(1314)

Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment

San Diego County, California

FINAL MITIGATED NEGATIVE DECLARATION
AND APPENDICES A-E
(SCH #2015061029/UPD #MND-2015-38)

San Diego Unified Port District
Document No. 63789
Filed 06/16/16

December 2015

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~~Draft~~ Final Mitigated Negative Declaration

Shelter Island Boat Launch Facility Improvements Project
and Port Master Plan Amendment

San Diego County, California

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~~DRAFT~~ FINAL MITIGATED NEGATIVE DECLARATION FOR SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS PROJECT AND PORT MASTER PLAN AMENDMENT SAN DIEGO, CALIFORNIA

CONTENTS

LIST OF TABLES

LIST OF ATTACHMENTS

LIST OF APPENDICES

ERRATA TO FINAL MITIGATED NEGATIVE DECLARATION

These errata to the Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment (Project) Final Mitigated Negative Declaration (MND) reflect additional clarifying and/or amplifying information to describe the demolition phasing proposed for the Shelter Island Boat Launch Facility (SIBLF) launch ramp, describe minor modifications proposed for the restrooms and parking facilities supporting the SIBLF, and to correct minor typographical errors and outdated information. California Environmental Quality Act (CEQA) Guidelines Section 15073.5 requires a lead agency to recirculate a negative declaration when the document must be substantially revised after public notice of its availability has previously been given pursuant to CEQA Guidelines Section 15072, but prior to its adoption. CEQA Guidelines Section 15073.5 identifies that a "substantial revision" shall mean: (1) A new, avoidable significant effect is identified and mitigation measures or project revisions must be added in order to reduce the effect to insignificance, or (2) The lead agency determines that the proposed mitigation measures or project revisions will not reduce potential effects to less than significance and new measures or revisions must be required. This additional clarifying and/or amplifying information does not constitute a "substantial revision" as defined by CEQA Guidelines Section 15073.5; therefore, recirculation of the MND is not necessary because none of the factors for recirculation exist. The revisions merely clarify that demolition of the existing SIBLF launch ramp would be conducted in two phases to allow Old Town Trolley Tours of San Diego, Inc. to utilize a portion of the launch ramp during the majority of the Project construction period to continue operating the Seal Tours. This phasing was assumed in the MND's analysis of construction and operational impacts. The revisions also describe that minor modifications to the restrooms and parking facilities supporting the SIBLF are proposed as part of the Project to meet current Americans with Disabilities Act (ADA) standards. Finally, the revisions correct other minor typographical and errors and outdated information.

The revisions are shown in ~~double strikeout~~/double underlined text below. As stated above, the revisions merely clarify and make minor modifications to the information that has already been presented in the MND, do not result in new significant impacts or a substantial increase in the severity of any impact already identified, and do not warrant recirculation of the MND. The modifications are provided by chapter and indicated with the page number from the Final MND that they would replace.

Final MND Chapter/Section Changes

EXECUTIVE SUMMARY

Section A. Project Description

Pages MND-1 and MND-2

The Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment (Project) includes the repair, maintenance, and replacement of several elements comprising the Shelter Island Boat Launch Facility (SIBLF), a free public boat launching facility that provides waterfront access opportunities to the public (see Figure 1 in Attachment A). The purpose of the Project is to provide accessibility for users with disabilities, to provide more navigable water area within the existing breakwater basin to launch and retrieve boats, to improve boat maneuverability, to reduce boat congestion, and to improve boat safety and operations at the SIBLF. The Project includes the following components: replacement of the existing 10-lane boat launching ramp; replacement of the existing rock jetties with concrete sheet pile (bulkhead) walls; installation of publicly accessible walking platforms with viewing areas atop the bulkhead walls; replacement of the existing floating docks; installation of new gangways to the floating docks; improvements to the existing kayak launching area; construction of a sidewalk with curb and gutter; re-grading and re-paving of the vehicle/trailer maneuvering area to raise the elevation of the upper area of the launch ramp; installation of signage; minor re-grading of the beach area to reinstate the pre-construction beach profile; completion of rock slope protection measures within the basin; ~~and~~ installation of updated launch ramp lighting; and completion of minor Americans with Disabilities Act (ADA)-compliant modifications to the restrooms and parking stalls. The Project would not increase the number of lanes comprising the existing boat launching ramp; therefore, an increase in the operational capacity of the SIBLF would not occur. Thus, no changes to ~~parking, sanitary facilities, or~~ other ancillary facilities are proposed.

Also, pursuant to Chapter 8 of the California Coastal Act, the Project involves a Project-specific Port Master Plan Amendment (PMPA). Pursuant to Section 30711(a)(4) of the Coastal Act, the PMP must include "proposed projects listed as appealable in Section 30715 in sufficient detail to be able to determine their consistency with the policies of Chapter 3." Section 30715(a)(4) includes "recreational small craft marina related facilities" as an appealable development. The Project falls within this category. The PMPA is described in Section II. Project Description, below, and is further detailed in Attachment B.

The State of California ~~Department~~Division of Boating and Waterways (DBW) has awarded a $~~9.35~~6.1 million grant to the District for design and construction of the Project. The DBW grant requirements include reporting and obtaining DBW approval of particulars during the design and construction phases of the Project and post-construction requirements, including: providing signage referencing DBW's financing of the Project, providing directional signage to the Project area, maintaining the Project area as open and accessible for use and enjoyment by the general public, maintaining liability and fire insurance for the Project area, and complying with DBW's Waterways Maintenance Guidelines.

II. PROJECT DESCRIPTION

Page MND-4

The Project includes the repair, maintenance, and replacement of several elements comprising the SIBLF. Specifically, the Project consists of the elements detailed below, which are shown in Figure 3 in Attachment A. Table 1, below, also provides a breakdown of the existing and proposed improvements comprising the SIBLF.

- Demolition of the existing 10-lane concrete launching ramp, docks, vehicle/trailer maneuvering area pavement, area lighting poles, and related improvements. Demolition of the existing launch ramp would be conducted in two phases to allow continued operation of the Seal Tours by Old Town Trolley Tours of San Diego, Inc. (OTT). The demolition phasing will allow OTT to access an approximately 15-foot-wide section of launch ramp during the majority of the Project construction period. There may be small windows where the ramp may become unavailable due to safety concerns or construction conflicts.

Page MND-5

- Creation of an approximately 600-square-foot (56-square-meter) on-site mitigation area for eelgrass impacts generally between the new east dock and the existing east jetty. Two possible areas for the mitigation area have been identified within the Project footprint (see Figure 3 in Attachment A).

- Replacement of two existing masonry screen walls within the restrooms.

- Restriping of two existing ADA accessible parking stalls to provide two 40-foot-long ADA accessible parking stalls near the restrooms for vehicles with boat trailers.

Page MND-6

Table 1. Existing and Proposed Improvements Summary

	Existing Improvements			**Proposed Improvements**			
Improvement	**Quantity**	**Number of Piles**	**Structure Area (square feet)**	**Quantity**	**Number of Piles**	**Structure Area (square feet)**	**Change in Structure Area (square feet)**
Docks and Gangways	4	10	2,100	5	16	5,190	+ 3,090
West Jetty	1	-	27,120	-	-	-	- 27,120
East Jetty	1	-	11,420	1	-	11,386	-34
West Sheet Pile Bulkhead Wall	-	-	-	1	173	456	+ ~~397~~456
East Sheet Pile Bulkhead Wall	-	-	-	1	86	285	+ 285
Boat Launch Ramp	1	-	16,090 (15,600 below 7.79' MLLW)	1	-	18,430 (14,780 below 7.79' MLLW)	+ 2,340 (-820 below 7.79' MLLW)
Total			**56,730**			**35,747**	**~~-21,042~~ -20,983**[a,b]

a. The net total of new open water area created as a result of the Project would be approximately ~~21,042~~20,983 square feet.
b. The net total of new navigable water area available for boater use within the existing basin would be approximately 18,200 square feet. However, an additional approximately 2,800 square feet of new open water area in addition to the approximately 18,200 square feet of new navigable water area would become available as a result of the Project. This open water area will be located between the new docks and bulkhead wall. Although this approximately 2,800-square-foot space will constitute new open water area benefiting marine biological resources, it would be unavailable for boaters to use as navigable water because the area would be too narrow for boats to enter.

The Project would not increase the capacity or use of the SIBLF, would not affect land-side buildings, and would not require additional on-site parking spaces or employees. The Project would include minor interior modifications to the restrooms in order to meet current ADA standards, but these modifications would not affect the restroom building. The ~~single-story comfort station (restrooms) and~~ the single-story building used by the Outboard Boating Club of San Diego, Inc. would remain unchanged. After construction is completed, the approximately 113 existing parking spaces for vehicles with attached boat trailers and approximately 239 general-use vehicles located adjacent to the boat launching area would continue to provide parking for the SIBLF. No land or water use changes would be required for the Project because the work is the repair and maintenance of existing facilities, and the land and water use designations would remain the same.

IV. ENVIRONMENTAL ANALYSIS

Section A. Environmental Factors Potentially Affected

Page MND-11

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. Generally, new pier or dock structures that result in increased bay coverage are typically considered to reduce the functionality of affected habitats, through decreased forage opportunities for some avian species, as well as through decreased productivity in shaded waters. However, the covered/shaded habitat continues to provide ecological value (e.g., forage opportunities, substrate to grow on, shelter from predators) for numerous fish and invertebrate species. The Project would not result in a net increase in surface area coverage or associated shading. As detailed in Table 1 above, implementation of the Project would result in the creation of approximately ~~21,042~~20,983 square feet of new open water area.

ATTACHMENT A. INITIAL STUDY

SECTION 1 BACKGROUND

1.2 Introduction

Page 1-3

The Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment (Project) includes the repair, maintenance, and replacement of several elements comprising the Shelter Island Boat Launch Facility (SIBLF), a free public boat launching facility that provides waterfront access opportunities to the public (Figure 1). The purpose of the Project is to provide accessibility for users with disabilities, to provide more navigable water area within the existing breakwater basin to launch and retrieve boats, to improve boat maneuverability, to reduce boat congestion, and to improve boat safety and operations at the SIBLF. The Project includes the following components: replacement of the existing 10-lane boat launching ramp; replacement of the existing rock jetties with concrete sheet pile (bulkhead) walls; installation of publicly accessible walking platforms with viewing areas atop the bulkhead walls; replacement of the existing floating docks; installation of new gangways to the floating docks; improvements to the existing kayak launching area; construction of a sidewalk with curb and gutter; re-grading and re-paving of the vehicle/trailer maneuvering area to raise the elevation of the upper area of the launch ramp; installation of signage; minor re-grading of the beach area to reinstate the preconstruction beach profile; completion of rock slope protection measures within the basin; ~~and~~ installation of updated launch ramp lighting; and completion of minor Americans with Disabilities Act (ADA)-compliant modifications to the restrooms and parking stalls (District 2013b). The Project would not increase the number of lanes comprising the existing boat launching ramp; therefore, an increase in the operational capacity of the SIBLF would not occur. Thus, no changes to ~~parking, sanitary facilities, or~~ other ancillary facilities are proposed.

1.3 Project Background and Existing Site Conditions

Page 1-4

The State of California ~~Department~~Division of Boating and Waterways (DBW) has awarded a $~~9.35~~6.1 million grant to the District for design and construction of the Project. The DBW grant requirements include reporting and obtaining DBW approval of particulars during the design and construction phases of the Project and post-construction requirements, including: providing signage referencing DBW's financing of the Project, providing directional signage to the Project area, maintaining the Project area as open and accessible for use and enjoyment by the general public, maintaining liability and fire insurance for the Project area, and complying with DBW's Waterways Maintenance Guidelines.

SECTION 2 PROJECT DESCRIPTION

2.1 Project Characteristics

Page 2-1

As detailed in Section 1.~~1~~2 above, the Project includes the repair, maintenance, and replacement of several elements comprising the SIBLF (District 2013b). Specifically, the Project consists of the elements detailed below, which are shown in Figure 3. Table 2-1, below, also provides a summary of the existing and proposed improvements comprising the SIBLF.

- Demolition of the existing 10-lane concrete launching ramp, docks, vehicle/trailer maneuvering area pavement, area lighting poles, and related improvements. Demolition of the existing launch ramp would be conducted in two phases to allow continued operation of the Seal Tours by Old Town Trolley Tours of San Diego, Inc. (OTT). The demolition phasing will allow OTT to access an approximately 15-foot-wide section of launch ramp during the majority of the Project construction period. There may be small windows where the ramp may become unavailable due to safety concerns or construction conflicts.

Page 2-2

- Creation of an approximately 600-square-foot (56-square-meter) on-site mitigation area for eelgrass impacts generally between the new east dock and the existing east jetty. Two possible areas for the mitigation area have been identified within the Project footprint (Figure 3).

- Replacement of two existing masonry screen walls within the restrooms.
- Restriping of two existing ADA accessible parking stalls to provide two 40-foot-long ADA accessible parking stalls near the restrooms for vehicles with boat trailers.

Page 2-5

Table 2-1. Existing and Proposed Improvements Summary							
	Existing Improvements			Proposed Improvements			
Improvement	**Quantity**	**Number of Piles**	**Structure Area (square feet)**	**Quantity**	**Number of Piles**	**Structure Area (square feet)**	**Change in Structure Area (square feet)**
Docks and Gangways	4	10	2,100	5	16	5,190	+ 3,090
West Jetty	1	-	27,120	-	-	-	- 27,120
East Jetty	1	-	11,420	1	-	11,386	-34
West Sheet Pile Bulkhead Wall	-	-	-	1	173	456	+ ~~397~~456
East Sheet Pile Bulkhead Wall	-	-	-	1	86	285	+ 285
Boat Launch Ramp	1	-	16,090 (15,600 below 7.79' MLLW)	1	-	18,430 (14,780 below 7.79' MLLW)	+ 2,340 (-820 below 7.79' MLLW)
Total			**56,730**			**35,747**	~~**-21,042**~~ **-20,983**[a,b]
a. The net total of new open water area created as a result of the Project would be approximately ~~21,042~~20,983 square feet. b. The net total of new navigable water area available for boater use within the existing basin would be approximately 18,200 square feet. However, an additional approximately 2,800 square feet of new open water area in addition to the approximately 18,200 square feet of new navigable water area would become available as a result of the Project. This open water area will be located between the new docks and bulkhead wall. Although this approximately 2,800-square-foot space will constitute new open water area benefiting marine biological resources, it would be unavailable for boaters to use as navigable water because the area would be too narrow for boats to enter.							

The Project would not increase the capacity or use of the SIBLF, would not affect land-side buildings, and would not require additional on-site parking spaces or employees. The Project would include minor interior modifications to the restrooms in order to meet current ADA standards, but these modifications would not affect the restroom building. The ~~single-story comfort station (restrooms) and the~~ single-story building used by the Outboard Boating Club of San Diego, Inc. would remain unchanged. After construction is completed, the approximately 113 existing parking spaces for vehicles with attached boat trailers and approximately 239 general-use vehicles located adjacent to the boat launching area would continue to provide parking for the SIBLF (District 2013b). No land or water use changes would be required for the

Project because the work is the repair and maintenance of existing facilities, and the land and water use designations would remain the same. However, a PMPA would be required as described in Section 2.3.2, below.

2.~~1~~2 Project Construction

Page 2-7

Due to confined basin access and the amount of heavy excavation and marine equipment required to construct the proposed improvements, the SIBLF would be closed to the public during ~~part of~~ the construction period for safety purposes. However, OTT would have access to an approximately 15-foot-wide section of launch ramp during the majority of the Project construction period to continue operating the Seal Tours. Additionally, the west driveway to the existing boat trailer parking lot (east of the launch ramp) would be closed, and a small portion of the west end of the parking lot, including a maximum of 15 parking spaces, would be closed to the public during construction so that it can be used as a staging and laydown area. To minimize basin down-time during construction, the Project would provide various milestones and phasing restrictions. It is anticipated the SIBLF would be closed to the public for approximately six months during the 10-month construction duration. Current users of the SIBLF would be redirected to other boat launching facilities located in San Diego Bay and Mission Bay. During construction, the following landside equipment is anticipated be used intermittently: air compressors, concrete saws, rubber tired and track mounted cranes, crawler tractors and excavators, impact hammer and vibratory pile driving equipment, paving equipment, rollers, dump trucks, graders, de-watering pumps, and other miscellaneous small equipment. Anticipated marine equipment would include a derrick barge with crane, impact hammer and vibratory pile driving equipment, and/or a flat deck barge with excavator. Not all of this equipment would be used for the entire duration of construction. Construction activities would be limited to 7 a.m. to 7 p.m. Monday through Friday, except for legal holidays as specified in Section 21.04 of the San Diego Municipal Code with the exception of Columbus Day or Washington's Birthday, to comply with the City of San Diego's Municipal Code.

SECTION 4 ENVIRONMENTAL CHECKLIST AND DISCUSSION

IV. BIOLOGICAL RESOURCES

Page 4-19

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. Generally, new pier or dock structures that result in increased bay coverage are typically considered to reduce the functionality of affected habitats, through decreased forage opportunities for some avian species, as well as through decreased productivity in shaded waters. However, the covered/shaded habitat continues to provide ecological value (e.g., forage opportunities, substrate to grow on, shelter from predators) for numerous fish and invertebrate species. The Project would not result in a net increase in surface area coverage or associated shading. As detailed in Table 2-1 above, implementation of the Project would result in the creation of approximately ~~21,042~~20,983 square feet of new open water area.

Page 4-20

No federally protected wetlands, as identified under Sections 401 and 404 of the Clean Water Act, are located within or immediately adjacent to the Project site. The surrounding bay is considered a water of the United States (Section 10 waters) and is a 303(d) impaired water body pursuant to the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. As described under Checklist response IV. b) above, the Project would result in a net decrease of bay surface area coverage of approximately ~~21,042~~20,983 square feet. The Project activities are regulated under Section 10 of the Rivers and Harbors Act of 1899, Section 401 of the Clean Water Act, and the Coastal Act. A Section 10 permit from the United States Army Corps of Engineers, a Water Quality Certification from the San Diego Regional Water Quality Control Board (RWQCB), and a Coastal Development Permit (CDP) from the District are required for the Project. Project compliance with all applicable certifications and permit requirements would ensure that construction and operation of the Project would not have a substantial adverse effect on federally protected wetlands. Impacts would be less than significant.

X. LAND USE PLANNING

Page 4-54

Figure 4 in Section 2 shows the existing land uses surrounding the Project site. Adjacent to the SIBLF, there are approximately 113 oversized parking spaces for vehicles with boat trailers and approximately 239 standard vehicles parking spaces for general use; a single-story comfort station building (restrooms); and a small single-story building of the Outboard Boating Club of San Diego, Inc. Kayak loading/unloading areas exist adjacent to the boat launching area. The Project would not permanently change the capacity or use of the SIBLF. ~~Therefore, no changes to parking or ancillary facilities are proposed.~~

XV. RECREATION

Page 4-88

Refer to Checklist response XIII. a) above. It is anticipated that the demand for 12 short-term construction jobs would be met by the local work force. Therefore, the temporary construction jobs are not anticipated to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. During the Project's approximately 6- to 10-month construction period, the SIBLF would not be operational and would be closed to the public. However, as identified above, OTT would have access to an approximately 15-foot-wide section of launch ramp during the majority of the Project construction period to continue operating the Seal Tours. Other public recreational facilities located outside of the primary Project construction area, such as restrooms and parking areas, would remain open and available for use during the majority of the Project construction period. Portable restrooms would be provided as necessary during the Project's minor improvements to the restrooms. The users of SIBLF would be redirected to surrounding boat launching facilities located in Chula Vista, National City, Glorietta Bay, and Mission Bay. The Chula Vista Boat Launching Ramp is located at the J Street Marina Park in Chula Vista. The ramp has a large parking lot for vehicles with trailers, picnic facilities and restrooms. The National City Boat Launching Ramp is located adjacent to Pepper Park in

National City. The ramp accesses San Diego Bay via the Sweetwater Channel. Restrooms, picnic facilities and a fishing pier are also located on the property. The Glorietta Bay Boat Launching Ramp is located in the City of Coronado. A 72-hour anchorage is located directly across the basin from the ramp. The South Shores boat launch is located on Mission Bay in South Shores Park, which includes a large parking lot, restrooms, and an RV Dump. Thus, the Project would result in a temporary increase in use of these boat launching facilities. However, because this increase in use would be temporary (approximately 6 to 10 months), it is not anticipated that substantial physical deterioration of the alternate boat launching facilities would occur. Thus, use of existing neighborhood and regional parks would not increase as a result of Project construction such that substantial physical deterioration of these facilities would occur or be accelerated.

XVI. TRANSPORTATION/TRAFFIC

Page 4-95

During construction, approximately 15 of the 113 parking spaces on the west side of the parking lot and the west driveway to the boat trailer parking lot east of the launch ramp would be temporarily inaccessible because this area would be used as a staging/laydown area for the Project. The temporary loss of approximately ~~nine~~13 percent of the parking spaces is not expected to result in a significant impact because boat launch users aside from OTT would be temporarily rerouted to other boat launching facilities in the area during construction. Moreover, OTT's operations on the site do not require parking spaces, as OTT's clientele board the vehicle at another location. These alternate boat launching facilities offer parking for users of those facilities. Furthermore, an increase in the operational capacity of the SIBLF would not occur as a result of the Project. Therefore, no ~~permanent changes to~~additional parking facilities are required. A less-than-significant impact would occur during construction, and no impact would occur during operation.

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~~DRAFT~~ <u>FINAL</u> MITIGATED NEGATIVE DECLARATION FOR SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS PROJECT AND PORT MASTER PLAN AMENDMENT SAN DIEGO, CALIFORNIA

EXECUTIVE SUMMARY

The San Diego Unified Port District (District), as the lead agency under the California Environmental Quality Act (CEQA), has prepared this ~~Draft~~ <u>Final</u> Mitigated Negative Declaration (MND) for the Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment (Project). The Project site is located at 2210 Shelter Island Drive, San Diego, CA 92106. The Project site is located within the Bay Corridor subarea of Planning District 1, Shelter Island/La Playa, of the District's certified Port Master Plan (PMP).

This document has been prepared pursuant to the requirements of CEQA (Public Resources Code Section 21000, et seq.) and the implementing regulations, the "CEQA Guidelines" (California Code of Regulations, Title 14, Division 6, Chapter 3, Section 15000, et seq.), as well as the District's CEQA Guidelines (Clerk Document No. 36294). Specifically, this document meets the requirements of CEQA Guidelines Sections 15070 and 15071 and District CEQA Guidelines Section V., and the attached Initial Study (see Attachment A) meets the requirements of CEQA Guidelines Section 15063 and District CEQA Guidelines Section IV. Together, the Initial Study and MND meet CEQA's content requirements by including a project description; a description of the environmental setting; potential environmental impacts and feasible mitigation measures for any significant effects; discussion of consistency with plans and policies; and names of the document preparers.

<u>In accordance with CEQA, the Draft MND was distributed for a 30-day public review and comment period beginning on June 12, 2015 and ending on July 14, 2015. During this timeframe, the document was available for review by various federal, state, regional, and local agencies as well as by interested organizations and individuals. The written comment letters received during the public review period and District responses to the comments received are included as Attachment C to this Final MND.</u>

<u>This Final MND addresses the comments contained in the comment letters received on the Draft MND. In response to comments received during the public review period, this Final MND includes minor clarifications to the text. Any additions are indicated as underlined text and deletions are shown as strikeout text.</u>

A. Project Description

The Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment (Project) includes the repair, maintenance, and replacement of several elements comprising the

Shelter Island Boat Launch Facility (SIBLF), a free public boat launching facility that provides waterfront access opportunities to the public (see Figure 1 in Attachment A). The purpose of the Project is to provide accessibility for users with disabilities, to provide more navigable water area within the existing breakwater basin to launch and retrieve boats, to improve boat maneuverability, to reduce boat congestion, and to improve boat safety and operations at the SIBLF. The Project includes the following components: replacement of the existing 10-lane boat launching ramp; replacement of the existing rock jetties with concrete sheet pile (bulkhead) walls; installation of publicly accessible walking platforms with viewing areas atop the bulkhead walls; replacement of the existing floating docks; installation of new gangways to the floating docks; improvements to the existing kayak launching area; construction of a sidewalk with curb and gutter; re-grading and re-paving of the vehicle/trailer maneuvering area to raise the elevation of the upper area of the launch ramp; installation of signage; minor re-grading of the beach area to reinstate the pre-construction beach profile; completion of rock slope protection measures within the basin; and installation of updated launch ramp lighting. The Project would not increase the number of lanes comprising the existing boat launching ramp; therefore, an increase in the operational capacity of the SIBLF would not occur. Thus, no changes to parking, sanitary facilities, or other ancillary facilities are proposed.

Also, pursuant to Chapter 8 of the California Coastal Act, the Project involves a Project-specific Port Master Plan Amendment (PMPA). Pursuant to Section 30711(a)(4) of the Coastal Act, the PMP must include “proposed projects listed as appealable in Section 30715 in sufficient detail to be able to determine their consistency with the policies of Chapter 3.” Section 30715(a)(4) includes “recreational small craft marina related facilities” as an appealable development. The Project falls within this category. The PMPA is described in Section II. Project Description, below, and is further detailed in Attachment B.

The State of California Department of Boating and Waterways (DBW) has awarded a $9.35 million grant to the District for design and construction of the Project. The DBW grant requirements include reporting and obtaining DBW approval of particulars during the design and construction phases of the Project and post-construction requirements, including: providing signage referencing DBW’s financing of the Project, providing directional signage to the Project area, maintaining the Project area as open and accessible for use and enjoyment by the general public, maintaining liability and fire insurance for the Project area, and complying with DBW’s Waterways Maintenance Guidelines.

B. Proposed Finding

The Initial Study prepared for the Project found that the Project would not result in significant adverse impacts in the following areas: aesthetics, agriculture and forestry resources, air quality, cultural resources, geology and soils, greenhouse gas emissions, hydrology and water quality, land use and planning, mineral and energy resources, population and housing, and utilities and service systems.

Impacts that were shown to have a less-than-significant impact with mitigation were biological resources, hazards and hazardous materials, noise, public services, recreation, and transportation/traffic. However, measures to avoid or mitigate the effects would be incorporated into the Project to reduce the impacts to below a level of significance. These measures are identified in Table 2 and discussed below in Section IV. Environmental Analysis.

I. INTRODUCTION

A. Purpose of a Mitigated Negative Declaration

CEQA Section 21064 defines a Negative Declaration as a well written statement briefly describing the reasons that a proposed project will not have a significant effect on the environment and does not require the preparation of an environmental impact report.

Section 21604.5 defines a Mitigated Negative Declaration as a negative declaration prepared for a project when the initial study has identified potentially significant effects on the environment, but (1) revision in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur; and (2) there is no substantial evidence in light of the whole record before the lead agency that the project, as revised, may have a significant effect on the environment.

CEQA Section 21068 defines a significant effect on the environment as a substantial or potentially substantial adverse change in the environment. Accordingly, the District has prepared an Initial Study to address the potential environmental effects associated with the Project pursuant to the requirements of CEQA, the CEQA Guidelines, and the District's CEQA Guidelines. Specifically, the Initial Study meets the requirements of CEQA Guidelines Section 15063 and the District's CEQA Guidelines Section IV. The Initial Study includes a discussion of the Project's effects on the existing environment. Issue areas identified as having potential impacts are discussed further and include mitigation measures that would reduce potential impacts to "Less Than Significant With Mitigation Incorporated." Project-specific information is discussed below.

CEQA Section 21082.2(a) requires the lead agency to determine whether a project may have a significant effect on the environment based on substantial evidence in light of the whole record.

See Attachment A for the Initial Study and Attachment B for the draft PMPA.

B. Project Proponent

The Project Proponent is the San Diego Unified Port District.

C. Project Purpose and Need

The SIBLF is in need of repairs because of the corrosive and wearing actions of seawater and heavy use by boaters. Also, due to the increased use over time and the use of larger recreational boats, the SIBLF has been experiencing congestion and delays when launching boats in the limited basin area. Finally, boat access to the SIBLF basin is extremely limited during low tide.

D. Project Location

The Project site is located at 2210 Shelter Island Drive in San Diego, CA. The SIBLF is located in a small basin that opens onto San Diego Bay. The boat launching area is protected from exposure to open bay waters by rock jetties. A boat launching ramp extends into the launch basin waters, and boarding docks, gangways, and piers are located on either side of the boat launching ramp. The Project site is located in an urbanized area surrounded by San Diego Bay to the south and east and by developed park and commercial uses, including hotels, restaurants, and marine sales and services uses to the north and west. The Project is located within the jurisdiction of the District and is located within the Bay Corridor subarea of Planning District 1, Shelter Island/La Playa, of the certified PMP. This subarea (subarea 13) is the largest in Planning District 1 and allows for mixed uses including hotels, marinas, restaurants, and various public recreational facilities including parks, beaches, fishing piers, and boat launching facilities. The specific land and water use designations for the Project site include Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade. The Project is compatible with existing land and water use designations; however a Project-specific PMPA is required for the Project pursuant to Chapter 8 of the California Coastal Act (see Section II. Project Description for details).

II. PROJECT DESCRIPTION

The Project includes the repair, maintenance, and replacement of several elements comprising the SIBLF. Specifically, the Project consists of the elements detailed below, which are shown in Figure 3 in Attachment A. Table 1, below, also provides a breakdown of the existing and proposed improvements comprising the SIBLF.

- Demolition of the existing 10-lane concrete launching ramp, docks, vehicle/trailer maneuvering area pavement, area lighting poles, and related improvements.

- Construction of a new 10-lane cast-in-place concrete launching ramp using a temporary steel sheet pile cofferdam to allow the ramp to be constructed in dry conditions. The temporary cofferdam would allow the concrete ramp to be constructed and cured before allowing contact with tidal waters. A total of approximately 200 24-inch-wide (1-inch thick), 35-foot-long vertical sheet piles and 25 10-inch-wide, 45-foot-long battered steel 'H' piles would be temporarily installed to support the cofferdam.

- Partial removal (approximately 27,154 square feet) of the existing rock jetties and replacement with permanent concrete sheet pile bulkhead walls to expand the boat basin within the existing jetty footprint from approximately 22,800 square feet to approximately 41,000 square feet, creating approximately 18,200 square feet of additional navigable water area within the existing basin. Installation of two new bulkhead walls within the existing jetty footprint, with the west wall measuring 338 feet long and the east wall measuring 169 feet long. The bulkheads walls would have a 60-foot wide opening to allow for boat access to and from the San Diego Bay. Approximately 5-foot-wide accessible walkways with widened overlook areas would be located along the top of the bulkhead walls to provide pedestrian access and viewing of the bay similar to the path that exists on the top of the existing jetties. The bulkhead wall walkways would meet the state accessibility codes and the Americans with Disabilities Act (ADA) requirements. A total of approximately 65 14-inch-wide, 54-foot-long concrete batter piles would be installed to support the permanent concrete sheet piles bulkhead walls.

- Replacement of the existing floating docks, including six dock guide piles, with an interior perimeter (of the basin) floating dock. The new floating dock would include 16 precast concrete guide pilings that would be approximately 18 inches in diameter and 46 feet long (13 piles would be new, and 3 would be reused).

- Installation of new prefabricated aluminum gangways to provide access from shore to the floating docks (one 34-foot standard gangway, one 42-foot standard gangway, and one 80-foot accessible gangway to accommodate users with disabilities).

- Installation of pavement striping and signage to better designate the existing kayak drop-off area. The kayak launch area is currently 1,300 square feet; no changes to the size of the launch area are proposed.

- Installation of a concrete sidewalk (approximately 160 feet long), a concrete curb and gutter (approximately 720 feet long) to improve access and safety of the users of the SILBF. The total area to be re-paved would be approximately 16,600 square feet.

- Installation of a Division of Boating and Waterways Project Sign, featuring the facility name and identifying the Division of Boating and Waterways as the Project funding agency and the District as the agency responsible for SIBLF operations and maintenance.

- Minor re-grading of approximately 2,100 square feet of beach area after the western jetty has been removed and the new bulkhead wall has been installed to reinstate the pre-construction beach profile.

- Installation of rock slope protection adjacent to the launch ramp within the basin by beneficially reusing approximately 850 cubic yards of existing rock revetment materials.

- Installation of updated lighting. All proposed lighting would be light-emitting diode (LED) technology for electrical efficiency and longevity.

- Creation of an approximately 600-square-foot (56-square-meter) on-site mitigation area for eelgrass impacts generally between the new east dock and the existing east jetty. Two possible areas for the mitigation area have been identified within the Project footprint (see Figure 3 in Attachment A).

The existing concrete boat launching ramp measures approximately 16,090 square feet and would be increased by 2,340 square feet to approximately 18,430 square feet as a result of the Project. The slight increase in launch ramp area would be necessary to raise the top of the ramp approximately two feet to a more appropriate elevation, which would accommodate future anticipated sea level rise, and would require the ramp to be extended 23 feet southward. Although the size of the ramp would increase, the area of the ramp that would be below 7.79 foot Mean Lower Low Water (MLLW) would decrease because the top of the ramp would be at higher elevation. Approximately 14,780 square feet of the new ramp would be below 7.79 feet MLLW as compared to the existing launching ramp, for which 15,600 square feet is below 7.79 feet MLLW.

The square footage of the existing rock jetties within the water would be reduced by approximately 27,154 square feet when replaced with the concrete sheet pile bulkhead walls. The surface water area usable by boaters within the basin would increase by 18,200 square feet, from approximately 22,800 square feet to approximately 41,000 square feet, with the proposed bulkhead wall construction. This would reduce congestion and improve boat and ramp operations and boater safety. However, the overall outside area, or footprint, of the SIBLF would not increase from its existing footprint.

Table 1. Existing and Proposed Improvements Summary

	Existing Improvements			**Proposed Improvements**			
Improvement	**Quantity**	**Number of Piles**	**Structure Area (square feet)**	**Quantity**	**Number of Piles**	**Structure Area (square feet)**	**Change in Structure Area (square feet)**
Docks and Gangways	4	10	2,100	5	16	5,190	+ 3,090
West Jetty	1	-	27,120	-	-	-	- 27,120
East Jetty	1	-	11,420	1	-	11,386	-34
West Sheet Pile Bulkhead Wall	-	-	-	1	173	456	+ 397
East Sheet Pile Bulkhead Wall	-	-	-	1	86	285	+ 285
Boat Launch Ramp	1	-	16,090 (15,600 below 7.79' MLLW)	1	-	18,430 (14,780 below 7.79' MLLW)	+ 2,340 (-820 below 7.79' MLLW)
Total			**56,730**			**35,747**	**-21,042**[a,b]

a. The net total of new open water area created as a result of the Project would be approximately 21,042 square feet.
b. The net total of new navigable water area available for boater use within the existing basin would be approximately 18,200 square feet. However, an additional approximately 2,800 square feet of new open water area in addition to the approximately 18,200 square feet of new navigable water area would become available as a result of the Project. This open water area will be located between the new docks and bulkhead wall. Although this approximately 2,800-square-foot space will constitute new open water area benefiting marine biological resources, it would be unavailable for boaters to use as navigable water because the area would be too narrow for boats to enter.

The Project would not increase the capacity or use of the SIBLF, would not affect land-side buildings, and would not require additional on-site parking spaces or employees. The single-story comfort station (restrooms) and the single-story building used by the Outboard Boating Club of San Diego, Inc. would remain unchanged. After construction is completed, the approximately 113 existing parking spaces for vehicles with attached boat trailers and approximately 239 general-use vehicles located adjacent to the boat launching area would continue to provide parking for the SIBLF. No land or water use changes would be required for the Project because the work is the repair and maintenance of existing facilities, and the land and water use designations would remain the same.

As part of the Project, an amendment to the PMP for Planning District 1 has been prepared to include a detailed description of the Project. Pursuant to Section 30711(a)(4) of the Coastal Act, the PMP must include “proposed projects listed as appealable in Section 30715 in sufficient detail to be able to determine their consistency with the policies of Chapter 3.” Section 30715(a)(4) includes “recreational small craft marina related facilities” as an appealable development. The Project falls within this category. Accordingly, the PMPA would include updating the Shelter Island Planning District 1 text and updating the Shelter Island Planning District 1 Project List table (Table 7 of the PMP) to include the Project.

A. Construction

Construction of the Project is expected to begin in late 2016 and take a total of approximately 6 to 10 months to complete. The Project construction activities, including active construction areas and laydown/staging areas, would encompass approximately 2.8 acres. Figure 3 in Attachment A shows the Project site and the major Project elements.

Cofferdam Installation and Removal

Construction of the 10-lane new concrete boat launching ramp would require installation of a temporary cofferdam. The temporary steel sheet piling for the cofferdam would be installed using a vibratory pile driving hammer when possible; however, an impact pile driving hammer may be used when required where firmer subsurface soil conditions are encountered. The temporary steel sheet piles would be supported laterally by slightly angled, or leaning, steel batter piles that would be installed with either a vibratory pile driving hammer or an impact pile driving hammer depending on soil conditions. The temporary cofferdam is expected to consist of installing approximately 200 vertical steel sheet piles and 25 battered steel ‘H’ piles over a duration of approximately 3 to 4 weeks. An additional 2 weeks is needed to remove sheet piles using vibratory pile driving equipment. The area behind (landward of) the cofferdam would be dewatered during construction in compliance with regulatory requirements. The temporary sheet pile cofferdam and supporting batter piles would be removed entirely after construction and curing of the concrete launch ramp.

Demolition, Jetty Removal and Dredging

The rock and soil jetties would be removed with landside and barge-mounted waterside equipment. It is likely that most of the jetty material would be removed using land-based excavating equipment working from the outer extremities of the jetties and moving shoreward as the jetties are removed. Remaining subtidal jetty material that cannot be reached by the land-based equipment would be removed with barge-mounted excavating equipment. A total of 14,500 cubic yards of material would be excavated, which includes: jetty riprap (6,100 cubic yards), jetty core fill (7,500 cubic yards), and dredged sediment (900 cubic yards). This maintenance dredging of the basin sediment would be required to maintain the existing depths. A portion (approximately between 1,150 and 1,350 cubic yards) of the jetty riprap, jetty core fill, and dredged materials is planned to be beneficially reused on-site for various Project improvements. The remainder of the riprap, jetty core fill, and dredged material (approximately between 13,150 and 13,350 cubic yards) would be removed and transported to the Copper Mountain Landfill, located at 34853 East County 12th St. Wellton, Arizona, approximately 200 miles east of the Project site (AMEC 2015).

Bulkhead Wall Construction

The permanent precast concrete sheet piles for the bulkhead walls would be driven solidly into the basin bottom sediment. The concrete sheet piles would be pile jetted as far as possible and then driven to full design depth with an impact pile driving hammer. The concrete sheet pile bulkhead walls would be supported by angled precast concrete batter piles to provide the necessary lateral support to resist the forces of the tides and current within San Diego Bay, and to provide support for the walkway on top of the bulkhead walls. The relatively small diameter batter piles would be placed by the impact pile driving method to assure firm support for the bulkhead walls. All pile driving would incorporate the use of cushion blocks made of wood or similar material to protect the top of the piles as they are driven and to decrease the noise produced by the pile driver striking the piles. Soft start pile driving techniques are being proposed. The use of a soft start procedure is believed to provide additional protection to marine mammals by providing a warning and giving the marine mammals a chance to leave the area prior to the contractor operating the impact hammer at full capacity. This soft start technique is recommended by the National Marine Fisheries Service (NMFS) for impact and vibratory pile driving. The soft start technique requires contractors to initiate noise from vibratory hammers for fifteen seconds at reduced energy followed by a 30-second waiting period. This procedure should be repeated two additional times. If an impact hammer is used, contractors are required to provide an initial set of three strikes from the impact hammer at 40 percent energy followed by a 30-second waiting period, then two subsequent three-strike sets. Furthermore, in order to minimize turbidity, the Project would include the use of silt curtains during all in-water construction activity as part of the design of the Project.

Installation of Docks, Gangways, and Other Site Improvements

The existing floating docks would be replaced with an interior perimeter (of the basin) floating dock. Two standard and one ADA accessible prefabricated aluminum gangways would be installed to provide access from shore to the floating docks. Rock slope protection adjacent to the launch ramp within the basin would be installed and there would be minor re-grading of approximately 2,100 square feet of beach area after the western jetty has been removed and the new bulkhead wall has been installed to reinstate the pre-construction beach profile. Other improvements include installation of pavement striping and signage to better designate the existing kayak drop-off area, installation of a concrete sidewalk and a concrete curb and gutter, installation of a Division of Boating and Waterways Project Sign, installation of updated lighting, and creation of an approximately 600-square-foot (56-square-meter) on-site mitigation area for eelgrass impacts generally between the new east dock and the existing east jetty.

III. ENVIRONMENTAL SETTING

The Project site is located at 2210 Shelter Island Drive in San Diego, California. The SIBLF is located in a small basin that opens onto San Diego Bay. The boat launching area is protected from exposure to open bay waters by rock jetties. A boat launching ramp extends into the launch basin waters, and boarding docks, gangways, and piers are located on either side of the boat launching ramp. The Project site is located in an urbanized area surrounded by San Diego Bay to the south and east and by developed park and commercial uses, including hotels, restaurants, and marine sales and services uses to the north and west. The Project is located within the jurisdiction of the District and is located within the Bay Corridor subarea of Planning District 1, Shelter Island/La Playa, of the certified PMP. This subarea (subarea 13) is the largest in Planning District 1 and allows for mixed uses including hotels, marinas, restaurants, and various public recreational facilities including parks, beaches, fishing piers, and boat launching facilities. The specific land and water use designations for the Project site include Boat Launching Ramp, Boat Navigation Corridor, Park and Promenade. The Project is compatible with existing land and water use designations; however a Project-specific PMPA is required for the Project pursuant to Chapter 8 of the California Coastal Act (see Section II. Project Description, above, for details).

IV. ENVIRONMENTAL ANALYSIS

As previously discussed, the Project for which this MND has been prepared consists of repair, maintenance, and replacement of several elements comprising the SIBLF located at 2210 Shelter Island Drive, San Diego, CA 92106, within the Bay Corridor subarea of Planning District 1, Shelter Island/La Playa, of the certified PMP. The Initial Study (Attachment A) evaluated the potential environmental impacts of the Project and determined that the Project would result in impacts that are mitigated to below a level of significance for biological resources, hazards and hazardous materials, noise, public services, recreation, and transportation/traffic. These impacts and associated mitigation measures are discussed below.

A. Environmental Factors Potentially Affected

Biological Resources

Existing Conditions

Habitats. San Diego Bay is characterized by a wide range of marine habitats including soft bottom, which predominates in the bay, eelgrass (*Zostera marina*), and artificial hard substrates primarily associated with piers and jetties. Habitats associated with the Project area are similar to other developed areas around the bay and include soft bottom and sandy beaches, floating piers, and hard bottom areas of the rock jetty. Throughout the bay, eelgrass beds support fisheries productivity unmatched by most habitats, while soft bottom habitats provide foraging for species that depend upon resident invertebrates for food (U.S. Navy and Port of San Diego 2013).

Plants. Seagrass is recognized as an extremely valuable habitat in southern California marine and estuarine environments. Four species of seagrass are known to occur in southern California, including narrow-bladed eelgrass, wide-bladed eelgrass (*Z. pacifica*), surfgrass (*Phylospadix torreyi* and *P. scouleri*), and widgeon grass (*Ruppia maritima*) (Talbot *et al.* 2006, Coyer *et al.* 2008). In 2011, approximately 1,831 acres of eelgrass existed within and adjacent to San Diego Bay (U.S. Navy 2011). Similarly, about 29 percent of the existing shallow waters of San Diego Bay are vegetated with eelgrass (U.S. Navy and Port of San Diego 2013). During surveys for the Project in 2013, a total of approximately 2,150 square meters (m^2) (0.53 acre) of eelgrass occurred within the survey area, which is larger than the Project area and includes areas within the launch basin and along the southwest beach.

Eelgrass resources observed within the launch basin in July 2013 indicated that the eelgrass did not form a contiguous bed. Individual plants less than 6 inches in height numbered between 12 and 15 individual's that likely represent recent recruitment. The larger plants (>12 inches) within the launch basin did not form a definitive eelgrass bed but the plants were clustered in small patches that occur in an area less frequently disturbed by vessel traffic than the majority of the launch basin. No flowering was observed and water clarity was relatively poor compared areas along the beach just outside the launch basin. Mapped eelgrass beds along the beaches on either side of the launch basin were dense and healthy. Eelgrass communities adjacent to the rock jetty, along the beach southwest of the launch basin, were within 20 feet of the existing rock jetty and varied between 8 and 25 feet wide. The substrate drops off rapidly moving offshore, limiting eelgrass habitat suitability in close proximity of the outer portions of the rock jetty. No eelgrass was observed along the rock jetty northeast of the SIBLF entrance.

Many soft bottom habitats throughout the bay are covered with mats of various algal species. Algal species, including *Ulva* spp., *Chaetomorpha* spp., *Cladophora* spp., and *Enteromorpha* spp., are components of the mat communities in some nearshore locations in the bay. The most common algae observed attached to the docks is *Ulva* (Heilprin pers. obs. July 2013).

Caulerpa taxifolia, an invasive species of algae that is known to cause significant habitat disruption in areas where it occurs (nearest record is from northern San Diego County), and has not been documented in San Diego Bay. However, it was not observed during a recent District survey or during the eelgrass survey of the Project area (District 2013a).

Marine Organisms. Infaunal and epifaunal invertebrates in the Project area are expected to be very similar to other adjacent areas of similar depth and habitat throughout the bay. These organsisms include polychaete (capitellids, spionids, and syllids) and oligochaete worms, while crustaceans (amphipods) molluscs and miscellaneous species (sponges, cnidarians, platyhelminthes, nemerteans, sipunculids, phoronids, echinoderms, and urochordates) are also common. Common demersal (bottom-dwelling) and pelagic (living near the surface or in the water column) fish species collected in the bay include northern anchovy, Pacific sardine, barred and spotted sand basses, and California halibut. Common waterfowl and seabird species in the bay, include surf scoter, eared grebe, California brown pelican, elegant tern, Heermann's gull, double-crested cormorant, mallard, and great blue heron. Marine mammal species that occur year-round in San Diego Bay include California sea lion, California harbor seal, and two cetaceans, bottlenose dolphin and gray whale. The following Special Status species may be found in the vicinity of the Project area and are also found throughout San Diego Bay:

- California least tern (*Sternula antillarum browni*) (federally endangered, state endangered, California fully protected species);
- Double-crested cormorant (*Phalacrocorax auritus*) (California watch list);
- Elegant tern (*Thalasseus elegans*) (bird of conservation concern, California watch list);
- California sea lion (*Zalophus californicus*) (Marine Mammal Protection Act);
- Common bottlenose dolphin (*Tursiops truncatus*) (Marine Mammal Protection Act);
- Common dolphin (*Delphinus delphis*) (Marine Mammal Protection Act);
- Pacific harbor seal (*Phoca vitulina*) (Marine Mammal Protection Act); and
- Eastern Pacific green sea turtle (*Chelonia mydas*) (federally threatened).

Thresholds for Determining Significance

The Project was determined to result in a significant impact if it would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service.

Potentially Significant Impacts

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. Generally, new pier or dock structures that result in increased bay coverage are typically considered to reduce the functionality of affected habitats, through decreased forage opportunities for some avian species, as well as through decreased productivity in shaded waters. However, the covered/shaded habitat continues to provide ecological value (e.g., forage opportunities, substrate to grow on, shelter from predators) for numerous fish and invertebrate species. The Project would not result in a net increase in surface area coverage or associated shading. As detailed in Table 1 above, implementation of the Project would result in the creation of approximately 21,042 square feet of new open water area.

Impacts to vegetated and nonvegetated soft bottom benthic habitat from dredging operations inside the basin and potential replacement of the rock jetty would occur. Direct impacts to eelgrass from the Project would be minor (less than approximately 30 square meters) based on 2013 surveys. Pursuant to the requirements of the lead federal agency and National Oceanic and Atmospheric Administration (NOAA) Fisheries, the actual level of impact to eelgrass will be determined during the pre- and post- construction eelgrass surveys, but the impact could be significant. Any significant impacts to eelgrass, as determined by these surveys, would be mitigated using the guidance from the California Eelgrass Mitigation Policy (CEMP) (NMFS 2014). Implementation of Mitigation Measure B-1, which would require impacts from effects to eelgrass to be mitigated according to the CEMP, would reduce impacts to eelgrass to less than significant. Two possible areas for the creation of an approximately 600-square-foot (56-square-meter) on-site mitigation area for eelgrass have been identified generally between the new east dock and the existing east jetty (see Figure 3 in Attachment A).

Species that may be directly or indirectly affected by noise levels produced during Project construction include eastern Pacific green sea turtle (Chelonia mydas), managed fish species under the Coastal Pelagic Species FMP and Pacific Coast Groundfish FMP, bird species such as California least tern, and marine mammals. The proposed Project would include construction activities (e.g., pile driving) that would generate airborne and underwater sound levels potentially harmful to biological resources. Hydroacoustic impact analysis aims to identify portions of the proposed Project that could have substantially adverse effects, direct or indirect, on marine species identified as candidates, sensitive, or actively maintain protected species-status by the NMFS and CDFW. Thresholds for significant effects are described as Level A and Level B Harassment. Amendments to the MMPA in 1994 define Level A Harassment as any act of pursuit, torment, or annoyance, which has the potential to injure a marine mammal or marine mammal stock in the wild. Level B Harassment is defined as having the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild (NOAA 2013).

Based on a recent analysis of pile driving effects for the BAE Systems Pier 1 project on San Diego Bay (TDI 2015), Level A Harassment (physical injury) is not expected to occur as a result of the Project based on the projected sound pressure levels from pile driving activities. Anticipated sound levels (decibels root mean squared [dB rms]) for this project are estimated between 137 and 160 dB for steel “H” batter piles using an either a vibratory or impact hammer, and up to 172 dB for all other piles using an impact hammer, which is below the Level A injury threshold of 180 dB rms (Caltrans 2012). However, single strike peak sound pressure levels generated from pile driving immediately adjacent to the point of impact would have the potential to approach or exceed the Level A (180 dB rms) injury threshold of 180 dB rms. Level B Harassment (behavioral) could occur if marine mammals move inside the 160 dB rms isopleths (contour line). Therefore, impacts to marine mammals could occur as a result of Project construction.

The criteria for cumulative effects to fish from repeated exposure to pile strikes is based on the size of the fish. A threshold of 187 dB SELcumulative is used for fish greater than 2 grams body weight, and 183 dB SELcumulative for fish less than 2 grams (SELcumulative is an estimate of the total exposure of repeated events). Although these fish are highly mobile and are expected to move away from the Project Area during construction, cumulative impacts to fish as a result of repeated exposure to elevated sound pressure levels from Project construction are possible. Therefore, impacts to fish could occur as a result of Project construction.

Impacts from pile driving noise on biological resources such as fish, birds, marine mammals, and sea turtles described above would be reduced to less than significant levels with the implementation of Mitigation Measure B-2.

Mitigation Measures

B-1 Impacts from effects to eelgrass shall be mitigated according to the California Eelgrass Mitigation Policy (CEMP), with replanting of eelgrass at a 1.2:1 ratio (NMFS 2014). Pursuant to the CEMP, pre- and post-construction surveys shall determine the exact amount of eelgrass affected by Project activities. Prior to the commencement of construction, the Project Applicant shall retain a qualified biologist to conduct a pre-construction eelgrass survey per the CEMP to quantify the amount of existing eelgrass within the Project area. The name of the retained contractor and proposed survey plan, including a schedule, shall be submitted to the District before initiation of survey work. A monitoring program consisting of a pre-construction eelgrass survey and three post-construction eelgrass surveys at the impact site and appropriate reference site(s) will be performed (NMFS 2014). The first post-construction eelgrass survey will be completed within 30 days following completion of construction to evaluate any immediate effects to eelgrass habitat. The second post-construction survey will be performed approximately one year after the first post-construction survey during the appropriate growing season. The third post-construction survey will be performed approximately two years after the first post-construction survey during the appropriate growing season. The second and third post-construction surveys will be used to evaluate if indirect effects resulted later in time due to altered physical conditions; the time frames identified above are aligned with growing season (attempting a survey outside of the growing season would show inaccurate results).

A final determination regarding the actual impact and amount of mitigation needed at the above-stated ratio, if any, to offset impacts should be made based upon the results of two annual post-construction surveys, which document the changes in the eelgrass habitat (areal extent, bottom coverage, and shoot density within eelgrass) in the vicinity of the action, compared to eelgrass habitat change at the reference site(s). Any impacts determined by these monitoring surveys would be mitigated. Two possible areas for on-site mitigation of eelgrass have been identified generally between the new east dock and the existing east jetty. Before implementation of the mitigation, the Project Applicant shall submit a mitigation plan to the District's Environmental and Land Use Management department and resource agencies for review and approval.

B-2 To mitigate potentially significant impacts to sensitive fish species, bird species, eastern Pacific green sea turtles, and marine mammals to less than significant, the following measures shall be implemented:

1. An on-site biological observer shall be present during pile driving activities with the authority to stop construction if a sensitive fish species, green sea turtle, or marine mammal approaches or enters the shutdown zone. The shutdown zone is the area within 10 meters of construction activities or inside the 190 dB rms isopleths for green sea turtle and marine mammal cetaceans or 180 dB rms for marine mammal pinnipeds. Prior to the start of pile-driving activities, the biological observer shall monitor the shutdown zone for 15 minutes to ensure that sensitive fish species, green sea turtles, and marine mammals are not present. If a sensitive fish species, green sea turtle, or marine mammal approaches or enters the shutdown zone during the pile-driving activities, the biological observer shall notify the construction contractor to stop the activity. The pile-driving activities shall be stopped and delayed until the biological observer visually confirms either that the animal has voluntarily left the shutdown zone and is beyond the shutdown zone, or 15 minutes have passed without re-detection of the animal. If the on-site biological observer determines that weather conditions prevent the visual detection of sensitive fish species, green sea turtles, or marine mammals in the shutdown zone, such as heavy fog, in-water construction activities with the potential to result in Level A Harassment (injury) shall not be conducted until conditions change.
2. Biological monitoring shall be conducted by qualified observers. The observer shall be placed in the best vantage point practicable to monitor, and when applicable, shall communicate directly with the construction superintendent and/or hammer operator.
3. During all observation periods, observers shall use binoculars and the naked eye to scan continuously for sensitive fish species, green sea turtles, and marine mammals. As part of the monitoring process the observer shall collect sighting data and behavioral responses to construction from sensitive fish species, green sea turtles, and marine mammals observed in the Project area of activity during the period of construction. The observer shall record any sensitive fish species, marine mammal, green sea turtle, or California least tern sightings, and submit the sighting records to the District within 60 days of the completion of the mitigation monitoring with a summary of observations.

Hazards and Hazardous Materials

Existing Conditions

The Project site is located on the San Diego Bay. SIBLF has been in the location since 1956. The Project site is not located on any federal, state, or local environmental databases.

Thresholds for Determining Significance

The Project was determined to result in a significant impact if it would impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Potentially Significant Impacts

During construction, the west driveway to the existing boat trailer parking lot (east of the launch ramp) and a small portion of the west portion of the parking lot (up to 15 parking spaces) would be closed. These spaces would be used for a staging and laydown area. Site-specific activities, including temporary construction activities, are reviewed and approved on a project-by-project basis by the District when development plans are submitted. The District ensures that emergency access is retained during construction through its project review and approval process. After construction, the equipment would be removed and access to the driveway and parking would be restored. Also, as described in the Initial Study (Attachment A), the addition of traffic from haul trucks during the construction period would result in a significant impact at the Rosecrans Street/Lytton intersection because there would be an increase of delay of more than 1.0 second in the AM peak hour when the intersection is at LOS F and an increase of delay of more than 2.0 seconds in the PM peak hour when the intersection is at LOS E (see Appendix E of Attachment A). This delay could also affect emergency response times when haul trucks are used in the AM and PM peak hours. Implementation of Mitigation Measure T-1 would reduce this impact to a less-than-significant level.

Mitigation Measures

T-1 Construction truck traffic hauling sediment or materials to or from the Project site shall not occur between the AM peak hours of 7 a.m. and 9 a.m, and shall be limited to no more than five loads per hour during the PM hours of 4 p.m. to 6 p.m. The Project Applicant shall include this restriction in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval. The contractor shall maintain hauling/delivery logs on the site for the District's review, and the Project Applicant shall submit a copy of the contractor's hauling/delivery logs to the District's Environmental and Land Use Management department for review.

Noise

Existing Conditions

A Project-specific noise study was conducted (see Appendix D of Attachment A). Noise measurements were taken at ten locations on Shelter Island and along the haul truck route. Five long-term, 24-hour measurements and five short-term noise measurements were taken. These noise level measurements are summarized in Tables 4-6 and 4-7 of Attachment A. The primary noise sources for both the long-term and short-term noise level measurements were traffic noise from neighboring roadways, aircraft overflights from Naval Air Station North Island, and background noise from boating activities.

Thresholds for Determining Significance

The Project was determined to result in a significant impact if it would result in exposure of persons to or generation of noise levels in excess standards established in the local general plan or noise ordinance, or applicable standards of other agencies or if it would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The District has not adopted noise standards or thresholds. Therefore, this analysis relies on the City of San Diego noise standards to determine the Project's potential noise impacts. The City of San Diego Municipal Code Section 59.5.0404 states that it "shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m." The City of San Diego does not identify any noise criteria to control single-event noise level impacts, such as those associated with pile driving activities. The 75-dBA (A-weighted decibel scale) construction noise criteria averages the construction noise level impacts over 12 hours during the daytime (7 a.m. to 7 p.m.).

In addition, the City's General Plan Noise Element identifies residential uses, hospitals, nursing facilities, intermediate care facilities, libraries, museums, places of worship, child care facilities, and certain types of passive recreational parks and open spaces as noise-sensitive land uses. The noise sensitive land uses are considered compatible with exterior noise levels below 60 dBA Community Noise Equivalent Level (CNEL) and conditionally compatible with exterior noise levels below 65 dBA CNEL. While the neighboring hotel uses are not zoned residential or specifically identified as a noise-sensitive land use according to the definition provided in the noise element, hotels are considered by the City of San Diego to be transient housing and are a noise-sensitive land use during the evening and nighttime hours between 7 p.m. and 7 a.m. when guests would be sleeping. The District does not consider the hotels to be sensitive receptors, and the analysis included in this MND and the Initial Study as it relates to hotels is for discussion purposes only.

According to the City of San Diego *Significance Determination Thresholds*, temporary construction noise that exceeds 75 dBA Leq (an average noise level over a given length of time) at a sensitive receptor would be considered significant. Additionally, where temporary construction noise would substantially interfere with normal business communication, or affect sensitive receptors, a significant noise impact may be identified. For noise associated with haul trucks, impacts are considered significant if project-generated truck traffic noise would create a 3 dBA or greater increase in ambient exterior noise levels. The use of the 3 dBA or greater increase is consistent with the City of San Diego *Significance Determination Thresholds*, as well as the Federal Highway Administration and Caltrans standards, all of which identify a 3 dBA change as the level at which noise level changes become discernible for most people. The City's General Plan establishes long-term operational noise impact compatibility guidelines.

Potentially Significant Impacts

A temporary increase in noise associated with the Project would occur during construction only. Operation of the SIBLF would not change as a result of the Project because an increase in capacity would not occur as a result and the Project, and the Project would be located on the same site as the existing SIBLF; therefore, operational noise levels are not anticipated to change from current conditions. Noise impacts would occur from construction on the SIBLF site, as well as from haul trucks traveling to the Copper Mountain Landfill in Arizona.

Construction Site Noise Analysis. Calculations of the Project construction noise level impacts were completed, as detailed in Appendix D of Attachment A. At a distance of 50 feet from the site, cumulative hourly construction noise levels are expected to range from 72.0 dBA L_{eq} during the paving phase to 98.8 dBA L_{eq} during the sheet/batter/guide pile installation phase. When compared with the City of San Diego's 75 dBA L_{eq} 12-hour construction noise level limit, the Project's construction noise level is expected to exceed the 75 dBA L_{eq} noise limit up to 777 feet beyond the Project construction area during the use of impact pile drivers. This would have potentially-significant impacts to noise-sensitive land uses located within 777 feet of the Project's construction area. Noise-sensitive land uses that occur in this area include the passive recreational areas associated with Shelter Island Shoreline Park. Impacts would be reduced to a less-than-significant level with the implementation of Mitigation Measures N-1 and N-2. As detailed in the Initial Study (Attachment A), sufficient park areas are located along Shelter Island outside of the noise impact area that offer similar public recreational activities. Nearby hotels (the Bay Club Hotel and Marina and Humphrey's by the Bay Hotel) are within 777 feet of the Project's construction area. However, hotel land uses are not considered to be sensitive noise receptors by the District during the evening and nighttime hours of 7 pm to 7 am. Therefore, the analysis included in this Initial Study as it relates to hotels is for discussion purposes only. In any event, no construction activities would occur during these hours, and no impact would occur to hotel users.

Refer to Checklist response XII. a) above. A substantial temporary or periodic impact is anticipated for passive recreational users within 777 feet of the Project construction site during impact pile driving activities. Impacts would be less-than-significant with the incorporation of Mitigation Measures N-1 and N-2. Other temporary noise impacts during construction would be less than significant.

Mitigation Measures

N-1 To avoid noise impacts from impact-type pile driving, vibratory-type pile driving techniques or other quieter methods, such as jetting, shall be used in place of impact-type pile driving to the extent feasible. The Project Applicant shall include this measure in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval.

N-2 If impact-type pile driving construction techniques cannot be avoided, the use of all passive recreational areas shall be restricted within a distance of 777 feet from the pile driving activity during all impact-type pile driving activities. Prior to the commencement of impact-type pile driving activities, the Project Applicant shall cordon off and post public notices informing of the construction activity in all public recreational areas within a distance of 777 feet from the pile driving activity. The Project Applicant shall include this measure in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval. Prior to the commencement of impact-type pile driving activities, the Project Applicant shall submit documentation to the District's Environmental and Land Use Management department demonstrating compliance with this measure.

Public Services

Existing Conditions

Fire. The City of San Diego's Fire-Rescue Department (SDFRD) provides emergency and non-emergency fire, medical, and lifeguard services within the Project vicinity. The closest fire station to the Project site is Fire Station No. 22 located at 1055 Catalina Boulevard, approximately 1.5 miles northwest of the Project site.

Police. Law enforcement in the Project vicinity is provided by the Port District Harbor Police and the City of San Diego Police Department (SDPD). The San Diego Harbor Police Dock is the closest police facility to the Project site. It is located approximately 0.7 mile southwest of the Project site.

Schools. The Project site is located within the San Diego Unified School District (SDUSD). The closest school to the Project site is Cabrillo Elementary School, which is located 0.7 mile from SIBLF.

Parks. Shoreline Park extends along the bay side of Shelter Island. In some locations, it is adjacent to the Project site.

Other Facilities. The closest library is the James Edgar and Jean Jessop Hervey Public Library, located in Point Loma approximately 1.75 miles north of the Project site. The nearest hospital is Scripps Mercy Hospital located approximately 4.5 miles northeast of the Project site.

Thresholds for Determining Significance

The Project was determined to result in a significant impact if it would result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

- Fire Protection
- Police Protection
- Schools
- Parks
- Other Public Facilities

Potentially Significant Impacts

Physical effects from construction and operation of the Project, a public facility, are discussed in the Initial Study (Attachment A). As discussed in the Initial Study, impacts from the Project would be less than significant with the exception of biological resources, hazards and hazardous materials, noise, and transportation/traffic. Mitigation measures have been identified for biological resources, hazards and hazardous materials, noise, and transportation/traffic, which would reduce Project-related impacts to a less-than-significant level.

Mitigation Measures

Mitigation measures for impacts to biological resources, hazards and hazardous materials, noise, and transportation/traffic are identified in their respective sections in this MND.

Recreation

Existing Conditions

The Project site is located within the Bay Corridor subarea of Planning District 1, Shelter Island/La Playa, of the certified PMP. This subarea (subarea 13) is the largest in Planning District 1 and allows for mixed uses including hotels, marinas, restaurants, and various public recreational facilities including parks, beaches, fishing piers and boat launching facilities. The specific land and water use designations underlying the Project site include Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade. Figure 4 in Section 2 of the PMP shows the existing uses surrounding the Project site. The neighboring areas include a recreational park (Shelter Island Shoreline Park) with landscaped areas, walkways and promenades, outdoor park furniture, and other amenities. Beyond the park areas there are hotels, restaurants, and boat repair facilities. The nearest hotel is the Bay Club Hotel and Marina approximately 300 feet northwest of the Project site. Views of San Diego Bay, North Island across the bay, and the downtown San Diego skyline are all visible from the Project site.

Adjacent to the SIBLF, there are approximately 113 oversized parking spaces for vehicles with boat trailers and approximately 239 standard vehicles parking spaces for general use; a single-story comfort station building (restrooms); and a small single-story building of the Outboard Boating Club of San Diego, Inc. Kayak loading/unloading areas exist adjacent to the boat launching area.

Thresholds for Determining Significance

The Project was determined to result in a significant impact if it would include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

Potentially Significant Impacts

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF, which is an existing recreational facility. The Project's purpose is to improve the existing facility; however, no expansion of the existing facility is proposed. Physical effects from construction and operation of the Project are discussed in the Initial Study (Attachment A). As discussed in the Initial Study, impacts from the Project would be less than significant with the exception of biological resources, hazards and hazardous materials, noise, and transportation/traffic. Mitigation measures have been identified for biological resources, hazards and hazardous materials, noise, and transportation/traffic, which would reduce Project-related impacts to a less-than-significant level.

Mitigation Measures

Mitigation measures for impacts to biological resources, hazards and hazardous materials, noise, and transportation/traffic are identified in their respective sections in this MND.

Transportation/Traffic

Existing Conditions

A Traffic Assessment was completed for the Project by Urban Crossroads, Inc. (see Appendix E of Attachment A). Traffic counts were taken and existing conditions were modeled at twelve intersections:

- Shelter Island Drive/Rosecrans Street;
- Shelter Island Drive/Scott Street;
- Shelter Island Drive/Shafter Street;
- Shelter Island Drive/Anchorage Lane;
- Rosecrans Street/North Harbor Drive;
- Rosecrans Street/Nimitz Boulevard;
- Rosecrans Street/Lytton Street;
- Rosecrans Street/Midway Drive;
- Midway Drive/Barnett Avenue;
- Sports Arena Boulevard-Rosecrans Street/Camino Del Rio;
- Camino Del Rio/I-5 and I-8 onramps; and
- I-5 southbound onramps/Pacific Highway.

Manual AM and PM peak hour turning movement counts were conducted at these intersections in May 2013 (see Appendix E of Attachment A). Existing peak hour traffic operations were evaluated for these intersections. The intersection analysis showed that all intersections are operating at an acceptable Level of Service (LOS) of D or better during the peak hour with the exception of the following intersections:

- Rosecrans Street/Nimitz Boulevard – LOS E for both the AM and PM peak hours; and
- Rosecrans Street/Lytton Street – LOS F for the AM peak hour and LOS E for the PM peak hour.

A traffic signal warrant analysis was conducted for the two unsignalized intersections in the study area (Shelter Island Drive/Shaffer Street and Shelter Island Drive/Anchorage Lane) based on the peak hour intersection volumes. Neither of the current unsignalized study area intersections warranted a traffic signal.

The District has not adopted transportation/traffic standards or thresholds. Therefore, this analysis relies on the City of San Diego Traffic Impact Study Manual thresholds to determine the Project's potential transportation/traffic impacts.

Thresholds for Determining Significance

The Project was determined to result in a significant impact if it would conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit; if it would conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways; or if it would result in inadequate emergency access.

Potentially Significant Impacts

Circulation System. Peak construction-related traffic activity would occur during the partially-overlapping grading and site preparation phases of construction. During construction, workers would access the Project site on a daily basis from Rosecrans Street and Shelter Island Drive. The site preparation phase of Project construction would require approximately 40 haul truck trips over the course of 15 working days with 6 workers per day. The grading phase would require approximately 1,335 haul truck trips over the course of 30 working days with 6 workers per day. As specified by the construction schedule, construction would occur 8 hours per day, 5 days per week (Monday through Friday). In an effort to more conservatively assess the potential traffic impact of the Project, it has been anticipated that haul truck traffic would be spread out evenly throughout the workday with the same number of haul trucks traveling during AM and PM peak hours as during less congested mid-day periods. Passenger car traffic has also been estimated to occur only during the AM and PM peak hours to represent the worst case scenario of workers arriving to the construction site in the AM peak hour and leaving in the PM peak hour. Passenger car trips were calculated from the total number of workers estimated for both construction phases (6 workers per day, 12 workers total) and split among the AM and PM peak hours, with all passenger car trips arriving at the site in the morning and leaving the site in the evening (see Appendix E of Attachment A).

The City of San Diego has determined that intersections in the City should operate at an acceptable LOS of D or better. The traffic assessment determined that the Project would not cause any of the intersections currently operating at an acceptable LOS to drop to LOS E or F. Currently two intersections (Rosecrans Street/Nimitz Boulevard and Rosecrans Street/Lytton Street) operate at an unacceptable LOS, as follows:

- Rosecrans Street/Nimitz Boulevard – LOS E for both the AM and PM peak hours; and
- Rosecrans Street/Lytton Street – LOS F for the AM peak hour and LOS E for the PM peak hour.

For intersections that operate at a worse LOS (LOS E or F), the City has identified significance thresholds of 2.0 second delay for LOS E and 1.0 second delay for LOS F to determine if Project impacts would be significant. The traffic assessment showed that the Project would not cause a significant delay of 2.0 seconds or longer at the Rosecrans Street/Nimitz Boulevard intersection. Results of the traffic assessment show that the addition of haul truck traffic from construction of the Project would result in a significant impact of an increase of delay of more than 1.0 second at the Rosecrans Street/Lytton Street intersection during the AM peak period (when the intersection operates at LOS F) and an increase of delay of more than 2.0 seconds at this intersection during the PM peak period (when the intersection operates at LOS E). Implementation of Mitigation Measure T-1 would not allow haul truck trips to arrive or leave the construction site during the AM peak period (7 a.m. to 9 a.m.), and would limit haul truck traffic to no more than five loads during the PM peak period (4 p.m. to 6 p.m.). With implementation of this mitigation measure, it is anticipated that the increase in delay at this intersection would be reduced to 1.0 second or less in the AM peak period and 2.0 seconds or less in the PM peak period, resulting in a less-than-significant impact (see Appendix E of Attachment A).

Congestion Management Program. The City of San Diego uses the LOS system for their congestion management program. The City of San Diego target for peak hour intersection operation is LOS D or better. For intersections that operate at a worse LOS (LOS E or F), the City has identified significance thresholds of 2.0 second delay for LOS E and 1.0 second delay for LOS F. As discussed in the Initial Study (Attachment A), with implementation of the Project, the Rosecrans Street/Nimitz Boulevard intersection would have a LOS E AM and PM peak hours, and the delay would be less than 2.0 seconds; therefore, the impact would be less than significant. With implementation of the Project, the Rosecrans Street/Lytton Street would have a LOS F in the AM peak hour and LOS E in the PM peak hour, and the estimated delay would be more than 1.0 second during the AM peak period and more than 2.0 seconds during the PM peak period due to Project haul truck traffic. Impacts at this intersection would be significant. Implementation of Mitigation Measure T-1 would reduce the impact to a less-than-significant level (see Appendix E of Attachment A).

Emergency Access. Impacts to emergency access may occur during construction. During construction, the west driveway to the existing boat trailer parking lot (east of the launch ramp) and a small portion of the west portion of the parking lot (up to 15 parking spaces) would be closed. These spaces would be used for a staging and laydown area. Site-specific activities, including temporary construction activities, are reviewed and approved on a project-by-project basis by the District when development plans are submitted. The District ensures that emergency access is retained during construction through its project review and approval process. After construction, the equipment would be removed and access to the driveway and parking would be restored. Also, the addition of traffic from haul trucks would result in a significant impact at the Rosecrans Street/Lytton intersection because there would be an increase of delay of more than 1.0 second in the AM peak period when the intersection operates at LOS F and an increase in delay of more than 2.0 seconds in the PM peak period when the intersection operates at LOS E (see Appendix E of Attachment A). This delay could also affect emergency response times when haul trucks are used in the AM peak hour. Implementation of Mitigation Measure T-1 would reduce this impact to a less-than-significant level.

Mitigation Measures

T-1 Construction truck traffic hauling sediment or materials to or from the Project site shall not occur between the AM peak hours of 7 a.m. and 9 a.m, and shall be limited to no more than five loads per hour during the PM hours of 4 p.m. to 6 p.m. The Project Applicant shall include this restriction in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval. The contractor shall maintain hauling/delivery logs on the site for the District's review, and the Project Applicant shall submit a copy of the contractor's hauling/delivery logs to the District's Environmental and Land Use Management department for review.

B. Effects Found Not To Be Significant

Based on the Initial Study conducted for the Project (see Attachment A), the following effects were found not to be significant: aesthetics, agriculture and forestry resources, air quality, cultural resources, geology and soils, greenhouse gas emissions, hydrology and water quality, land use and planning, mineral and energy resources, population and housing, and utilities and service systems. A full analysis/ discussion of these issue areas is provided in the attached Initial Study.

V. ~~DRAFT~~ MITIGATION MONITORING AND REPORTING PROGRAM

Potential impacts associated with biological resources, hazards and hazardous materials, noise, public services, recreation, and transportation/traffic were identified in the Initial Study and MND, but were found to be reduced to less-than-significant levels through the application of those mitigation measures described above and in Table 2 below.

Table 2. Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment MND ~~Draft~~ Mitigation Monitoring and Reporting Program			
Mitigation Measure(s)	**Responsible Party**	**Mitigation Timing**	**Monitoring and Reporting Procedures**
Biological Resources			
B-1 Impacts from effects to eelgrass shall be mitigated according to the California Eelgrass Mitigation Policy (CEMP), with replanting of eelgrass at a 1.2:1 ratio (NMFS 2014). Pursuant to the CEMP, pre- and post-construction surveys shall determine the exact amount of eelgrass affected by Project activities. Prior to the commencement of construction, the Project Applicant shall retain a qualified biologist to conduct a pre-construction eelgrass survey per the CEMP to quantify the amount of existing eelgrass within the Project area. The name of the retained contractor and proposed survey plan, including a schedule, shall be submitted to the District before initiation of survey work. A monitoring program consisting of a pre-construction eelgrass survey and three post-construction eelgrass surveys at the impact site and appropriate reference site(s) will be performed (NMFS 2014). The first post-construction eelgrass survey will be completed within 30 days following completion of construction to evaluate any immediate effects to eelgrass habitat. The second post-construction survey will be performed approximately one year after the first post-construction survey during the appropriate growing season. The third post-construction survey will be performed approximately two years after the first post-construction survey during the appropriate growing season. The second and third post-construction surveys will be used to evaluate if indirect effects resulted later in time due to altered physical conditions; the time frames identified above are aligned with growing season (attempting a survey outside of the growing season would show inaccurate results). A final determination regarding the actual impact and amount of mitigation needed at the above-stated ratio, if any, to offset impacts should be made based upon the results of two annual post-construction	District	Pre- and Post-Project construction	District shall conduct surveys and implement the mitigation plan. District shall maintain survey reports in Project files.

Table 2. Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment MND ~~Draft~~ Mitigation Monitoring and Reporting Program			
Mitigation Measure(s)	**Responsible Party**	**Mitigation Timing**	**Monitoring and Reporting Procedures**
surveys, which document the changes in the eelgrass habitat (areal extent, bottom coverage, and shoot density within eelgrass) in the vicinity of the action, compared to eelgrass habitat change at the reference site(s). Any impacts determined by these monitoring surveys would be mitigated. Two possible areas for on-site mitigation of eelgrass have been identified generally between the new east dock and the existing east jetty. Before implementation of the mitigation, the Project Applicant shall submit a mitigation plan to the District's Environmental and Land Use Management department and resource agencies for review and approval.			
B-2 To mitigate potentially significant impacts to sensitive fish species, bird species, eastern Pacific green sea turtles, and marine mammals to less than significant, the following measures shall be implemented: 1. An on-site biological observer shall be present during pile driving activities with the authority to stop construction if a sensitive fish species, green sea turtle, or marine mammal approaches or enters the shutdown zone. The shutdown zone is the area within 10 meters of construction activities or inside the 190 dB rms isopleths for green sea turtle, and marine mammal cetaceans or 180 dB rms for marine mammal pinnipeds. Prior to the start of pile-driving activities, the biological observer shall monitor the shutdown zone for 15 minutes to ensure that sensitive fish species, green sea turtles, and marine mammals are not present. If a sensitive fish species, green sea turtle, or marine mammal approaches or enters the shutdown zone during the pile-driving activities, the biological observer shall notify the construction contractor to stop the activity. The pile-driving activities shall be stopped and delayed until the biological observer visually confirms either that the animal has voluntarily left the shutdown zone	District	During Project construction	District shall implement the mitigation plan. District shall maintain monitoring reports in Project files.

Table 2. Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment MND ~~Draft~~ Mitigation Monitoring and Reporting Program			
Mitigation Measure(s)	**Responsible Party**	**Mitigation Timing**	**Monitoring and Reporting Procedures**
and is beyond the shutdown zone, or 15 minutes have passed without re-detection of the animal. If the on-site biological observer determines that weather conditions prevent the visual detection of <u>sensitive fish species,</u> green sea turtles or marine mammals in the shutdown zone, such as heavy fog, in-water construction activities with the potential to result in Level A Harassment (injury) shall not be conducted until conditions change. 2. Biological monitoring shall be conducted by qualified observers. The observer shall be placed in the best vantage point practicable to monitor, and when applicable, shall communicate directly with the construction superintendent and/or hammer operator. 3. During all observation periods, observers shall use binoculars and the naked eye to scan continuously for <u>sensitive fish species,</u> green sea turtles<u>,</u> and marine mammals. As part of the monitoring process the observer shall collect sighting data and behavioral responses to construction from <u>sensitive fish species,</u> green sea turtles<u>,</u> and marine mammals observed in the Project area of activity during the period of construction. The observer shall record any <u>sensitive fish species,</u> marine mammal, green sea turtle, or California least tern sightings, and submit the sighting records to the District within 60 days of the completion of the mitigation monitoring with a summary of observations.			
Hazards and Hazardous Materials			
T-1 Construction truck traffic hauling sediment or materials to or from the Project site shall not occur between the AM peak hours of 7 a.m. and 9 a.m, and shall be limited to no more than five loads per hour during the PM hours of 4 p.m. to 6 p.m. The Project Applicant shall include this restriction in the construction specification documents for the Project. Prior to issuance of the	District and Contractor	During Project construction	District shall place truck hauling restrictions in bid specifications. Contractor shall maintain hauling/delivery logs on the site.

Table 2. Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment MND ~~Draft~~ Mitigation Monitoring and Reporting Program			
Mitigation Measure(s)	**Responsible Party**	**Mitigation Timing**	**Monitoring and Reporting Procedures**
construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval. The contractor shall maintain hauling/delivery logs on the site for the District's review, and the Project Applicant shall submit a copy of the contractor's hauling/delivery logs to the District's Environmental and Land Use Management department for review.			
Noise			
N-1 To avoid noise impacts from impact-type pile driving, vibratory-type pile driving techniques or other quieter methods, such as jetting, shall be used in place of impact-type pile driving to the extent feasible. The Project Applicant shall include this measure in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval.	District and Contractor	During Project construction	District shall place use of alternative pile-driving methods in bid specifications. District shall review contractor construction methods.
N-2 If impact-type pile driving construction techniques cannot be avoided, the use of all passive recreational areas shall be restricted within a distance of 777 feet from the pile driving activity during all impact-type pile driving activities. Prior to the commencement of impact-type pile driving activities, the Project Applicant shall cordon off and post public notices informing of the construction activity in all public recreational areas within a distance of 777 feet from the pile driving activity. The Project Applicant shall include this measure in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval. Prior to the commencement of impact-type pile driving	District and Contractor	During Project construction	District shall place recreational use restrictions in bid specifications. Project Applicant shall submit documentation demonstrating compliance with this measure.

Table 2. Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment MND ~~Draft~~ Mitigation Monitoring and Reporting Program			
Mitigation Measure(s)	**Responsible Party**	**Mitigation Timing**	**Monitoring and Reporting Procedures**
activities, the Project Applicant shall submit documentation to the District's Environmental and Land Use Management department demonstrating compliance with this measure.			
Public Services			
See Mitigation Measures B-1, B-2, N-1, N-2, and T-1	See Mitigation Measures B-1, B-2, N-1, N-2, and T-1	See Mitigation Measures B-1, B-2, N-1, N-2, and T-1	See Mitigation Measures B-1, B-2, N-1, N-2, and T-1
Recreation			
See Mitigation Measures B-1, B-2, N-1, N-2, and T-1	See Mitigation Measures B-1, B-2, N-1, N-2, and T-1	See Mitigation Measures B-1, B-2, N-1, N-2, and T-1	See Mitigation Measures B-1, B-2, N-1, N-2, and T-1
Transportation / Traffic			
T-1 Construction truck traffic hauling sediment or materials to or from the Project site shall not occur between the AM peak hours of 7 a.m. and 9 a.m, and shall be limited to no more than five loads per hour during the PM hours of 4 p.m. to 6 p.m. The Project Applicant shall include this restriction in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval. The contractor shall maintain hauling/delivery logs on the site for the District's review, and the Project Applicant shall submit a copy of the contractor's hauling/delivery logs to the District's Environmental and Land Use Management department for review.	District and Contractor	During Project construction	District shall place truck hauling restrictions in bid specifications. Contractor shall maintain hauling/delivery logs on the site.

VI. FINDINGS

The Project, with the incorporation of mitigation measures and monitoring program, will have no significant impact on the environment with respect to biological resources, hazards and hazardous materials, noise, public services, recreation, and transportation/traffic, nor would the Project otherwise have potentially significant adverse impacts to aesthetics, agriculture and forestry resources, air quality, cultural resources, geology and soils, greenhouse gas emissions, hydrology and water quality, land use and planning, mineral and energy resources, population and housing, and utilities and service systems.

VII. DOCUMENTATION

The attached Initial Study and additional attachments document the reasons in support of the above findings.

VIII. PUBLIC REVIEW OF DRAFT MITIGATED NEGATIVE DECLARATION

A Notice of Intent (NOI) to adopt the MND and proposed finding was published in the San Diego Daily Transcript.

Copies of the Draft MND or NOI were distributed to:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service, Carlsbad
- U.S. Department of the Navy
- U.S. Department of Commerce, National Marine Fisheries Service
- U.S. Coast Guard, Marine Safety Office
- California Air Resources Board
- California Coastal Commission
- California Department of Boating and Waterways
- California Department of Fish & Wildlife, San Diego
- California Highway Patrol
- California Integrated Waste Management Board
- California Department of Transportation (CALTRANS), District 11
- California Environmental Protection Agency, Regional Administrator
- California Native American Heritage Commission
- California Office of Planning and Research (State Clearinghouse)
- California State Lands Commission
- California State Water Resources Control Board, Statewide
- California Regional Water Quality Control Board, San Diego (Region 9)
- California Department of Toxic Substances Control
- California Department of Public Health, Environmental Health Branch
- California Public Utilities Commission
- California Resources Agency
- City of Chula Vista Planning Department
- City of Coronado Community Development
- City of Imperial Beach Community Development
- City of National City Community Development
- City of San Diego
    - Mayor
    - City Council
    - City Clerk
    - City Planning and Community Investment
    - Development Services
    - Metropolitan Wastewater Department
    - Transportation Division

- Water Department
- Civic San Diego

- County of San Diego
  - Board of Supervisors
  - Clerk's Office / Records Division
  - Land Use & Environment Group
  - San Diego Air Pollution Control District
  - Department of Planning and Land Use
  - Department of Environmental Health
- San Diego Association of Governments (SANDAG)
- San Diego Central Library, Government Documents
- San Diego County Regional Airport Authority
- San Diego County Water Authority
- San Diego Gas & Electric
- San Diego Logan Heights Branch Library, Government Documents
- San Diego Metropolitan Transit System
- San Diego Business Journal
- San Diego Daily Transcript
- San Diego Union-Tribune
- Accessible San Diego
- Citizens Coordinate for Century III
- Downtown San Diego Partnership
- Environmental Health Coalition
- I Love a Clean San Diego
- San Diego Audubon Society
- San Diego Coastkeeper
- San Diego County Archaeological Society, Inc.
- Save Our Bay, Inc.
- Save Our Heritage Organisation
- Sierra Club, San Diego Chapter
- Surfrider Foundation, San Diego Chapter
- San Diego Chamber of Commerce
- San Diego Convention and Visitors Bureau
- San Diego Port Tenants Association
- Other Interested Parties

IX. RESULTS OF PUBLIC REVIEW OF DRAFT MITIGATED NEGATIVE DECLARATION

☐ No comments were received during the public review period.

☐ Comments were received, but did not address the proposed Mitigated Negative Declaration findings or the accuracy/ completeness of the Initial Study. No response is necessary. The letters are attached.

☒ Comments addressing the proposed findings of the Draft Mitigated Negative Declaration and/or accuracy or completeness of the Initial Study were received during the public review period. Responses to these comments follow, and the letters of comments are attached.

X. CERTIFICATION

The Draft Mitigated Negative Declaration and supporting documents are on file with and may be reviewed during regular business hours in the Office of the District Clerk of the San Diego Unified Port District, 3165 Pacific Highway, San Diego, CA 92101.

Prepared by: Mayra Medel

Mayra Medel, Senior ~~Associate~~ Redevelopment Planner

☒ Draft Report JUNE 8, 2015 Jason H. Giffen

Date

Jason H. Giffen, Director
Environmental and Land Use Management

☒ Final Report October 16, 2015 Jason H. Giffen

Date

Jason H. Giffen, Director
Environmental and Land Use Management

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ATTACHMENT A

INITIAL STUDY

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~~Draft~~ Final Initial Study

Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment

San Diego County, California

Prepared for:
San Diego Unified Port District
P.O. Box 120488
San Diego, CA 92112-0488
(619) 686-6283

Prepared by:
ECORP Consulting, Inc.
3914 Murphy Canyon Road, Suite A206
San Diego, CA 92123

~~June~~ December 2015

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SAN DIEGO UNIFIED PORT DISTRICT
P.O. BOX 120488
SAN DIEGO, CA 92112-0488
(SCH#2015061029/UPD #MND-2015-38)

~~DRAFT~~ FINAL INITIAL STUDY/CHECKLIST FOR SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS PROJECT AND PORT MASTER PLAN AMENDMENT SAN DIEGO, CALIFORNIA

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

SECTION 1 BACKGROUND

1.1 Summary

Project Title:	Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment
Lead Agency Name and Address:	San Diego Unified Port District P.O. Box 120488 San Diego, CA 92112-0488
Contact Person and Phone Number:	Mayra Medel, Environmental and Land Use Management (619) 686-6598
Project Location:	2210 Shelter Island Drive San Diego, CA 92106
Project Sponsor's Name and Address:	San Diego Unified Port District P.O. Box 120488 San Diego, CA 92112-0488
Port Master Plan Designations:	Shelter Island/La Playa, Planning District 1, Subarea 13 (Bay Corridor): Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade

1.2 Introduction

The Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment (Project) includes the repair, maintenance, and replacement of several elements comprising the Shelter Island Boat Launch Facility (SIBLF), a free public boat launching facility that provides waterfront access opportunities to the public (Figure 1). The purpose of the Project is to provide accessibility for users with disabilities, to provide more navigable water area within the existing breakwater basin to launch and retrieve boats, to improve boat maneuverability, to reduce boat congestion, and to improve boat safety and operations at the SIBLF. The Project includes the following components: replacement of the existing 10-lane boat launching ramp; replacement of the existing rock jetties with concrete sheet pile (bulkhead) walls; installation of publicly accessible walking platforms with viewing areas atop the bulkhead walls; replacement of the existing floating docks; installation of new gangways to the floating docks; improvements to the existing kayak launching area; construction of a sidewalk with curb and gutter; re-grading and re-paving of the vehicle/trailer maneuvering area to raise the elevation of the upper area of the launch ramp; installation of signage; minor re-grading of the beach area to reinstate the pre-construction beach profile; completion of rock slope protection measures within the basin; and installation of updated launch ramp lighting (District 2013b). The Project would not increase the number of lanes comprising the existing boat launching ramp; therefore, an increase in the operational capacity of the SIBLF would not occur. Thus, no changes to parking, sanitary facilities, or other ancillary facilities are proposed.

Also, pursuant to Chapter 8 of the California Coastal Act (Coastal Act), the Project involves a Project-specific Port Master Plan Amendment (PMPA). Pursuant to Section 30711(a)(4) of the Coastal Act, the PMP must include “proposed projects listed as appealable in Section 30715 in sufficient detail to be able to determine their consistency with the policies of Chapter 3.” Section 30715(a)(4) includes “recreational small craft marina related facilities” as an appealable development. The Project falls within this category. The PMPA is described in Section 2.3.2.

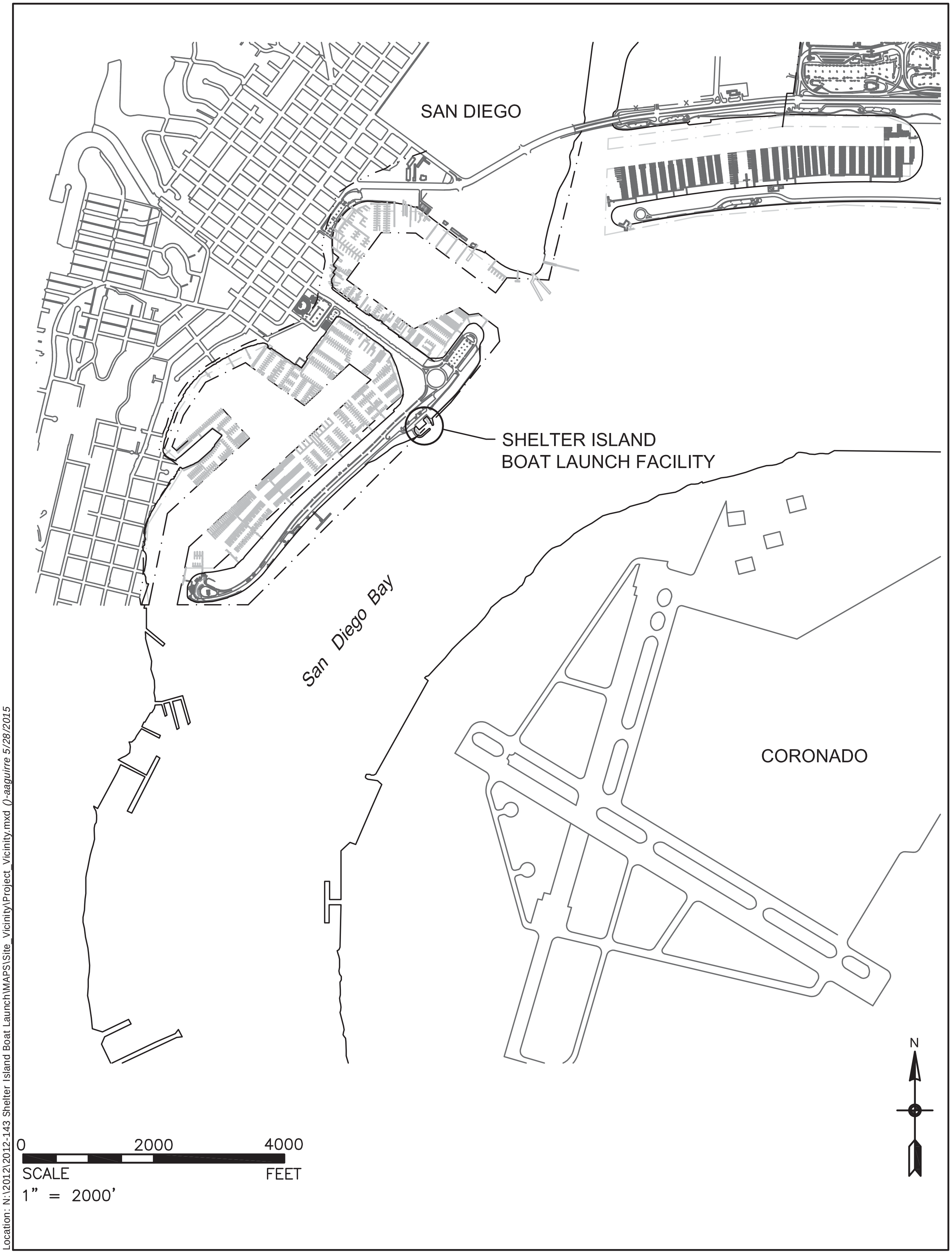
1.3 Project Background and Existing Site Conditions

The SIBLF was built in 1956 and was upgraded in 1976. It is located in a small basin that opens onto San Diego Bay. The boat launching area is protected from exposure to open bay waters by rock jetties. A boat launching ramp extends into the launch basin waters and boarding docks, gangways, and piers are located on either side of the boat launching ramp (Figure 2).

The SIBLF is in need of repairs because of the corrosive and wearing actions of seawater and heavy use by boaters. Also, due to the increased use over time and the use of larger recreational boats, the SIBLF has been experiencing congestion and delays when launching boats in the limited basin area (District 2013b). Finally, boat access to the SIBLF basin is extremely limited during low tide.

The State of California Department of Boating and Waterways (DBW) has awarded a $9.35 million grant to the District for design and construction of the Project. The DBW grant requirements include reporting and obtaining DBW approval of particulars during the design and construction phases of the Project and post-construction requirements, including: providing signage referencing DBW’s financing of the Project, providing directional signage to the Project area, maintaining the Project area as open and accessible for use and enjoyment by the general public, maintaining liability and fire insurance for the Project area, and complying with DBW’s Waterways Maintenance Guidelines.

As part of the San Diego Bay, with adjacency to the Pacific Ocean, Shelter Island and the SIBLF provide a regional and immediate habitat environment for aquatic plants and animals and foraging area for terrestrial animals and birds. The SIBLF’s existing jetties, launch ramp, boarding docks/piling, and subtidal bottom provide habitat for marine invertebrates, vegetation, and various fish species. Several marine mammal species, such as sea lions, harbor seals, and sea turtles are known to transit the area near Shelter Island. Seabirds, such as California least tern, brown pelican, cormorant, and peregrine falcon are also known to be regular or occasional visitors to Shelter Island.



Map Date: 5/28/2015
Map Source: TranSystems 2015

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Figure 1 Project Vicinity

2012-143 Shelter Island Boat Launch

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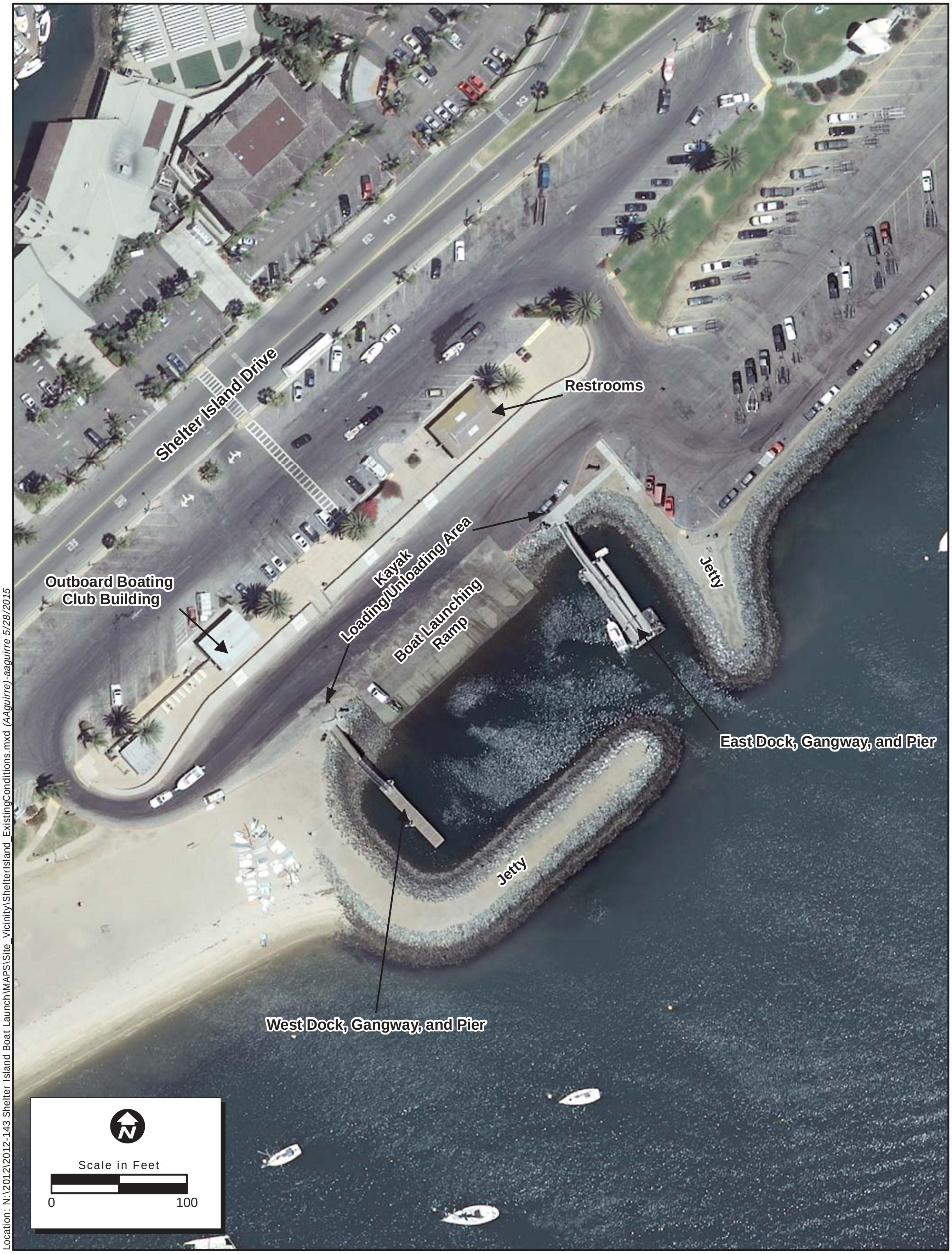

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Map Date: 5/28/2015
Photo Source: 2012 USGS

Figure 2 Shelter Island Boat Launch Facility Existing Conditions

2012-143 Shelter Island Boat Launch

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SECTION 2 PROJECT DESCRIPTION

2.1 Project Characteristics

As detailed in Section 1.~~1~~ 2 above, the Project includes the repair, maintenance, and replacement of several elements comprising the SIBLF (District 2013b). Specifically, the Project consists of the elements detailed below, which are shown in Figure 3. Table 2-1, below, also provides a summary of the existing and proposed improvements comprising the SIBLF.

- Demolition of the existing 10-lane concrete launching ramp, docks, vehicle/trailer maneuvering area pavement, area lighting poles, and related improvements.

- Construction of a new 10-lane cast-in-place concrete launching ramp using a temporary steel sheet pile cofferdam to allow the ramp to be constructed in dry conditions. The temporary cofferdam would allow the concrete ramp to be constructed and cured before allowing contact with tidal waters. A total of approximately 200 24-inch-wide (1-inch thick), 35-foot-long vertical sheet piles and 25 10-inch-wide, 45-foot-long battered steel 'H' piles would be temporarily installed to support the cofferdam.

- Partial removal (approximately 27,154 square feet) of the existing rock jetties and replacement with permanent concrete sheet pile bulkhead walls to expand the boat basin within the existing jetty footprint from approximately 22,800 square feet to approximately 41,000 square feet, creating approximately 18,200 square feet of additional navigable water area within the existing basin. Installation of two new bulkhead walls within the existing jetty footprint, with the west wall measuring 338 feet long and the east wall measuring 169 feet long. The bulkhead walls would have a 60-foot wide opening to allow for boat access to and from the San Diego Bay. Approximately 5-foot-wide accessible walkways with widened overlook areas would be located along the top of the bulkhead walls to provide pedestrian access and viewing of the bay similar to the path that exists on the top of the existing jetties. The bulkhead wall walkways would meet the state accessibility codes and the Americans with Disabilities Act (ADA) requirements. A total of approximately 65 14-inch-wide, 54-foot-long concrete batter piles would be installed to support the permanent concrete sheet piles bulkhead walls.

- Replacement of the existing floating docks, including six dock guide piles, with an interior perimeter (of the basin) floating dock. The new floating dock would include 16 precast concrete guide pilings that would be approximately 18 inches in diameter and 46 feet long (13 piles would be new, and 3 would be reused).

- Installation of new prefabricated aluminum gangways to provide access from shore to the floating docks (one 34-foot standard gangway, one 42-foot standard gangway, and one 80-foot accessible gangway to accommodate users with disabilities).

- Installation of pavement striping and signage to better designate the existing kayak drop-off area. The kayak launch area is currently 1,300 square feet; no changes to the size of the launch area are proposed.

- Installation of a concrete sidewalk (approximately 160 feet long) and a concrete curb and gutter (approximately 720 feet long) to improve access and safety of the users of the SILBF. The total area to be re-paved would be approximately 16,600 square feet.

- Installation of a Division of Boating and Waterways Project Sign, featuring the facility name and identifying the Division of Boating and Waterways as the Project funding agency and the District as the agency responsible for SIBLF operations and maintenance.

- Minor re-grading of approximately 2,100 square feet of beach area after the western jetty has been removed and the new bulkhead wall has been installed to reinstate the pre-construction beach profile.

- Installation of rock slope protection adjacent to the launch ramp within the basin by beneficially reusing approximately 850 cubic yards of existing rock revetment materials.

- Installation of updated lighting. All proposed lighting would be light-emitting diode (LED) technology for electrical efficiency and longevity.

- Creation of an approximately 600-square-foot (56-square-meter) on-site mitigation area for eelgrass impacts generally between the new east dock and the existing east jetty. Two possible areas for the mitigation area have been identified within the Project footprint (Figure 3).

The existing concrete boat launching ramp measures approximately 16,090 square feet and would be increased by 2,340 square feet to approximately 18,430 square feet as a result of the Project. The slight increase in launch ramp area would be necessary to raise the top of the ramp approximately two feet to a more appropriate elevation, which would accommodate future anticipated sea level rise. Although the size of the ramp would increase, the area of the ramp that would be below 7.79 foot Mean Lower Low Water (MLLW) would decrease because the top of the ramp would be at higher elevation. Approximately 14,780 square feet of the new ramp would be below 7.79 feet MLLW as compared to the existing launching ramp, for which 15,600 square feet is below 7.79 feet MLLW.

The square footage of the existing rock jetties within the water would be reduced by approximately 27,154 square feet when replaced with the concrete sheet pile bulkhead walls. The surface water area usable by boaters within the basin would increase by 18,200 square feet, from approximately 22,800 square feet to approximately 41,000 square feet, with the proposed bulkhead wall construction. This would reduce congestion and improve boat and ramp operations and boater safety. However, the overall outside area, or footprint, of the SIBLF would not increase from its existing footprint (District 2013b).

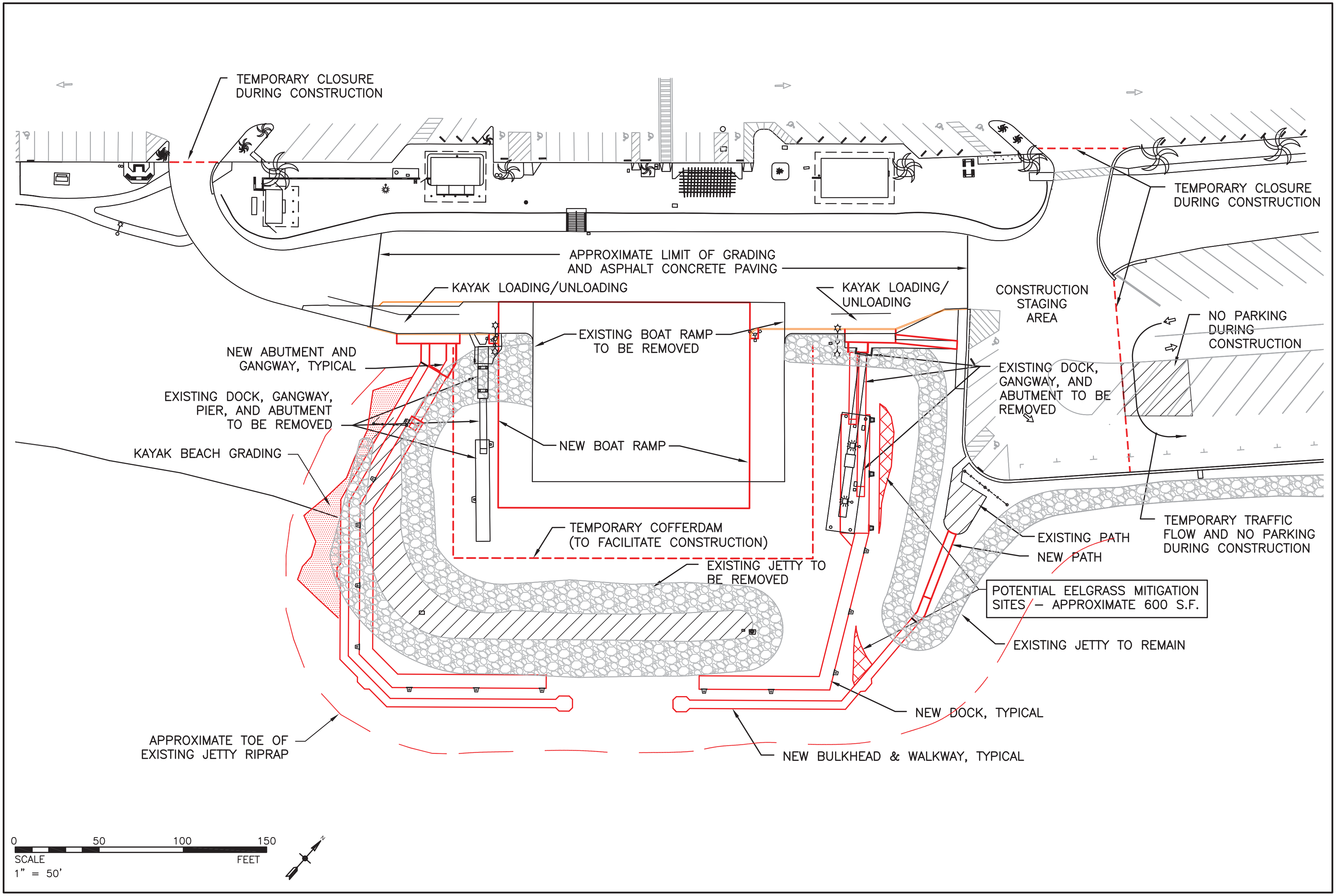

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Figure 3 Proposed Site Improvements

2012-143 Shelter Island Boat Launch

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Table 2-1. Existing and Proposed Improvements Summary							
	Existing Improvements			Proposed Improvements			
Improvement	**Quantity**	**Number of Piles**	**Structure Area (square feet)**	**Quantity**	**Number of Piles**	**Structure Area (square feet)**	**Change in Structure Area (square feet)**
Docks and Gangways	4	10	2,100	5	16	5,190	+ 3,090
West Jetty	1	-	27,120	-	-	-	- 27,120
East Jetty	1	-	11,420	1	-	11,386	-34
West Sheet Pile Bulkhead Wall	-	-	-	1	173	456	+ 397
East Sheet Pile Bulkhead Wall	-	-	-	1	86	285	+ 285
Boat Launch Ramp	1	-	16,090 (15,600 below 7.79' MLLW)	1	-	18,430 (14,780 below 7.79' MLLW)	+ 2,340 (-820 below 7.79' MLLW)
Total			**56,730**			**35,747**	**-21,042**[a,b]

a. The net total of new open water area created as a result of the Project would be approximately 21,042 square feet.
b. The net total of new navigable water area available for boater use within the existing basin would be approximately 18,200 square feet. However, an additional approximately 2,800 square feet of new open water area in addition to the approximately 18,200 square feet of new navigable water area would become available as a result of the Project. This open water area will be located between the new docks and bulkhead wall. Although this approximately 2,800-square-foot space will constitute new open water area benefiting marine biological resources, it would be unavailable for boaters to use as navigable water because the area would be too narrow for boats to enter.

The Project would not increase the capacity or use of the SIBLF, would not affect land-side buildings, and would not require additional on-site parking spaces or employees. The single-story comfort station (restrooms) and the single-story building used by the Outboard Boating Club of San Diego, Inc. would remain unchanged. After construction is completed, the approximately 113 existing parking spaces for vehicles with attached boat trailers and approximately 239 general-use vehicles located adjacent to the boat launching area would continue to provide parking for the SIBLF (District 2013b). No land or water use changes would be required for the Project because the work is the repair and maintenance of existing facilities, and the land and water use designations would remain the same. However, a PMPA would be required as described in Section 2.3.2, below.

2.~~1~~ 2 Project Construction

Construction of the Project is expected to begin in late 2016 and take a total of approximately 6 to 10 months to complete. The Project construction activities, including active construction areas and laydown/staging areas, would encompass approximately 2.8 acres. Figure 3 shows the Project site and the major Project elements.

Cofferdam Installation and Removal

Construction of the 10-lane new concrete boat launching ramp would require installation of a temporary cofferdam. The temporary steel sheet piling for the cofferdam would be installed using a vibratory pile driving hammer when possible; however, an impact pile driving hammer may be used when required where firmer subsurface soil conditions are encountered. The temporary steel sheet piles would be supported laterally by slightly angled, or leaning, steel batter piles that would be installed with either a vibratory pile driving hammer or an impact pile driving hammer depending on soil conditions. The temporary cofferdam is expected to consist of installing approximately 200 vertical steel sheet piles and 25 battered steel 'H' piles over a duration of approximately three to four weeks. An additional two weeks is needed to remove sheet piles using vibratory pile driving equipment. The area behind (landward of) the cofferdam would be dewatered during construction in compliance with regulatory requirements. The temporary sheet pile cofferdam and supporting batter piles would be removed entirely after construction and curing of the concrete launch ramp.

Demolition, Jetty Removal, and Dredging

The rock and soil jetties would be removed with landside and barge-mounted waterside equipment. It is likely that most of the jetty material would be removed using land-based excavating equipment working from the outer extremities of the jetties and moving shoreward as the jetties are removed. Remaining subtidal jetty material that cannot be reached by the land-based equipment would be removed with barge-mounted excavating equipment. A total of 14,500 cubic yards of material would be excavated, which includes: jetty riprap (6,100 cubic yards), jetty core fill (7,500 cubic yards), and dredged sediment (900 cubic yards). This maintenance dredging of the basin sediment would be required to maintain the existing depths. A portion (approximately between 1,150 and 1,350 cubic yards) of the jetty riprap, jetty core fill, and dredged materials is planned to be beneficially reused on-site for various Project improvements. The remainder of the riprap, jetty core fill, and dredged material (approximately between 13,150 and 13,350 cubic yards) would be removed and transported to the Copper Mountain Landfill, located at 34853 East County 12th St. Wellton, Arizona, approximately 200 miles east of the Project site (AMEC 2015).

Bulkhead Wall Construction

The permanent precast concrete sheet piles for the bulkhead walls would be driven solidly into the basin bottom sediment. The concrete sheet piles would be pile jetted as far as possible and then driven to full design depth with an impact pile driving hammer. The concrete sheet pile bulkhead walls would be supported by angled precast concrete batter piles to provide the necessary lateral support to resist the forces of the tides and current within San Diego Bay, and to provide support for the walkway on top of the bulkhead walls. The relatively small diameter batter piles would be placed by the impact pile driving method to assure firm support for the bulkhead walls. All pile driving would incorporate the use of cushion blocks made of wood or similar material to protect the top of the piles as they are driven and to decrease the noise produced by the pile driver striking the piles. Soft start pile driving techniques are being proposed. The use of a soft start procedure is believed to provide additional protection to marine mammals by providing a warning and giving the marine mammals a chance to leave the area prior to the contractor operating the impact hammer at full capacity. This soft start technique is recommended by the National Marine Fisheries Service (NMFS) for impact and vibratory pile driving. The soft start technique requires contractors to initiate noise from vibratory hammers for fifteen seconds at reduced energy followed by a 30-second waiting period. This procedure should be repeated two additional times. If an impact hammer is used, contractors are required to provide an initial set of three strikes from the impact hammer at 40 percent energy followed by a 30-second waiting period, then two subsequent three-strike sets. Furthermore, in order to minimize turbidity, the Project would include the use of silt curtains during all in-water construction activity as part of the design of the Project.

Installation of Docks, Gangways, and Other Site Improvements

The existing floating docks would be replaced with an interior perimeter (of the basin) floating dock. Two standard and one ADA accessible prefabricated aluminum gangways would be installed to provide access from shore to the floating docks. Rock slope protection adjacent to the launch ramp within the basin would be installed and there would be minor re-grading of approximately 2,100 square feet of beach area after the western jetty has been removed and the new bulkhead wall has been installed to reinstate the pre-construction beach profile. Other improvements include installation of pavement striping and signage to better designate the existing kayak drop-off area, installation of a concrete sidewalk and a concrete curb and gutter, installation of a Division of Boating and Waterways Project Sign, installation of updated lighting, and creation of an approximately 600-square-foot (56-square-meter) on-site mitigation area for eelgrass impacts generally between the new east dock and the existing east jetty.

Due to confined basin access and the amount of heavy excavation and marine equipment required to construct the proposed improvements, the SIBLF would be closed to the public during part of the construction period for safety purposes. Additionally, the west driveway to the existing boat trailer parking lot (east of the launch ramp) would be closed, and a small portion of the west end of the parking lot, including a maximum of 15 parking spaces, would be closed to the public during construction so that it can be used as a staging and laydown area. To minimize basin down-time during construction, the Project would provide various milestones and phasing restrictions. It is anticipated the SIBLF would be closed to the public for approximately six months during the 10-month construction duration. Current users of the SIBLF would be redirected to other boat launching facilities located in San Diego Bay and Mission Bay. During construction, the following landside equipment is anticipated be used intermittently: air compressors, concrete saws, rubber tired and track mounted cranes, crawler tractors and excavators, impact hammer and vibratory pile driving equipment, paving equipment, rollers, dump trucks, graders, de-watering pumps, and other miscellaneous small equipment. Anticipated marine equipment would include a derrick barge with crane, impact hammer and vibratory pile driving equipment, and/or a flat deck barge with excavator. Not all of this equipment would be used for the entire duration of construction. Construction activities would be limited to 7 a.m. to 7 p.m. Monday through Friday, except for legal holidays as specified in Section 21.04 of the San Diego Municipal Code with the exception of Columbus Day or Washington's Birthday, to comply with the City of San Diego's Municipal Code.

2.~~2~~ 3 Compatibility with Port Master Plan

2.~~2~~3.1 Existing Land Use Designations

The Project site is located within the District's coastal development permit (CDP) jurisdiction. The District has a certified Port Master Plan (PMP) that "provides official planning policies, consistent with a general statewide purpose, for the physical development of the tide and submerged lands conveyed and granted in trust to the San Diego Unified Port District" (District 2012). The District's PMP governs the lands that the State Legislature has conveyed to the

District to act as trustee for administration and for which the District has regulatory duties and proprietary responsibilities. The California Coastal Commission certified the original PMP on January 21, 1981. This action resulted in the District having authority to issue coastal development permits for coastal zone projects within its jurisdiction that are consistent with the PMP.

The Project is located within the Bay Corridor subarea of Planning District 1, Shelter Island/La Playa, of the certified PMP. This subarea (subarea 13) is the largest in Planning District 1 and allows for mixed uses, including hotels, marinas, restaurants, and various public recreational facilities, including parks, beaches, fishing piers, and boat launching facilities. The specific land and water use designations for the Project site include Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade. The Project is compatible with existing land and water use designations; however, a Project-specific Port Master Plan Amendment (PMPA) is required for the Project pursuant to Chapter 8 of the Coastal Act (see Section 2.3.2 for details) (District 2013b).

Figure 4 shows the existing land uses surrounding the Project site. Adjacent to the SIBLF, there are approximately 113 oversized parking spaces for vehicles with attached boat trailers and approximately 239 standard vehicle parking spaces for general use; a single-story comfort station building (restrooms); and a small single-story building of the Outboard Boating Club of San Diego, Inc. Kayak loading/unloading areas exist adjacent to the boat launching area. The neighboring areas are recreational park areas (Shelter Island Shoreline Park) with landscaped areas, walkways, outdoor park furniture, and other amenities. Beyond the park areas there are hotels, restaurants, and marine sales and services uses. The nearest hotel is the Bay Club Hotel and Marina approximately 300 feet northwest of the Project site (Figure 4). Views of San Diego Bay, North Island, and the downtown San Diego skyline are all visible from the Project site.

2.~~2~~3.2 Port Master Plan Amendment

As part of the Project, an amendment to the PMP for Planning District 1 has been prepared to include a detailed description of the Project. Pursuant to Section 30711(a)(4) of the Coastal Act, the PMP must include "proposed projects listed as appealable in Section 30715 in sufficient detail to be able to determine their consistency with the policies of Chapter 3." Section 30715(a)(4) includes "recreational small craft marina related facilities" as an appealable development. The Project falls within this category. Accordingly, the PMPA would include updating the Shelter Island Planning District 1 text and updating the Shelter Island Planning District 1 Project List table (Table 7 of the PMP) to include the Project. The potential effects of the proposed PMPA are discussed in more detail in Section 4, Section X. Land Use and Planning. The Draft PMPA is provided in Attachment ~~2~~ B to the Draft MND.

2.~~3~~ 4 Regulatory Requirements, Permits, and Approvals

The District is the approval authority for the Project. District authorizations include:

- Adoption of the Mitigated Negative Declaration in compliance with the California Environmental Quality Act (CEQA).
- Approval of the Port Master Plan Amendment.
- Issuance of an appealable Coastal Development Permit in compliance with the Coastal Act.
- Acceptance of the grant funding for the Project from the DBW.
- Adoption of the plans and specifications and award of the construction contract for the Project.

Additional subsequent approvals and other permits that may be required from local, regional, state, and federal agencies include, but are not limited to:

- **California Coastal Commission** – Port Master Plan Amendment.
- **San Diego Regional Water Quality Control Board** – Stormwater Construction General Permit (including the development and implementation of a Storm Water Pollution Prevention Plan) and Clean Water Act Section 401 Water Quality Certification.
- **State Lands Commission** – Authorization of proposed improvements to the Shelter Island Boat Launch Facility to Area 1 of Master Lease PRC 7987.1 and a Dredging Lease for the State Lands Commission's mineral rights under Master Lease PRC 7987.1
- **U.S. Army Corps of Engineers** – Clean Water Act Section 404 permit application for discharge of "fill" materials to waters of the U.S., and dredging.

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Map Date: 5/28/2015
Photo Source: 2012 USGS

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 4 Existing Land Uses

2012-143 Shelter Island Boat Launch

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SECTION 3 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED AND DETERMINATION

3.1 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" or "Less than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Greenhouse Gas Emissions	☐ Population and Housing
☐ Agriculture and Forestry Resources	☒ Hazards and Hazardous Materials	☒ Public Services
☐ Air Quality	☐ Hydrology/Water Quality	☒ Recreation
☒ Biological Resources	☐ Land Use and Planning	☒ Transportation/Traffic
☐ Cultural Resources	☐ Mineral and Energy Resources	☐ Utilities and Service Systems
☐ Geology and Soils	☒ Noise	☐ Mandatory Findings of Significance

Determination. On the basis of this initial evaluation:

I find that the Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	☐
I find that although the Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	☒
I find that the Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	☐
I find that the Project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	☐
I find that although the Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the Project, nothing further is required.	☐

Jason H. Giffen
Signature

JUNE 8, 2015
Date

JASON H. GIFFEN
Printed Name

San Diego Unified Port District
Agency

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained if it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.
4. "Negative Declaration: Less than Significant with Mitigation Incorporated" applies when the incorporation of mitigation measures has reduced an effect from a "Potentially Significant Impact" to a "Less than Significant Impact". The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less-than-significant level.
5. Earlier analyses may be used if, pursuant to tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration [Section 15063(c)(3)(D)]. In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where earlier analyses are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, when appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

   a. The significance criteria or threshold, if any, used to evaluate each question; and

   b. The mitigation measure identified, if any, to reduce the impact to a less-than-significant level.

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SECTION 4 ENVIRONMENTAL CHECKLIST AND DISCUSSION

I. AESTHETICS

Environmental Setting

The SIBLF is located in a small basin that opens onto San Diego Bay. The boat launching area is protected from exposure to open bay waters by rock jetties. A launching ramp extends into the launch basin waters, and boarding docks are located on either side of the launch ramp.

The Project is located on an approximately 2.8-acre site designated as Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade in the District's PMP. The Project site is located in an urbanized area surrounded by San Diego Bay to the south and east and by developed park and commercial uses, including hotels, restaurants, and marine sales and services uses to the north and west. Seven PMP-designated Vista Areas are located on Shelter Island and four PMP-designated Vista Areas are located along the North Embarcadero that could have views of the Project site. The closest Vista Area to the Project is located 0.3 mile northeast of the Project site (District 2012).

Thresholds of Significance

A project may be deemed to have a significant adverse aesthetic impact if it results in any of the following:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- Substantially degrade the existing visual character or quality of the site and its surroundings; or,
- Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.

Analysis of Environmental Impacts

a) Would the project have a substantial adverse effect on a scenic vista?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

The PMP identifies Vista Areas (points of natural visual beauty, photo vantage points, and other panoramas) along District tidelands. Seven Vista Areas are located on Shelter Island as identified in the PMP Figure 4, Planning District 1 (Shelter Island/La Playa); however, none of the seven Vista Areas are oriented toward the Project site. Four Vista Areas are located along the North Embarcadero as identified in the PMP Figure 11, Planning District 3 (Centre City Embarcadero); these Vista Areas are oriented toward the Project site.

As discussed above, the Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. The Project would not involve the construction of any new structures or features that would block views or potentially affect scenic resources or vistas. The nearest PMP-designated Vista Area to the Project is located approximately 0.3 mile to the northeast of the site; however, this Vista Area is oriented toward San Diego Bay away from the Project site. Furthermore, those Vista Areas located in the North Embarcadero that are oriented toward the Project site are situated approximately 2.7 miles east of the site. Several large structures located at Naval Air Station (NAS) North Island interrupt or completely block views to the Project site from these Vista Areas. Due to the nature of the Project, the orientation of the Vista Areas, the distance of the Vista Areas from the Project site, and existing visual obstructions, none of the designated Vista Areas would be affected by the Project. During the 10-month construction period, views would be temporarily changed from a boat launching facility to a construction site. However, construction equipment would be moved around the site and removed from the site once it is no longer needed, and the views would return back to a boat launching facility once construction is complete. The view during operation would be the same or very similar to the current SIBLF. Therefore, there would be a less-than-significant impact to scenic vistas.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Two state scenic highways, State Route 75 and State Route 163, are located southeast and east of the Project site, respectively. State Route 75 (San Diego-Coronado Bay Bridge) is located approximately 3.7 miles southeast and State Route 163 is located approximately 4 miles east of the Project site. No designated scenic resources are located on the Project site or in the immediate vicinity. Additionally, the Project would not affect any trees, rock outcroppings, or historic buildings within these highways. Due to the distance of the state scenic highways from the Project site and the absence of scenic resources, no impact to state scenic highways would occur as a result of the Project.

c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Implementation of the Project would not substantially change or degrade the existing visual character of quality of the site and surrounding area. As identified above, the Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. The Project would occur within the existing SIBLF footprint, which is an active recreational boat launching facility. The Project would not result in a substantial increase in the size or bulk of structures or features on the Project site nor damage the visual characteristics of the site. The proposed improvements would be consistent with the existing use of the site, and the improvements would appear to be similar in scale and in character to the existing condition (an existing active boat launching facility). The Project would not substantially alter the character of views currently experienced by off-site viewers. Changes to views would only occur temporarily during the 10-month construction period when views would be altered from the SIBLF to a construction site. During this short period, the site would include characteristics similar to a typical construction site, but intermittent views through the site would still be available. Construction equipment would be moved around the site and removed from the site once it is no longer needed, and the characteristics of the site would return back to a boat launching facility once construction is complete. Operations would not cause permanent view changes to the site or surrounding area. Therefore, the Project would not substantially degrade the existing visual character or quality of the site and its surroundings. Impacts would be less than significant.

d) Would the project create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

In order to meet operational and safety requirements, the Project would include additional lighting on the boat launching ramp, bulkhead walls, and boarding docks. To the extent possible, the new light fixtures would provide downcast, directional light to focus illumination on the SIBLF and minimize spillover light and glare impacts on surrounding development while still providing sufficient safety lighting for the facility. In addition, the Project would replace some existing light poles with bollard lighting, resulting in a more energy efficient lighting system that would reduce the potential for spillover light and glare. The additional lighting would not constitute a new source of substantial light or glare that would affect day or nighttime views in the area because the Project site and surrounding area are currently urbanized and developed with several sources of existing light and glare, including street lights, pole lights, hotels, restaurants, marinas, and boat repair facilities. Furthermore, construction of the Project would be completed during the day, so construction night lighting would not be required. Therefore, the Project would not affect day or nighttime views in the area by creating a new source of substantial light or glare. Impacts would be less than significant.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

II. AGRICULTURE AND FORESTRY RESOURCES

Environmental Setting

The Project site has operated as a boat launching facility for the past 50 years. This site is designated as Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade in the District's PMP. The Project site is not located on Farmland or forest land, nor is it under a Williamson Act contract. There are no local policies for agricultural or forest resources that apply to the Project site (District 2012).

Thresholds of Significance

A project may be deemed to have a significant adverse impact on agriculture and forestry resources if it results in any of the following:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g));
- Result in the loss of forest land or conversion of forest land to non-forest use; or,
- Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

Analysis of Environmental Impacts

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. The Project site is not currently an active agricultural use nor is the site planned or zoned for agricultural uses. The Project site is designated as Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade in the District's PMP. It is currently developed with a boat launching facility. Additionally, there are no agricultural resources or operations in the vicinity of the Project site that would be affected by the Project. Based on farmland maps prepared by the California Department of Conservation, the Project site is not located in an area designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance; it is in an area designated as Urban and Built Up Land (California Department of Conservation 2010). Construction and operation of the Project would not involve changes in the existing environment that could result in the conversion of Farmland to nonagricultural use because no Farmland is located within the Project site or vicinity of the Project site. Therefore, no impact would occur.

b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist response II. a) above.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

The Project site is not zoned for and does not contain forest land, timberland, or timberland zoned Timberland Production. The Project site is designated as Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade in the District's PMP and is currently developed with a boat launching facility. Therefore, construction and operation of the Project would not conflict with zoning for or cause rezoning of forest land or timberland. No impact would occur.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist response II. c) above.

e) Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist responses II. a) and c) above.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

III. AIR QUALITY

Environmental Setting

An Air Quality/Climate Change Technical Report has been prepared for the Project (Urban Crossroads 2013a [Appendix A]), which was used, along with other substantial evidence, in this section. The 2013 analysis was revised in May 2015 to reflect additional Project haul truck trips. The updated analysis is also provided in Appendix A.

The Project site is located within the San Diego Air Basin (SDAB) and is within the San Diego County Air Pollution Control District (SDAPCD). The Project site is in an area designated as nonattainment for:

- the one-hour and eight-hour California standard for ozone;
- the eight-hour Federal Standard for ozone;
- the California standard for particulate matter 10 microns or less in diameter (generally designated as PM_{10} and referred to as respirable or inhalable particulate matter); and
- the California standard for particulate matter 2.5 microns or less in diameter (generally designated as $PM_{2.5}$ and referred to as fine particulate matter).

The Project site is in an area designated as attainment or unclassified for other ambient air quality standards. As a result, ozone and particulate matter are the pollutants of concern in the vicinity of the Project site.

Thresholds of Significance

A project may be deemed to have a significant adverse air quality impact if it results in any of the following:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or,
- Create objectionable odors affecting a substantial number of people.

Analysis of Environmental Impacts

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

The air quality plans relevant to the Project are the State Implementation Plan (SIP) and the Regional Air Quality Strategy (RAQS). The SIP includes strategies and tactics, called RAQS, to be used to attain and maintain acceptable air quality in the SDAB. Consistency with the RAQS is typically determined by two standards. The first standard is whether the Project would exceed assumptions contained in the RAQS. The second standard is whether the Project 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 California Air Resources Board and the San Diego Association of Governments (SANDAG), including mobile and area source emissions, as well as information regarding projected growth in the County of San Diego, to forecast future emissions and then determine the strategies necessary for the reduction of emissions through regulatory controls. The California Air Resources Board mobile source emissions projections and SANDAG's growth projections are based on population and vehicle use trends, local general plans, local coastal programs, and other applicable land management plans such as the PMP. As such, projects that propose development consistent with, or less than, the growth projections anticipated by applicable land management plans would be consistent with the RAQS.

For the Project, the PMP is the document governing future land and water use within the Project area. The Project requires a Project-specific PMPA that would include updating the Shelter Island Planning District 1 text and updating the Shelter Island Planning District 1 Project List table (Table 7 in the PMP) to include the Project. Although the Project requires a PMPA, the Project would not change the capacity, operation, or land use of the SIBLF. The SIBLF, along with all of the other elements of the PMP, was considered as part of SANDAG's projections and incorporated into SANDAG's Regional Comprehensive Plan, which provide data for the formulation and development of RAQS and the SIP. The Project would not result in any long-term changes to population, land use, transportation system, or addition of stationary sources of air pollutant emissions. Short-term construction related employment as a result of the Project would not have a significant effect on population levels. As a result, the Project would not result in any changes to demographic forecasts or planned land use development. Therefore, the Project would not conflict with the RAQS or the SIP, and no impact would occur.

b) Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Construction Emissions. The Project's air quality emissions are mainly attributable to construction activities associated with the repair, maintenance, and replacement of several elements comprising the SIBLF. Emissions of pollutants such as fugitive dust and heavy equipment exhaust are generally highest near the construction site. Emissions associated with construction would include the following: emissions of fugitive dust from surface disturbance activities, emissions of combustion pollutants from heavy construction equipment, emissions of combustion pollutants from worker vehicles, and emissions of combustion pollutants from heavy duty vehicles transporting construction materials and equipment to the site. Emissions from the transport of riprap, jetty core fill, and dredged material to the Copper Mountain Landfill would also occur (Urban Crossroads 2013a, Appendix A).

Construction emissions were estimated based on information from the District and the California Emissions Estimate Model (CalEEMod™) model, an air quality modeling program that estimates air pollution emissions in pounds per day or tons per year for various land uses, area sources, construction projects, and project operations. The model uses the California Air Resources Board EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions and has separate databases for specific counties and air districts. The San Diego County database was used for this Project. Specific inputs to the CalEEMod™ model for construction include Project land uses and size in acres. Construction input data include but are not limited to the anticipated start and finish dates of Project construction phases, inventories of construction equipment to be used during each phase, volumes of structures to be demolished, volumes of cut-and-fill grading and materials to be imported to and exported from the site, areas to be paved, and areas to be painted. Output emissions data sources include off-road equipment, on-road vehicles, fugitive dust, and reactive organic compounds (ROCs) from asphalt and architectural coatings.

Construction of the Project is expected to take a total of approximately 6 to 10 months. During that time, a variety of construction equipment would be used intermittently, including air compressors, concrete saws, rubber tired and track mounted cranes, crawler tractors and excavators, impact hammer and vibratory pile driving equipment, paving equipment, rollers, dump trucks, graders, de-watering pumps, and other miscellaneous small equipment. Anticipated marine equipment would include a derrick barge with crane, impact hammer and vibratory pile driving equipment, and/or a flat-deck barge with excavator. All equipment would not be used for each construction phase. However, the maximum construction emissions for each phase, assuming concurrent use of applicable equipment for that phase, has been analyzed. Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips (construction materials delivered to the Project site) would also occur. The screening-level thresholds for air quality impact analysis from the County of San Diego Guidelines for Determining Significance, Air Quality were used for all pollutants to determine the significance of incremental emissions increase due to Project construction. The thresholds are shown in Table 4-1 below. Table 4-2 below shows the Project's maximum daily construction emissions. As shown in Table 4-2 below, construction emissions from the Project are anticipated to be below the emissions thresholds established by the SDAPCD (Urban Crossroads 2013a, Appendix A). Therefore, construction impacts to air quality would be less than significant.

Table 4-1. County of San Diego Screening-Level Thresholds		
Pollutant	**Daily (lb/day)**	**Annual (ton/year)**
NO_X	250	40
VOC	75	13.7
PM_{10}	100	15
$PM_{2.5}$	55	10
So_X	250	40
CO	550	100
Lead	3.2	0.6
NO_X	250	40
TAC and Odor Thresholds		
Toxic Air Contaminants (TACs)	Maximum Incremental Cancer Risk $\geq$ 10 in 1 million Hazard Index $\geq$ 1.0 (project increment)	
Odor	Project creates a minimal odor nuisance pursuant to SDAPCD Rule 51	

Notes: VOC = Volatile Organic Compounds
NO_x = oxides of nitrogen
CO = carbon monoxide
SO_x = oxides of sulfur
PM_{10} = particulate matter 10 microns or less in diameter or inhalable particulate matter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter or fine particulate matter

Table 4-2. Summary of Construction Emissions (pounds/day)						
	VOC	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Emissions from Project	25.12	227.57	119.94	0.40	18.32	10.61
Threshold	75	250	550	250	100	55
Significant Impact	**No**	**No**	**No**	**No**	**No**	**No**

Source: Urban Crossroads 2013a (Appendix A)

Notes: VOC = Volatile Organic Compounds
NO_x = oxides of nitrogen
CO = carbon monoxide
SO_x = oxides of sulfur
PM_{10} = particulate matter 10 microns or less in diameter or inhalable particulate matter
$PM_{2.5}$ = particulate matter 2.5 microns or less in diameter or fine particulate matter

Operational Emissions. Operational air pollutant emission impacts are generally associated with any change in the permanent use of the Project site by on-site stationary and off-site mobile sources that substantially increase emissions. Stationary source emissions typically include those associated with electricity consumption. Mobile source emissions would result from vehicle trips associated with the SIBLF. The Project would not result in long-term air quality impacts because no expansion of the existing use is proposed. No electrical use is proposed with the exception of nighttime lighting. The SIBLF has existing lighting for operational and safety purposes. The consumption of electricity associated with the Project is anticipated to be lower than with current conditions because the Project would replace some existing light poles with bollard lighting and would use LEDs, resulting in a more energy efficient lighting system. Because the Project would not increase the number of lanes at the existing boat launching ramp, an increase in the operational capacity of the SIBLF would not occur.

Therefore, operation of the Project would not result in an increase in stationary or mobile source emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation (Urban Crossroads 2013a). A less-than-significant impact would occur as a result of the Project.

c) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

As noted previously, the Project site is in an area considered a nonattainment area for PM_{10}, $PM_{2.5}$, and ozone for California standards. As discussed under Checklist response III. b) and shown in Table 4-2, criteria pollutant emissions are expected to be below San Diego County screening level thresholds for all nonattainment criteria pollutants and their precursors. Due to their regional nature and the fact that they take in account past, present, and future projects and set a regional threshold in consideration of current and future projects, these San Diego County screening-level thresholds serve as thresholds for both direct and indirect project-related impacts and as an indication of whether a project's cumulative contribution would be significant. Since the Project would not result in an increase in stationary or mobile source emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, the Project's operation would have no potential to contribute to cumulative air quality impacts.

Furthermore, as indicated in Table 4-2, the Project would not contribute to a regional cumulative air quality impact during the construction phase. However, it is still possible that the Project, when combined with current construction projects, could result in localized air quality impacts such as the effects from dust (i.e., PM_{10}) and construction equipment operations associated with the use of diesel fuel (i.e., $PM_{2.5}$). The radius for such localized emission impacts is approximately 0.25 mile. There are five cumulative projects that are located within 0.25 mile of the Project's construction boundaries, including the Best Western Island Palms Exterior Renovation project, the Humphrey's Half Moon Inn and Suites Renovation project, the Humphrey's Half Moon Inn and Suites Marina Redevelopment project, the Shelter Island Boat Yard Crane Replacement project, and the Tonga Landing Redevelopment project. The Best Western Island Palms Exterior Renovation project, Humphrey's Half Moon Inn and Suites Renovation, and Shelter Island Boat Yard Crane Replacement projects are expected to be completed before the Project begins construction. The Humphrey's Half Moon Inn and Suites Marina Redevelopment project would not involve the use of heavy construction equipment and would not require any major earthwork, grading, or dredging that would contribute to air quality impacts. The Tonga Landing Redevelopment project would contribute to air emissions, however, this project would be implemented in conformance with air quality regulations and, if required, mitigation measures identified in the environmental document that would be implemented. Moreover, this project would be subject to the same SDAPCD rules and regulations that would reduce emissions from the Project, including fugitive dust control in accordance with Rule 55. As such, the Project is not expected to result in a cumulatively considerable net increase in a nonattainment pollutant. This impact is considered less than significant.

d) Would the project expose sensitive receptors to substantial pollutant concentrations?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Health effects associated with criteria air pollutants are discussed in Appendix A. The nearest sensitive receptors are the recreational uses that are scattered through the area and the residences located over 2,000 feet northwest of the Project site. Health effects resulting from the release of criteria air pollutants would not occur unless the screening criteria are exceeded by a large margin or for a prolonged period of time. Furthermore, exposure of sensitive recreational receptors to criteria air pollutants would be limited to visitation that coincides with weekday construction activities. As shown in Table 4-2, construction emissions from the Project are anticipated to be below the emissions thresholds established by the SDAPCD. Due to the minor amount of construction emissions, the limited expose of recreational receptors to these pollutants, and the distance of residential receptors from the site, health effects associated with these criteria pollutants during construction would not occur. As discussed above, operation of the Project would not result in an increase in stationary or mobile source emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation. Therefore, health effects associated with these criteria pollutants during operation would not occur.

Furthermore, construction activities related to the Project would result in emissions of diesel particulate matter from heavy equipment used on site and truck traffic to and from the site, as well as minor amounts of toxic air contaminants (TAC) emissions from motor vehicles. Health effects attributed from exposure to diesel particulate matter are long-term effects based on long-term exposure to emissions. Health effects from TACs are usually described in terms of Cancer Risk. An incremental cancer risk threshold of 10 in one million is established by the SDAPCD. “Incremental Cancer Risk” is the likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 70 year lifetime would contract cancer based on the use of standard risk assessment methodology. Due to the short term nature of construction on this Project, no adverse health effects would be anticipated from diesel particulate matter (Urban Crossroads 2013a). Receptors that access the recreational uses scattered throughout the Shelter Island area would have limited exposure to diesel exhaust, with exposure limited to visitation that coincides with weekday construction activities. Motor vehicle emissions would not be concentrated in any one area but would be dispersed along travel routes and would not be anticipated to cause a significant health risk to sensitive receptors. Furthermore, the Project would not involve expansion of the existing SIBLF use, so no additional emissions associated with operations would occur that would cause a significant health risk to sensitive receptors. Therefore, the Project would not expose sensitive receptors to substantial pollutant concentrations, and impacts would be less than significant.

e)	Would the project create objectionable odors affecting a substantial number of people?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
		☐	☐	☒	☐

The California Air Resources Board's Air Quality and Land Use Handbook identifies a list of the most common 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. Construction of the Project would result in minor amounts of odor compounds associated with diesel exhaust from heavy equipment. However, these odors are not anticipated to be overwhelming and would be limited to the time that construction equipment is operating during the construction period for the Project. Additionally, all construction equipment is required to be maintained in accordance with the manufacturers' specifications, and all construction equipment would be turned off when not in use. Therefore, odors during construction would not affect a substantial number of people and would not be a significant impact.

Upon completion of the Project construction, the temporary sources of diesel exhaust would cease. It is anticipated that no new odors would be generated during the operation of the Project as it is an existing use and no new, expanded, or additional uses are proposed. Therefore, impacts would be less than significant.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

IV. BIOLOGICAL RESOURCES

Environmental Setting

Habitats. San Diego Bay is characterized by a wide range of marine habitats including soft bottom, which predominates in the bay, eelgrass (*Zostera marina*), and artificial hard substrates primarily associated with piers and jetties. Habitats associated with the Project area are similar to other developed areas around the bay and include soft bottom and sandy beaches, floating piers, and hard bottom areas of the rock jetty. Throughout the bay, eelgrass beds support fisheries productivity unmatched by most habitats, while soft bottom habitats provide foraging for species that depend upon resident invertebrates for food (U.S. Navy and Port of San Diego 2013). Marine flora and fauna typically found in these habitats, including within the Project area, are described below.

Plants. Seagrass is recognized as an extremely valuable habitat in southern California marine and estuarine environments. Four species of seagrass are known to occur in southern California, including narrow-bladed eelgrass, wide-bladed eelgrass (*Z. pacifica*), surfgrass (*Phylospadix torreyi* and *P. scouleri*), and widgeon grass (*Ruppia maritima*) (Talbot *et al*. 2006, Coyer *et al.* 2008). In 2010, approximately 1,831 acres of eelgrass existed within and adjacent to San Diego Bay (U.S. Navy 2010). Similarly, about 29 percent of the existing shallow waters of San Diego Bay are vegetated with eelgrass (U.S. Navy and Port of San Diego 2013). During surveys for the Project in 2013, a total of approximately 2,150 square meters (m^2) (0.53 acre) of eelgrass occurred within the survey area, which is larger than the Project area and includes areas within the launch basin and along the southwest beach.

Eelgrass resources observed within the launch basin in July 2013 indicated that the eelgrass did not form a contiguous bed. Individual plants less than 6 inches in height numbered between 12 and 15 individual's that likely represent recent recruitment. The larger plants (>12 inches) within the launch basin did not form a definitive eelgrass bed but the plants were clustered in small patches that occur in an area less frequently disturbed by vessel traffic than the majority of the launch basin. No flowering was observed and water clarity was relatively poor compared areas along the beach just outside the launch basin. Mapped eelgrass beds along the beaches on either side of the launch basin were dense and healthy. Eelgrass communities adjacent to the rock jetty, along the beach southwest of the launch basin, were within 20 feet of the existing rock jetty and varied between 8 and 25 feet wide. The substrate drops off rapidly moving offshore, limiting eelgrass habitat suitability in close proximity of the outer portions of the rock jetty. No eelgrass was observed along the rock jetty northeast of the SIBLF entrance. (TDI 2013b, Appendix B-2)

Many soft bottom habitats throughout the bay are covered with mats of various algal species. Algal species, including *Ulva* spp., *Chaetomorpha* spp., *Cladophora* spp., and *Enteromorpha* spp., are components of the mat communities in some nearshore locations in the bay. The most common algae observed attached to the docks is *Ulva* (Heilprin pers. obs. July 2013).

Caulerpa taxifolia, an invasive species of algae that is known to cause significant habitat disruption in areas where it occurs (nearest record is from northern San Diego County), and has not been documented in San Diego Bay. However, it was not observed during a recent District survey or during the eelgrass survey of the Project area (District 2013a).

Invertebrates. Infaunal and epifaunal invertebrates in the Project area are expected to be very similar to other adjacent areas of similar depth and habitat throughout the bay. Infauna invertebrates are organisms that live within the bottom substratum of a body of water, especially the bottom-most oceanic sediments, rather than on its surface. Epifauna are organisms that live on the surface of a substrate, such as rocks, pilings, marine vegetation or the sea or lake floor itself. Common infaunal and epifaunal invertebrates routinely collected the bay are listed in Table 4-3. Similar to other parts of the bay, the infaunal community at SIBLF is could or is likely to have polychaete (capitellids, spionids, and syllids) and oligochaete worms, while crustaceans (amphipods) molluscs and miscellaneous species (sponges, cnidarians, platyhelminthes, nemerteans, sipunculids, phoronids, echinoderms, and urochordates) are common.

Table 4-3. Common Infaunal and Epifaunal Invertebrates within San Diego Bay.	
Scientific Name	*Common Name*
Amphipholis cf. *pugetana*	Brittlestar
Armandia bioculata	Polychaete worm
**Balanus Amphitrite*	Barnacle
Bulla gouldiana	Bubble snail
Capitella capitata	Polychaete worm
**Chthamalus* spp.	Barnacle
Cirriformia spirabranchiata	Polychaete worm
**Crassostrea gigas*	Japanese oyster
Cylinchnella inculta	Acteocinid tectibranch
Eteone cf. *lighti*	Polychaete worm
Euphilomedes carcharodonta	Ostracod
Exogone lourei	Polychaete worm
Fabricinuda limnicola	Polychaete worm
Glycera cf. *Americana*	Polychaete worm
Leitoscoloplos elongates	Polychaete worm
Leptochelia cf. *dubia*	Tanaid crustacean
Lumbrineris spp.	Polychaete worm
Marphysa sanguinea	Polychaete worm
Mayerella banksia	Gammarid amphipod
Mediomastus californiensis	Polychaete worm
Musculista senhousii	Japanese mussel
**Mytilus edulis*	Mussel
Neanthes acuminate	Polychaete worm
Pherusa cf. *neopapillata*	Polychaete worm
Phoronida sp.	Phoronid
Prionospio cf. *heterobranchiata*	Polychaete worm
Rutiderma judayi	Ostracod
Scoletoma tetraura	Polychaete worm
Streblospio benidicti	Polychaete worm
**Styela clava*	Tunicate
**Styela montereyensis*	Tunicate
Zoobotryon verticillatum	Bryozoan
*Notes: * Indicates epifaunal taxa primarily occurring on hard substrate, including pilings and other manmade structures.*	

Epifaunal communities within San Diego Bay are generally sparse in abundance, with the most common taxonomic groups (sponges, tunicates, coelenterates, crustaceans, molluscs, and echinoderms) being typical of most soft bottom areas (Table 4-3). Hard-bottom epifaunal communities on existing pilings and rock structures such as jetties are expected to be typical of other man-made and hard structures in the bay, and include California spiny lobster (*Panulirus interruptus*) and a variety of crabs, worms, mussels, barnacles, echinoderms (sea stars and sea urchins), sponges, sea anemones, and tunicates (sea squirts) (U.S. Navy and Port of San Diego 2013).

Fishes. The ichthyofauna in the Port of San Diego has been relatively well-studied. Fish communities in the vicinity of the Project area are similar to those described by Allen *et al.* (2002) and Vantuna Research Group (VRG) (2006, 2009, 2012) for other areas of San Diego Bay. Common demersal (bottom-dwelling) and pelagic (living near the surface or in the water column) fish species collected in the bay are listed in Table 4-4.

Fishes observed during 2013 eelgrass survey at the SIBLF include kelp bass, barred sand bass, round stingray, opaleye, and shiner perch (TDI 2013b). Some of these species like opaleye are typically associated with pier pilings, while other species such as barred sand bass and shiner perch are commonly observed in vegetated (eelgrass) areas.

Table 4-4. Common Pelagic and Demersal Fish Species in San Diego Bay.

		Distribution	
Common Name	*Scientific Name*	*Pelagic*	*Demersal*
Deepbody anchovy	*Anchoa compressa*	X	
Slough anchovy	*Anchoa delicatissima*	X	
Topsmelt	*Atherinops affinis*	X	
Jacksmelt	*Atherinopsis californiensis*	X	
Northern anchovy	*Engraulis mordax*	**X**	
Black croaker	*Cheilotrema saturnum*	X	
Opaleye	*Girella nigricans*		X
Arrow goby	*Clevelandia ios*		X
Shiner surfperch	*Cymatogaster aggregata*		X
California butterfly ray	*Gymnura marmorata*		X
Giant kelpfish	*Heterostichus rostratus*		X
Bay blenny	*Hypsoblennius gentilis*		X
Diamond turbot	*Hypsopsetta guttulata*		X
Cheekspot goby	*Ilypnus gilbert*		X
Staghorn sculpin	*Leptocottus armatus*		X
Striped mullet	*Mugil cephalus*		X
Gray smoothhound	*Mustelus californicus*		X
Spotted sandbass	*Paralabrax maculatofasciatus*		X
Barred sandbass	*Paralabrax nebulifer*		X
California halibut	*Paralichthys californicus*		X
Specklefin midshipman	*Porichthys myriaster*		X
Plainfin midshipman	*Porichthys notatus*		X
Shadow goby	*Quietula y-cauda*		X
Pacific sardine	*Sardinops sagax caeruleus*	**X**	
Queenfish	*Seriphus politus*	X	X
California needlefish	*Strongylura exilis*	X	
Pipefish	*Syngnathus spp.*		X
Leopard shark	*Triakis semifasciata*	**X**	**X**
Yellowfin croaker	*Umbrina roncador*	X	X
Round stingray	*Urobatus halleri*		X

Notes: Species in ***bold*** *represent Essential Fish Habitat (EFH) species known to occur in San Diego Bay.*

Essential Fish Habitat (EFH) Assessment. The Project is located within an area designated as EFH for two Fishery Management Plans (FMPs) – Pacific Coast Groundfish (Pacific Fishery Management Council [PFMC] 2014) and Coastal Pelagic Species (PFMC 2011). The species covered by these plans are considered in this assessment, but salmonids (covered by a third plan) do not occur in the Project region and, consequently, are not addressed in this document. A detailed EFH assessment is presented in Appendix B-3 (ECORP Consulting, Inc. 2013).

Of the 57 species found by VRG in 2006, 48 found in 2009 and 52 found in 2012, six are managed under two FMPs: the Coastal Pelagics and Pacific Groundfish Management Plans. Four of the five fish managed under the Coastal Pelagics FMP are represented in San Diego Bay. The northern anchovy (*Engraulis mordax*) and Pacific sardine (*Sardinops sagax*) are the most abundant pelagics identified by Allen and VRG and are likely present adjacent to the Project area. The other two Coastal Pelagic Species, Pacific mackerel (*Scomber japonicas*) and jack mackerel (*Trachurus symmetricus*) are much less abundant in the bay and together account for less than one percent of the total catch. It is unlikely that these two species are found in the Project area.

Of the 81 species managed under the Pacific Groundfish FMP, two (California scorpionfish and English sole) have been found in San Diego Bay. These species have rarely been observed in the bay during the Allen (1999) study and were not collected by VRG in 2006. California scorpionfish accounted for only 0.02 percent of the total abundance in the VRG 2006 surveys and 0.05 percent in the 2012 surveys.

Marine Birds. San Diego Bay is part of a major bird migratory pathway, the Pacific Flyway, and supports large populations of over-wintering birds traveling between northern breeding grounds and southern wintering sites. More than 300 migratory and resident bird species have been documented to use San Diego Bay, including shore birds, gulls, marsh birds, and other waterfowl (U.S. Navy and Port of San Diego 2013).

Common waterfowl and seabird species in the bay, include surf scoter (*Melanitta perspicillata*), eared grebe (*Podiceps nigricollis*), California brown pelican (*Pelecanus occidentalis californicus*), elegant tern (*Sterna elegans*), Heermann's gull (*Larus heermanni*), double-crested cormorant (*Phalacrocorax auritus*), mallard (*Anas platyrhynchos*), and great blue heron (*Ardea herodias*) (U.S. Navy and Port of San Diego 2013, TDI 2011).

Federal or state bird species of concern with the potential to occur in the SIBLF area include double-crested cormorant, American merlin (*Falco columbiarus columbiarus*), California brown pelican, black oystercatcher (*Haematopus bachmani*), and American peregrine falcon (*Falco peregrinus anatum*). Most of these species are considered sensitive only where breeding or nesting occurs. However, there are no breeding seabirds in the Project area. These birds typically use intertidal flats, shallow water habitat, or manmade structures for foraging or resting (U.S. Navy and Port of San Diego 2013).

Marine Mammals and Sea Turtles. Of the approximately 41 marine mammal species that occur in southern California waters (Carretta *et al.* 2012), only three species occur in San Diego Bay year-round, with one additional migratory species expected to occur in the general area of northern San Diego Bay. These include California sea lion (*Zalophus californianus*) and California harbor seal (*Phoca vitulina richardii*) and two cetaceans, bottlenose dolphin (*Tursiops truncatus*) and gray whale (*Eschrichtius robustus*) (U.S. Navy and Port of San Diego 2013).

Within and adjacent to San Diego Bay, California sea lion and harbor seal are commonly observed on navigation buoys, barges, and docks. California sea lions are typically more commonly observed in the bay compared to harbor seals and are especially abundant on or near the bait barge, which is presently moored in north San Diego Bay approximately 1.5 nautical miles to the west. In addition, sea lions are commonly observed swimming, milling, and "begging" for fish within the SIBLF basin as boats return from fishing (Heilprin pers. obs. July 2013).

Bottlenose dolphins inhabit nearshore waters of southern California and regularly move along the coast and occasionally enter northern San Diego Bay. This species has been consistently observed in many parts of central and north bay (U.S. Navy 2012), including outside the SIBLF.

Gray whale occurs off southern California during their annual migration between the Bering and southern Chukchi seas (summer feeding areas) and Baja California and mainland Mexico (winter calving areas). While gray whales typically stay a kilometer or more offshore of the San Diego coast, on rare occasions individual gray whales have entered San Diego Bay and lingered for up to two weeks (U.S. Navy 2012, U.S. Navy and Port of San Diego 2013).

The green sea turtle (*Chelonia mydas*) is federally threatened throughout its eastern North-Pacific range and have been sighted from Baja California to southern Alaska, but most commonly occur from San Diego south (NMFS 2015). A small population primarily resides in the warmer waters of south San Diego Bay. The number of turtles using the bay varies but is estimated to range from 30 to 60 animals (U.S. Navy and Port of San Diego 2013). Therefore, green sea turtles may transit past the Project area, although they have not been observed in the North Bay in recent years (U.S. Navy 2012). Tracking studies conducted by San Diego State University and National Marine Fisheries Service indicate that the turtles continue to only utilize South San Diego Bay.

Special Status Species. The following Special Status species may be found in the vicinity of the Project area and are also found throughout San Diego Bay:

- California least tern (*Sternula antillarum browni*) (federally endangered, state endangered, California fully protected species);
- Double-crested cormorant (*Phalacrocorax auritus*) (California watch list);
- Elegant tern (*Thalasseus elegans*) (bird of conservation concern, California watch list);
- California sea lion (*Zalophus californicus*) (Marine Mammal Protection Act);
- Common bottlenose dolphin (*Tursiops truncatus*) (Marine Mammal Protection Act);
- Common dolphin (*Delphinus delphis*) (Marine Mammal Protection Act);
- Pacific harbor seal (*Phoca vitulina*) (Marine Mammal Protection Act); and
- Eastern Pacific green sea turtle (*Chelonia mydas*) (federally threatened).

Thresholds of Significance

A project may be deemed to have a significant adverse impact on biological resources if it results in any of the following:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;

- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat plan.

Analysis of Environmental Impacts

	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☒	☐

As further detailed below, the Project would not significantly affect biological resources because impacts such as turbidity from suspended sediments and noise during the construction would be temporary and would not have a substantial adverse effect. Biological resources, including birds and marine mammals, are expected to leave the Project area during construction and return after construction activities are completed. Some studies suggest that increased turbidity resulting from dredging operations could potentially decrease foraging success of Least Terns, as a result of decreased visibility. However, there's also evidence that higher turbidity may benefit Least Tern foraging by concentrating prey in the surface layer (HT Harvey 2012). Given the relatively short duration of turbidity plumes generated by dredging during this Project, overall impacts resulting from visual impairment of foraging Least Terns would likely be less than significant. Project design features such as the use of silt curtains to reduce potential turbidity would also minimize any potential foraging effect on protected bird species such as California least tern.

Other Project design features would be implemented during proposed pile driving and dredging activities. These features include the use of a "soft-start" procedure, which is believed to provide additional protection to marine mammals by providing warning and/or giving marine mammals a chance to leave the area prior to any impact hammer operating at full capacity.

Some disturbance to migratory birds foraging and resting behavior may occur in the immediate Project vicinity during construction. However, any impacts would be short-term, localized, and would not have a substantial adverse effect to bird populations. Marine birds frequently experience elevated noise and disturbance from boat launching and passing vessels on the bay.

Operation of the Project is not anticipated to result in increased boat traffic or other increased post-construction risks to wildlife because the capacity of the SIBLF would remain the same as existing conditions. Therefore, impacts would be less than significant.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☒	☐	☐

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. Generally, new pier or dock structures that result in increased bay coverage are typically considered to reduce the functionality of affected habitats, through decreased forage opportunities for some avian species, as well as through decreased productivity in shaded waters. However, the covered/shaded habitat continues to provide ecological value (e.g., forage opportunities, substrate to grow on, shelter from predators) for numerous fish and invertebrate species. The Project would not result in a net increase in surface area coverage or associated shading. As detailed in Table 2-1 above, implementation of the Project would result in the creation of approximately 21,042 square feet of new open water area.

Impacts to vegetated and nonvegetated soft bottom benthic habitat from dredging operations inside the basin and potential replacement of the rock jetty would occur. Direct and indirect impacts to eelgrass from the Project would be minor (less than approximately 30 square meters) based on 2013 surveys. Pursuant to the requirements of the lead federal agency and National Oceanic and Atmospheric Administration (NOAA) Fisheries, the actual level of impact to eelgrass will be determined during the pre-and post- construction eelgrass surveys, but the impact could be significant. Any significant impacts to eelgrass, as determined by these surveys, would be mitigated using the guidance from the California Eelgrass Mitigation Policy (CEMP) (NMFS 2014). Implementation of Mitigation Measure B-1, which would require impacts from effects to eelgrass to be mitigated according to the CEMP, would reduce impacts to eelgrass to less than significant. Two possible areas for the creation of an approximately 600-square-foot (56-square-meter) on-site mitigation area for eelgrass have been identified generally between the new east dock and the existing east jetty (see Figure 3).

c) Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

No federally protected wetlands, as identified under Sections 401 and 404 of the Clean Water Act, are located within or immediately adjacent to the Project site. The surrounding bay is considered a water of the United States (Section 10 waters) and is a 303(d) impaired water body pursuant to the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. As described under Checklist response IV. b) above, the Project would result in a net decrease of bay surface area coverage of approximately 21,042 square feet. The Project activities are regulated under Section 10 of the Rivers and Harbors Act of 1899, Section 401 of the Clean Water Act, and the Coastal Act. A Section 10 permit from the United States Army Corps of Engineers, a Water Quality Certification from the San Diego Regional Water Quality Control Board (RWQCB), and a Coastal Development Permit (CDP) from the District are required for the Project. Project compliance with all applicable certifications and permit requirements would ensure that construction and operation of the Project would not have a substantial adverse effect on federally protected wetlands. Impacts would be less than significant.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐

Species that may be directly or indirectly affected by noise levels produced during Project construction include eastern Pacific green sea turtle (*Chelonia mydas*), managed fish species under the Coastal Pelagic Species FMP and Pacific Coast Groundfish FMP, bird species such as California least tern, and marine mammals. The proposed Project would include construction activities (e.g., pile driving) that would generate airborne and underwater sound levels potentially harmful to biological resources. Hydroacoustic impact analysis aims to identify portions of the proposed Project that could have substantially adverse effects, direct or indirect, on marine species identified as candidates, sensitive, or actively maintain protected species-status by the NMFS and CDFW. Thresholds for significant effects are described as Level A and Level B Harassment. Amendments to the MMPA in 1994 define Level A Harassment as any act of pursuit, torment, or annoyance, which has the potential to injure a marine mammal or marine mammal stock in the wild. Level B Harassment is defined as having the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering but which does not have the potential to injure a marine mammal or marine mammal stock in the wild (NOAA 2013).

Based on a recent analysis of pile driving effects for the BAE Systems Pier 1 project on San Diego Bay (TDI 2015), Level A Harassment (physical injury) is not expected to occur as a result of the Project based on the projected sound pressure levels from pile driving activities. Anticipated sound levels (decibels root mean squared [dB rms]) for this project are estimated between 137 and 160 dB for steel "H" batter piles using an either a vibratory or impact hammer, and up to 172 dB for all other piles using an impact hammer, which is below the Level A injury threshold of 180 dB rms (Caltrans 2012). However, single strike peak sound pressure levels generated from pile driving immediately adjacent to the point of impact would have the potential to approach or exceed the Level A (180 dB rms) injury threshold of 180 dB rms. Level

B Harassment (behavioral) could occur if marine mammals move inside the 160 dB rms isopleths (contour line). Therefore, impacts to marine mammals could occur as a result of Project construction.

The criteria for cumulative effects to fish from repeated exposure to pile strikes is based on the size of the fish. A threshold of 187 dB $SEL_{cumulative}$ is used for fish greater than 2 grams body weight, and 183 dB $SEL_{cumulative}$ for fish less than 2 grams ($SEL_{cumulative}$ is an estimate of the total exposure of repeated events). Although these fish are highly mobile and are expected to move away from the Project Area during construction, cumulative impacts to fish as a result of repeated exposure to elevated sound pressure levels from Project construction are possible. Therefore, impacts to fish could occur as a result of Project construction.

Impacts from pile driving noise on biological resources such as fish, birds, marine mammals, and sea turtles described above would be reduced to less than significant levels with the implementation of Mitigation Measure B-2.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Local biological resource policies and ordinances relevant to the Project include the Port Master Plan and the California Eelgrass Mitigation Policy. The Project would be consistent with the Port Master Plan (see discussion in Checklist response X. b)) and the California Eelgrass Mitigation Policy (see discussion in Checklist response IV. b)). Therefore, the Project would not conflict with any local policies or ordinances protecting biological resources.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

No adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or other approved local, regional, or State HCP is in place that includes the Project site or surrounding areas. However, the Project site is within an area (known as the Functional Planning Zone) covered by the San Diego Bay Integrated Natural Resource Management Plan (INRMP), which is a San Diego Bay Ecosystem Plan (SDBEP) (U.S. Navy and Port of San Diego 2013). The SDBEP is a long-term strategy sponsored by two of the major managers of the San Diego Bay: the U.S. Navy and the District. The most recent version of the INRMP was approved in September 2013. The intent of the INRMP is to provide direction for the good stewardship that natural resources require, while also supporting the ability of the Navy and the District to meet their missions and continue functioning within the bay. The stated goal of the INRMP is to ensure the long-term health, recovery, and protection of San Diego Bay's ecosystem in concert with the bay's economic, Naval, recreational, navigational, and fishery needs. The SIBLF is identified as an existing use in the INRMP.

Construction of the Project would require dredging, and management of dredge and fill projects is discussed in Section 5.2.1 of the INRMP. The INRMP recognizes that dredging is necessary for safe navigation for vessels in areas such as the SIBLF. (U.S. Navy and Port of San Diego 2013). According to the INRMP, dredging and dredge disposal should be conducted in an environmentally and economically sound manner. This includes characterizing the sediment chemically, physically, and biologically; minimizing turbidity; maximizing the use of existing channels rather than creating new ones; minimizing air quality emissions; and maximizing the use of dredged material for beneficial reuse in the bay. The Project would be conducted in a manner that is compatible with all of these objectives, as further detailed below. The sediment has been characterized, and all inorganic and organic contaminant concentrations are below the effects range-median (ERM) values. Detailed results of the sediment characterization are presented in Appendices B-1 and B-4 and are summarized in ~~s~~Section VIII~~,~~. Hazards and Hazardous Materials.

Turbidity would be minimized during construction through the use of silt curtains as part of the design of the Project. The Project would maximize the use of the SIBLF, an existing boat launching facility, and does not propose any new facility or expansion of existing use. As described in Section III. Air Quality, the Project would not result in adverse air quality impacts. Finally, approximately between 1,150 and 1,350 cubic yards of jetty riprap, jetty core fill, and dredged materials would be beneficially reused on-site.

The Project does not conflict with provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, as none exists that covers the Project site or surrounding area. The Project is consistent with the goals and objectives of the INRMP. No impact would occur.

Required Mitigation Measures

B-1 Impacts from effects to eelgrass shall be mitigated according to the California Eelgrass Mitigation Policy (CEMP), with replanting of eelgrass at a 1.2:1 ratio (NMFS 2014). Pursuant to the CEMP, pre- and post-construction surveys shall determine the exact amount of eelgrass affected by Project activities. Prior to the commencement of construction, the Project Applicant shall retain a qualified biologist to conduct a pre-construction eelgrass survey per the CEMP to quantify the amount of existing eelgrass within the Project area. The name of the retained contractor and proposed survey plan, including a schedule, shall be submitted to the District before initiation of survey work. A monitoring program consisting of a pre-construction eelgrass survey and three post-construction eelgrass surveys at the impact site and appropriate reference site(s) will be performed (NMFS 2014). The first post-construction eelgrass survey will be completed within 30 days following completion of construction to evaluate any immediate effects to eelgrass habitat. The second post-construction survey will be performed approximately one year after the first post-construction survey during the appropriate growing season. The third post-construction survey will be performed approximately two years after the first post-construction survey during the appropriate growing season. The second and third post-construction surveys will be used to evaluate if indirect effects resulted later in time due to altered physical conditions; the time frames identified above are aligned with growing season (attempting a survey outside of the growing season would show inaccurate results).

A final determination regarding the actual impact and amount of mitigation needed at the above-stated ratio, if any, to offset impacts should be made based upon the results of two annual post-construction surveys, which document the changes in the eelgrass habitat (areal extent, bottom coverage, and shoot density within eelgrass) in the vicinity of the action, compared to eelgrass habitat change at the reference site(s). Any impacts determined by these monitoring surveys would be mitigated. Two possible areas for on-site mitigation of eelgrass have been identified generally between the new east dock and the existing east jetty. Before implementation of the mitigation, the Project Applicant shall submit a mitigation plan to the District's Environmental and Land Use Management department and resource agencies for review and approval.

B-2 To mitigate potentially significant impacts to sensitive fish species, bird species, eastern Pacific green sea turtles, and marine mammals to less than significant, the following measures shall be implemented:

1. An on-site biological observer shall be present during pile driving activities with the authority to stop construction if a sensitive fish species, green sea turtle, or marine mammal approaches or enters the shutdown zone. The shutdown zone is the area within 10 meters of construction activities or inside the 190 dB rms isopleths for green sea turtle and marine mammal cetaceans or 180 dB rms for marine mammal pinnipeds. Prior to the start of pile-driving activities, the biological observer shall monitor the shutdown zone for 15 minutes to ensure that sensitive fish species, green sea turtles, and marine mammals are not present. If a sensitive fish species, green sea turtle, or marine mammal approaches or enters the shutdown zone during the pile-driving activities, the biological observer shall notify the construction contractor to stop the activity. The pile-driving activities shall be stopped and delayed until the biological observer visually confirms either that the animal has voluntarily left the shutdown zone and is beyond the shutdown zone, or 15 minutes have passed without re-detection of the animal. If the on-site biological observer determines that weather conditions prevent the visual detection of sensitive fish species, green sea turtles, or marine mammals in the shutdown zone, such as heavy fog, in-water construction activities with the potential to result in Level A Harassment (injury) shall not be conducted until conditions change.
2. Biological monitoring shall be conducted by qualified observers. The observer shall be placed in the best vantage point practicable to monitor, and when applicable, shall communicate directly with the construction superintendent and/or hammer operator.
3. During all observation periods, observers shall use binoculars and the naked eye to scan continuously for sensitive fish species, green sea turtles, and marine mammals. As part of the monitoring process the observer shall collect sighting data and behavioral responses to construction from sensitive fish species, green sea turtles, and marine mammals observed in the Project area of activity during the period of construction. The observer shall record any sensitive fish species, marine mammal, green sea turtle, or California least tern sightings, and submit

the sighting records to the District within 60 days of the completion of the mitigation monitoring with a summary of observations.

V. CULTURAL RESOURCES

Environmental Setting

Shelter Island is primarily a man-made environment that has been developed for over 50 years. The SIBLF was originally constructed in 1956 and was upgraded in 1976. According to the PMP, no known historical or archaeological resources are located on the Project site, and the site has a low potential for buried cultural resources (District 2012). Subsurface conditions at the site consist of pavements, fill soils, rock revetments, bay deposits, and Old Paralic Deposits, Unit 6 (formerly known as the Bay Point Formation). The Old Paralic Deposits, Unit 6 formation dates from the late to middle Pleistocene, roughly 10,000 to 600,000 years ago. A tremendous variety of invertebrate and vertebrate fossils have been found in these deposits, including both marine and terrestrial animals, with mammoth and whale remains being some of the most significant. Consequently, this formation is highly sensitive for paleontologic resources.

Thresholds of Significance

A project may be deemed to have a significant adverse impact on cultural resources if it results in any of the following:

- Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5;
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or,
- Disturb any human remains, including those interred outside of formal cemeteries.

The District will use the City of San Diego's CEQA Significance Determination Thresholds for determining significant impacts to paleontological resources. A project may be determined to have significant impacts on paleontological resources if it would:

- Require over 1,000 cubic yards of excavation in a high resource potential geologic deposit/formation/rock unit; or
- Require over 2,000 cubic yards of excavation in a moderate resource potential geologic deposit/formation/rock unit.

Analysis of Environmental Impacts

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

The SIBLF was originally constructed in 1956 and was upgraded in 1976. No known historical resources are located on the Project site (District 2012). Because implementation of the Project is limited to the repair, maintenance, and replacement of several elements comprising the SIBLF, no historical resources would be affected. Therefore, no impact would occur from construction or operation of the Project.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

No archaeological resources have been recorded on the Project site. The Project is situated on an artificial landform area created by bay infill and is within a highly developed environment that has been severely disturbed by development; thus, the potential for any buried resources to exist on the Project site is low (District 2012). Therefore, the sensitivity of the Project site for archaeological resources is low.

In addition, there is a low likelihood of underwater resources at the Project site. The in-water construction would occur within a highly active recreational boating area that has operated as a boat launching facility since 1956 and has been subject to renovation in 1976 and ongoing maintenance. There is no evidence based on current and past activities that there are shipwrecks or other underwater archaeological resources at or near the SIBLF. Therefore, construction and operation of the Project would not cause a substantial adverse change in the significance of an archaeological resource. Impacts would be less than significant.

c) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

The near shore marine sedimentary deposits and marine terraces along the coast of San Diego have a high potential for paleontological resources. Although the Project site is located along the coast of San Diego, Shelter Island, including the Project site, was originally mudflats and the open water of the San Diego Bay. Decades of modifications to the shoreline and placement of fill soils have resulted in the creation of Shelter Island, including the Project site and surrounding land. Most construction activities, such as removal of the existing rock jetties, installation of prefabricated aluminum gangways, installation of pavement striping and signage, etc., would occur in this fill soil or would not require ground disturbance, and effects to paleontological resources are not anticipated. However, Old Paralic Deposits, Unit 6 formation underlies the surficial fill soils at the Project site. This formation has been identified as a highly sensitive formation for paleontological resources (see Section VI. Geology and Soils for more information). Pursuant to the City of San Diego's CEQA Significance Determination Thresholds, excavation of more than 1,000 cubic yards in this formation would be considered significant. No excavation of this formation is proposed as part of the Project. Therefore, construction and operation of the Project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. Impacts would be less than significant.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Would the project disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

The Project site is not known to have been used for religious or sacred purposes. No evidence is in place to suggest the Project site has been used for human burials. The California Health and Safety Code (HSC) (Section 7050.5) states that if human remains are discovered on site, no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code (PRC) Section 5097.98, including coordination with the Native American Heritage Commission (NAHC), which will identify the "most likely descendant" (MLD) should the remains be identified as being of Native American origin. As further stated in Section 7050.5, "... with the permission of the owner of the land or his/her authorized representative, the descendant may inspect the site of the discovery. The descendant shall complete the inspection within 24 hours of notification of the NAHC. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials." As adherence to above-identified State regulation is required for all development, no mitigation is required in the unlikely event human remains are discovered on site. Adherence to applicable HSC and PRC requirements is standard for all projects; therefore, impacts associated with this issue would be less than significant.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

VI. GEOLOGY AND SOILS

Environmental Setting

A site-specific geotechnical study was conducted for the Project (Terra Costa 2012; Appendix C), which was used, along with other substantial evidence, in this section. SIBLF is situated in a basin that opens into the San Diego Bay. Harbor improvements since the early 1940s included the placement of fill soils comprised of relatively clean sands placed over relatively granular natural embayment and fluvial sand deposits. Subsurface conditions at the site consist of pavements, fill soils, rock revetments, bay deposits, and Old Paralic Deposits, Unit 6 (formerly known as the Bay Point Formation). The Old Paralic Deposits, Unit 6 formation generally consists of poorly sorted, interfingered beach, estuarine, and colluvial deposits comprised of silts and sands and occasional clays. The bay deposit soils that underlie the site down to the more competent Old Paralitic Deposits, Unit 6 formation are typical of soils that are susceptible to liquefaction and lateral spreading during a seismic event.

There are no active faults or Alquist-Priolo (AP) Earthquake Fault Zones on the Project site (California Department of Conservation 2003). Located approximately 1.8 miles east/southeast, the Spanish Bight segment of the Rose Canyon fault zone is the closest active fault to the Project site. The AP Zone associated with this fault is also the closest AP Zone to the Project site. AP Zones are regulatory zones around active faults that are subject to surface fault rupture or fault creep. The Project site is not located within an AP Zone.

Thresholds of Significance

A project may be deemed to have a significant adverse geology and soils impact if it results in any of the following:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault Refer to Division of Mines and Geology Special Publication 42;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; or,
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or,
- Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

Analysis of Environmental Impacts

		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i)	Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii)	Strong seismic ground shaking?	☐	☐	☒	☐
iii)	Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv)	Landslides?	☐	☐	☐	☒

i) In 1972, the Alquist-Priolo Earthquake Fault Zoning Act was passed by the California Legislature. It served to identify zones that are susceptible to severe ground shaking. The Project site is not located in an AP Zone; the nearest AP Zone is associated with the Spanish Bight segment of the Rose Canyon fault, located approximately 1.8 miles east/southeast of the Project site (California Department of Conservation 2003). According to the geotechnical report, ground rupture due to faulting is not a hazard for the Project because no active faults or AP Zones traverse the site. Additionally, the Project does not include any habitable structures or structures for occupancy. No impact would occur from construction or operation of the Project.

ii-iii) The Project site is located within a seismically active area, which is subject to strong ground shaking during a seismic event. According to the geotechnical report, the subsurface soils at the site are liquefiable under the California Building Code level design earthquake. In addition, the site soils are prone to lateral displacements associated with seismic events.

Consequences associated with soil liquefaction include ground settlement, loss of strength, possible ground movement (lateral spreading), and possible ground failure (Terra Costa 2012, Appendix C).

The proposed improvements to the SIBLF have been designed according to the recommendations in the geotechnical study to account for seismic concerns, including strong ground shaking, liquefaction, and lateral displacement, in accordance with the California Building Code (Terra Costa 2012, Appendix C). The SIBLF breakwater would be entirely supported by a deep pile foundation system. Concrete sheet piling would comprise the exterior face and would be driven into competent geologic strata (the Old Paralic Deposits, Unit 6 formation, formerly known as the Bay Point Formation). This wall would be braced for lateral support (seismic, wave, and unbalanced earth pressures) by concrete batter piles at 8 feet on center. The system of batter piles and sheet piles would be connected by a reinforced concrete cap allowing the transfer of horizontal lateral loads into vertical pile reactions, completing the load path for the lateral system. The breakwater would have its own response period to seismic movement and would be separated from the shore landings at each end by means of an expansion joint capable of accommodating the anticipated seismic differential deflection. Furthermore, the new concrete launch ramp walks and paving would be supported on compacted subgrade over the existing fill soils and are expected to perform equal to the existing landside improvements during a major seismic event. The reconstructed sections of rock mole would be rebuilt in the same manner as they are presently constructed, and their seismic performance would match that of the existing rock slopes and rock moles on Shelter Island. These improvements would also be constructed in accordance with the California Building Code. Overall, the SIBLF improvements have been designed to account for site-specific geotechnical conditions. In addition, the Project would not construct habitable structures or structures for occupancy. Therefore, construction and operation of the Project would not result in substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking and seismic-related ground failure. A less-than-significant impact would occur.

iv) No landslides were encountered at the site during the geotechnical investigation. Due to the low-lying topography of the area, landslides and mudslides are not expected to occur at the Project site. No impact would occur from construction or operation of the Project (Terra Costa 2012, Appendix C).

b) Would the project result in substantial soil erosion or the loss of topsoil?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

The Project would involve landside and waterside earthwork that would include grading, excavation, pile driving, and other standard construction practices. During construction, the Project would be required to comply with the Best Management Practices (BMPs) contained within its Stormwater Pollution Prevention Plan (SWPPP), a regulatory requirement of the National Pollution Discharge Elimination System (NPDES) permit issued by the San Diego RWQCB, which would identify the BMPs required to properly control erosion and siltation impacts during construction of the Project. These BMPs may include, but not be limited to, gravel asphalt surfacing, equipment wash-out areas, and haul truck covers. During operation, all activities, such as parking, staging, and launching, would occur on paved areas; therefore, soil erosion and loss of topsoil is not expected. A less-than-significant impact would occur.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c)	Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐

Refer to Checklist responses VI. a) ii – iv above. The Project site is located on fill soils that would be subject to lateral spreading, liquefaction, and collapse. The Project has been designed to account for these site-specific geotechnical conditions, as described above. Furthermore, landslide and subsidence are not considered to be hazards at the Project site. Therefore, impacts would be less than significant.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d)	Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐

The subsurface conditions of the Project site consist of pavement, fill soils, rock revetments, recent bay deposits, bay deposits, and the Old Paralic Deposits, Unit 6 formation. The soils that compose the site tend to be loose silts, fine-grained sands and silts, which are not susceptible to expansion. Although occasional clays are known to occur in general in the Old Paralic Deposits, Unit 6 formation, expansive soils are not considered to be a geotechnical hazard at the Project site according to the site-specific soil sampling effort (Terra Costa 2012, Appendix C). A less-than-significant impact would occur.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e)	Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

The Project does not propose the use of septic tanks or alternative wastewater disposal systems. No impacts would occur.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

VII. GREENHOUSE GAS EMISSIONS

Environmental Setting

An Air Quality/Climate Change Technical Report has been prepared for the Project (Appendix A), which was used, along with other substantial evidence, in this section.

According to U.S. Environmental Protection Agency, a greenhouse gas (GHG) is any gas that absorbs infrared radiation in the atmosphere. This absorption traps heat within the atmosphere, maintaining the earth's surface temperature at a level higher than would be the case in the absence of GHGs. GHGs include water vapor, carbon dioxide, methane, nitrous oxide, ozone, perfluorocarbons, hydrofluorocarbons, and halogenated chlorofluorocarbons. Naturally occurring GHGs include water vapor, carbon dioxide, methane, nitrous oxide, and ozone. Human activities add to the levels of most of these naturally occurring gases. The sources and sinks of each GHG are discussed under the GHG Emissions Sources heading, below.

Increasing levels of GHGs in the atmosphere result in an increase in the temperature of the earth's lower atmosphere, a phenomenon that is commonly referred to as global warming. Warming of the earth's lower atmosphere induces a suite of additional changes, including changes in global precipitation patterns; ocean circulation, temperature, and acidity; global mean sea level; species distribution and diversity; and the timing of biological processes. These large-scale changes are collectively referred to as global climate change.

The majority of GHG emissions are the result of burning fossil fuels. Other sources of GHG emissions in the U.S. include agriculture, land clearing, landfilling, the use of refrigerants, and certain industrial processes. Although many nations, including the U.S., regularly monitor and report GHG emissions, federal legislation to reduce global emissions has not been adopted and is the subject of much debate.

Statewide GHG inventories performed by the California Air Resources Board (CARB) over the past two decades report that statewide GHG emissions totaled 433 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) in 1990, 466 $MMTCO_2e$ in 2000, 493 $MMTCO_2e$ in 2004, 487 $MMTCO_2e$ in 2008, and 459 $MMTCO_2e$ in 2012. Transportation-related emissions consistently contribute the most GHG emissions, followed by electricity generation and industrial emissions. As reported by the California Energy Commission (CEC), California contributes 1.4 percent of the global and 6.2 percent of the national manmade GHG emissions. Approximately 80 percent of manmade GHGs in California are from fossil fuel combustion and over 70 percent of GHG emissions are composed of CO_2 emissions.

In response to growing scientific and political concern regarding global climate change, California has recently adopted a series of laws to reduce both the level of GHGs in the atmosphere and emissions of GHGs from commercial and private activities within the state.

In September 2002, Governor Gray Davis signed Assembly Bill 1493, which requires the development and adoption of regulations to achieve "the maximum feasible reduction of greenhouse gases" emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the State.

In June 2005, Governor Schwarzenegger signed Executive Order S-3-05, which established GHG emissions reduction targets for the state, as well as a process to ensure that the targets are met. As a result of this executive order, the California Climate Action Team (CAT), led by the Secretary of the California State Environmental Protection Agency (CalEPA), was formed. The CAT published its first report in March 2006, in which it laid out several recommendations and strategies for reducing GHG emissions and reaching the targets established in the executive order.

In September 2006, Governor Schwarzenegger signed Assembly Bill 32 (AB 32). AB 32 requires CARB to establish a statewide GHG emissions cap for 2020; adopt mandatory reporting rules and an emission reduction plan for significant sources of GHG emissions; and adopt regulations to achieve the maximum technologically feasible and cost effective reductions of GHGs. In 2008, the 1990 baseline and statewide limit for the year 2020, consistent with the baseline, were approved. A Scoping Plan, which is a framework for achieving the reductions legislated under AB 32, was adopted in December 2008.

California Senate Bill 97 (SB 97), passed in August 2007, is designed to work in conjunction with CEQA and AB 32. SB 97 requires the California Office of Planning and Research (OPR) to prepare and develop CEQA Guidelines for the mitigation of GHG emissions or the effects thereof, including, but not limited to, effects associated with transportation and energy consumption. These Guidelines were approved and adopted, and became effective in March 2010.

Executive Order S-01-07 was issued by the California executive branch with the purpose of reducing GHG emissions. Executive Order S-01-07, also known as the Low Carbon Fuel Standard (LCFS), called for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020.

On August 19, 2011, CARB released a Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document ("FED" or "2011 Scoping Plan") that updated the AB 32 Scoping Plan originally adopted in 2008. In the FED, CARB updated the projected Business-As-Usual (BAU) emissions for 2020 based on updated economic forecasts due to the economic downturn.

In March 2012, Governor Brown issued an Executive Order directing state government to help significantly expand the market for Zero-emission Vehicles (ZEVs) in California. The Executive Order established several milestones, highlighted by the target of 1.5 million ZEVs in California by the year 2025.

In addition, AB 32 required the CARB to develop a Scoping Plan that describes the approach California will take to reduce GHGs to achieve the goal of reducing emissions to 1990 levels by 2020. The Scoping Plan was first considered by the CARB in 2008 and must be updated every five years. The First Update to the Scoping Plan was approved by the CARB Board on May 22, 2014, and builds upon the initial Scoping Plan with new strategies and recommendations. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines CARB's climate change priorities for the next five years, and also sets the groundwork to reach long-term goals set forth in Executive Orders S-3-05 and B-16-2012.

In December 2013, the Board of Port Commissioners approved a Climate Action Plan (CAP) to reduce GHG emissions on District tidelands (District 2013c). The CAP includes a variety of potential GHG reduction policies and measures selected to help meet the District's GHG reduction goals of:

- 10 percent less than 2006 levels by 2020
- 25 percent less than 2006 levels by 2035

Reducing GHG emissions can slow the rate of climate change – thus reducing impacts. The District's reduction measures include those required by state and federal regulations, and District-specific reduction measures focused on the following:

Transportation Land Use Planning: Supporting alternative-fueled technology and implementing management systems that increase the efficiency of transportation and reduce energy consumption.

Energy Conservation and Efficiency: Employing energy strategies in buildings and exterior spaces that save money on utility costs, reduce GHG emissions, and provide other community benefits.

Water Conservation and Recycling: Conserving, treating, and re-using water to minimize GHG emissions and conserve a scarce resource.

Alternative Energy Generation: Meeting energy demands through renewable energy generation.

Waste Reduction and Recycling: Promoting behavioral changes that encourage conserving resources, re-use, and recycling.

Miscellaneous: Supporting other programs and outreach to reduce GHG emissions.

The CAP does not establish a CEQA threshold of significance for GHG emissions. However, CAP reduction measures applicable to this Project include the following:

- EL4: Replace light fixtures in Port-owned facilities with lower energy bulbs such as fluorescent, LEDs or CFLs.
- SW1: Increase the diversion of solid waste from landfill disposal.

The City of San Diego recently adopted a Climate Action Plan and developed draft GHG thresholds of significance in March 2013. The City of San Diego's identified thresholds are as follows:

- A bright-line numeric threshold of 2,500 metric tons of carbon dioxide equivalent ($MTCO_2e$) for land use projects. To provide further guidance for small projects to use when determining when they are below the bright-line threshold, the City of San Diego developed screening criteria for various types of land use projects. The screening criteria level corresponds to approximately 40,000 square feet of stand-alone retail space or 115,000 square feet of office building space.

- An efficiency metric of 4.46 $MTCO_2e$ per Service Population (SP), applicable to residential, commercial, civic, light industrial development, or mixed-use projects that are above the bright-line threshold but are GHG efficient.
- A bright-line numeric threshold for stationary source projects of 10,000 $MTCO_2e$, applicable only to projects with an identified emission point or points, often associated with industrial processes.
- A performance threshold of 16 percent below BAU is appropriate for projects that are above the bright-line threshold but include design features that, in combination with mitigation measures, demonstrate the project's fair share of the reductions consistent with AB 32 (City of San Diego 2013a).

Consistent with State CEQA Guidelines Sections 15064.4(a) and 15064.7(c) and affirmed in *Citizens for Responsible Equitable Environmental Development v. City of Chula Vista*, the District has deemed that the evidence in support of the thresholds drafted by the City of San Diego are appropriate for use in this analysis.

In April 2015, California Governor Brown issued Executive Order B-30-15, which did the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 as a "mid-term" benchmark needed to achieve the 80 percent below 1990 levels by 2050.
- Ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed CARB to update the Scoping Plan to express the 2030 target in terms of metric tons of carbon dioxide equivalent.

CARB expressed its intention to initiate the Scoping Plan update during the summer of 2015, with adoption schedule for 2016. Senate Bill 32, which recently was withdrawn in the Legislature, would have amended AB 32 to codify the 2030 and 2050 Executive Orders' GHG emission reduction targets (40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050). Thus, while the 2030 and 2050 GHG reduction goals of the Executive Orders are envisioned as part of California's overall GHG emission reduction strategy, they have not been codified as law.

Thresholds of Significance

A project may be deemed to have a significant adverse greenhouse gas emissions impact if it results in any of the following:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. The City of San Diego's Bright Line Threshold identified in the Draft Significance Thresholds for Greenhouse Gas Emissions (the project would have a significant impact on GHG emissions if the project would result in more than 2,500 $MTCO_2e$ per year), is applied as a significance threshold to the Project; or

- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Analysis of Environmental Impacts

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Neither the State of California nor the SDAPCD has adopted emission-based thresholds for GHG emissions under CEQA. Thus, as identified above, this analysis relies on the City's Draft Significance Thresholds for Greenhouse Gas Emissions. As indicated in the City's Draft Significance Thresholds for Greenhouse Gas Emissions, any land use development project that would emit more than 2,500 $MTCO_2e$ per year would result in a cumulatively considerable contribution to climate change impacts. According to the City's Draft Significance Thresholds for Greenhouse Gas Emissions, the 2,500 $MTCO_2e$ per year Bright Line Threshold is intended to reduce a certain level of emissions from each new land use project expected to be built by the AB 32 target year of 2020 (City of San Diego 2013a). Emissions resulting from construction of the Project are summed and amortized over the expected life of the project (assumed to be 30 years), consistent with City's guidance.

The main source of GHG emissions associated with the Project would be combustion of fossil fuels during short-term construction activities from the use of heavy construction equipment and construction-related vehicle trips. The construction phase of the Project is temporary, but would result in GHG emissions from the use of heavy construction equipment, haul trucks, and construction-related vehicle trips during the approximately 6- to 10-month construction period. Construction GHG emissions were estimated based on the CalEEMod™ Model. Total GHG emissions associated with construction of the Project are summarized in Table 4-5 (Urban Crossroads 2013a; Appendix A).

Table 4-5. Summary of Construction GHG Emissions (metric tons CO_2e/ year)

	CO_2	CH_4	N_2O	CO_2e
Total Construction Related Emissions	852.24	0.04	--	853.21
Amortized Construction Related Emissions	42.61	0.002	--	42.66
Threshold	2,500 $MTCO_2e$ per year			
Significant Impact	No			

Source: Urban Crossroads 2013a (Appendix A)
Notes: CO_2e = carbon dioxide equivalent
CO_2 = carbon dioxide
CH_4 = methane
N_2O = nitrous oxide
MT = metric tons
-- = negligible emissions

As shown in Table 4-5, the amount of Project-related $MTCO_2e$ construction emissions would be 42.66 $MTCO_2e$ per year, well below the City's Bright Line Threshold of 2,500 $MTCO_2e$ per year. After construction, the SIBLF would continue to generate GHG emissions from visitor vehicles, boats, and electricity use from nighttime lighting. However, because the capacity of the SIBLF would remain the same as existing conditions, there would be no net increase in GHG emissions from vehicles and boats as a result of the Project. Furthermore, it is anticipated that operational emissions from electricity use would be reduced compared to existing conditions because the Project would replace some existing light poles with bollard lighting and would utilize LEDs, resulting in a more energy efficient lighting system. Therefore, construction and operation of the Project would not result in a significant contribution to global climate change, and impacts would be less than significant.

The Project is also consistent with the District's CAP. Although the CAP accounts for continued growth of District operations in an efficient and sustainable manner (meaning it is not a "net zero" GHG emission plan), the Project would not increase the size or capacity of the SIBLF because it proposes to maintain SIBLF as a 10-lane boat launch facility. Thus, net operational emissions would not increase as a result of the Project. The CAP has identified a GHG reduction goal of 25 percent less than 2006 levels by 2035 for new projects. While the CAP does not assign percent reductions to individual businesses or operations, the Project would be consistent with the goals of the CAP because it would reduce emissions from electricity use due to the introduction of bollard lighting and energy-efficient LEDs, and it would not expand or change operational activities associated with the SIBLF. The Project is further consistent with the CAP because it would replace light fixtures in a District-owned facility with lower energy bulbs (i.e., LED light bulbs), consistent with CAP reduction measure EL4, and would beneficially reuse approximately between 1,150 and 1,350 cubic yards of jetty riprap, jetty core fill, and dredged materials, consistent with CAP reduction measure SW1. Therefore, the Project would result in a less-than-significant impact associated with the generation of GHG emissions.

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

AB 32 codified the state's GHG emissions reduction targets for the future and identified the acceptable level of GHG emissions in California. To reach the target level, there will have to be widespread reductions in GHG emissions across California. Some reductions will need to come in the form of changes pertaining to vehicle emissions and mileage standards. Some will come from changes pertaining to sources of electricity and increased energy efficiency at existing facilities. The remainder will need to come from plans, policies, or regulations that will require new facilities to have lower carbon intensities than they have under BAU conditions. At the local level, the District adopted their CAP in December 2013. The CAP identified the District's reduction goals and measures to be implemented to achieve the reduction goals set forth in AB 32 and Executive Order S-03-05. Therefore, both AB 32 and the District's CAP represent the most applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions.

As discussed above, the amount of Project-related $MTCO_2e$ construction emissions would be 42.66 $MTCO_2e$ per year, well below the City's Bright Line Threshold of 2,500 $MTCO_2e$ per year. Furthermore, the Project's operational GHG emissions are anticipated to be reduced compared to existing conditions because the Project would not change the capacity of the SIBLF and bollard lighting and energy-efficient LEDs are proposed. The City's Bright Line Threshold was developed in accordance with the reduction goals set forth in AB 32. Thus, the Project would not impede the implementation of AB 32. The Project is also consistent with the District's CAP. Although the CAP accounts for continued growth of District operations in an efficient and sustainable manner (meaning it is not a "net zero" GHG emission plan), the Project would not increase the size or capacity of the SIBLF because it proposes to maintain the SIBLF as a 10-lane boat launch facility. Thus, net operational emissions would not increase as a result of the Project. The CAP has identified a GHG reduction goal of 25 percent less than 2006 levels by 2035 for new projects. While the CAP does not assign percent reductions to individual businesses or operations, the Project would be consistent with the goals of the CAP because it would reduce emissions from electricity use due to the introduction of bollard lighting and energy-efficient LEDs, and it would not expand or change operational activities associated with the SIBLF. The Project is further consistent with the CAP because it would replace light fixtures in a District-owned facility with lower energy bulbs (i.e., LED light bulbs), consistent with CAP reduction measure EL4, and would beneficially reuse approximately between 1,150 and 1,350 cubic yards of jetty riprap, jetty core fill, and dredged materials, consistent with CAP reduction measure SW1. Therefore, the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs, and the impact would be less than significant.

Furthermore, the Project would comply with Executive Order S-01-07 because it would not conflict with or impede the ability to achieve the targets set forth by S-01-07, nor impact the ability for a reduction in carbon intensity of transportation fuels. The Project does not propose a change in the use of the site that would eliminate the ability to achieve the targets. The Project also does not involve the production of fuel or alternative fuel. It is anticipated that boats and vehicles visiting the Project would use California transportation fuels that would be produced consistent with the S-01-07 targets.

The Project would also be consistent with Executive Orders S-3-05 and B-30-15. Executive Order S-3-05's goal to reduce GHG emissions to 1990 levels by 2020 was codified by the California Legislature in AB 32. As discussed above, the Project is consistent with AB 32 and, therefore, is consistent with that portion of the Executive Order. Executive Order B-30-15 established, among other items, a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 as a "mid-term" benchmark needed to achieve the 80 percent below 1990 levels by 2050. CARB expressed its intention to initiate the Scoping Plan update during the summer of 2015, with adoption schedule for 2016. Senate Bill 32, which recently was withdrawn in the Legislature, would have amended AB 32 to codify the 2030 and 2050 Executive Orders' GHG emission reduction targets (40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050). Thus, while the 2030 and 2050 GHG reduction goals of the Executive Orders are envisioned as part of California's overall GHG emission reduction strategy, they have not been codified as law. Additionally, there is very little guidance on how an individual project could comply with the 2030 and 2050 reduction goals. CARB has not yet issued business as usual projections for 2030 or 2050, which are necessary data points for quantitatively analyzing a CEQA project's consistency with these targets.

Additionally, CARB has not issued detailed guidelines related to compliance. Due to technological shifts required and the unknown parameters or guidance of the regulatory framework, a quantitative analysis of the Project's impacts on the 2030 and 2050 goals is not realistic. However, whether a project would impede California's 2030 and 2050 GHG emission goals depends on the amount of GHG emissions generated by the project and whether a downward trajectory of GHG emissions would be achieved.

Furthermore, studies have shown that in order to meet the 2030 and 2050 targets, aggressive technologies in the transportation and energy sector, including electrification and decarbonization of fuel, will be required. In CARB's 2008 Scoping Plan, CARB acknowledged that the "measures needed to meet the 2050 goal are too far in the future to define in detail" (CARB, 2008 Scoping Plan, p. 117). In the 2014 First Update to the Scoping Plan (First Update), CARB generally described the type of activities that would be required to achieve the 2050 targets: "energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately" (CARB, First Update, p. 32). More recently, CARB has noted that the 40 percent goal set by Executive Order B-30-15 is achievable and that CARB was accelerating cuts to carbon output through 2030 to reduce continued temperature rise and shifting infrastructure priorities to protect against future climate change related impacts (CARB, Frequently Asked Questions About Executive Order B-30-15: 2030 Carbon Target and Adaptation, p. 1). An emphasis on public transit and sustainable communities will be required to achieve the 2030 and 2050 emission reduction goals (CARB, First Update, pp. 46, 49-50).

Statewide efforts, discussed below, are underway to facilitate California's achievements with the Executive Orders' 2030 and 2050 goals. These efforts are under the control of other agencies such as CARB. In assessing the Project's impacts, it is appropriate to consider the GHG control measures that other agencies have adopted or which are listed in the Scoping Plan and the First Update. Additionally, it is reasonable to expect that these agencies will implement such measures and promulgate regulations to decrease California's overall GHG emissions. Consequently, it is reasonable to anticipate that the Project's emission levels would decrease as a result because users of the Project site and the District, as the Project proponent, would be required to comply with future laws and regulations. In other words, the Project's GHG emissions at build-out would represent the maximum emissions inventory and as regulations – such as regulations that control fuel and energy – are passed and imposed on the Project and users of the same, the total Project GHG emissions would decrease.

The Scoping Plan recognizes that AB 32 establishes an emissions reduction trajectory that will allow California to achieve the more stringent 2050 target: "These [greenhouse gas emission reduction] measures also put the state on a path to meet the long-term 2050 goal of reducing California's greenhouse gas emissions to 80 percent below 1990 levels. This trajectory is consistent with the reductions that are needed globally to stabilize the climate." (CARB, Scoping Plan, p. 15). Also, the First Update provides that it "lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," and many of the emission reduction strategies recommended by CARB would serve to reduce the Project's post-2020 emissions level to the extent applicable by law (CARB, First Update, pp. 4, 32-33, 94-00 [recent studies show that achieving the 2050 goal will require that the "electricity sector will have to be essentially zero carbon; and that electricity or hydrogen will have to power much of the transportation sector, including almost all passenger vehicles.”]). CARB’s recommended reduction strategies that may result in future Project-related GHG reductions include, but are not limited to, the following:

- Energy Sector: Additions to California's renewable resource portfolio would favorably influence the Project’s emissions level as the electricity that would serve the Project site would include more renewable energy (CARB, First Update, pp. 40-41).

- Transportation Sector: Anticipated improved vehicle efficiency, zero emission technologies, lower carbon fuels and improvements to existing transportation systems would all serve to reduce the Project’s future GHG emissions as vehicles and boats visiting the site would produce less GHG (CARB, First Update, pp. 55-56).

- Waste Management Sector: Plans to further improve recycling and reduction of solid waste would also reduce the Project’s future GHG emissions (CARB, First Update, p. 69).

In addition to CARB’s efforts, in January 2015, during his inaugural address, Governor Jerry Brown expressed a commitment to achieve "three ambitious goals" that he would like to see accomplished by 2030 to reduce the state's GHG emissions (1) increasing the state's Renewable Portfolio Standard from 33 percent in 2020 to 50 percent in 2030; (2) cutting the petroleum use in cars and trucks in half; and (3) doubling the efficiency of existing buildings and making heating fuels cleaner. These expressions of Executive Branch policy may be manifested in adopted legislative or regulatory action through the state agencies and departments responsible for achieving the California's environmental policy objectives, particularly those relating to global climate change.

Recent studies have also shown that the state's existing and proposed regulatory framework will allow the state to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050 (Energy and Environmental Economics (E3), "Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios" (April 2015); Greenblatt, Jeffrey, Energy Policy, "Modeling California Impacts on Greenhouse Gas Emissions" (Vol. 78, pp. 158-172) (CARB, California Energy Commission, California Public Utilities Commission, and the California Independent System Operator engaged E3 to evaluate the feasibility and cost of a range of potential 2030 targets along the way to the state's goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. With input from the agencies, E3 developed scenarios that explore the potential pace at which emission reductions can be achieved as well as the mix of technologies and practices deployed. E3 conducted the analysis using its California PATHWAYS model. Enhanced specifically for this study, the model encompasses the entire California economy with detailed representations of the buildings, industry, transportation, and electricity sectors.)). Even though these studies did not provide an exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies and regulations could allow California’s emissions to remain low through 2050, allowing the state to meet the 2030 and 2050 goals. Some of these measures are likely to reduce the Project's GHG emissions as well. For example, the vehicles traveling to and from the Project site will continue to be subject to more stringent fuel standards, or future requirements for electrified engines or fuel cell technology, as determined by CARB. Additional more stringent regulations for boats and other waterborne vessels may also be developed. Therefore, by simply complying with future regulations, the Project's post-2020 emission trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets.

Additionally, the Project's GHG emissions are very minor at 42.66 MTCO$_2$e per year. The 900 MTCO$_2$e per year threshold is the lowest, most conservative Bright Line threshold that has been referenced consistently by other lead agencies throughout the state. It was first introduced in the California Air Pollution Control Officers Association (CAPCOA) White Paper (2008), and was developed to ensure capture of 90 percent or more of likely future discretionary developments. CAPCOA acknowledged that the 900 MTCO$_2$e per year was set low enough to capture most future developments that would be needed to accommodate statewide population growth and job growth, but set high enough to exclude small developments that would only contribute a small fraction of statewide GHG emissions in order to achieve the state's GHG reduction targets. Here, the District used the City's Draft Bright Line Threshold of 2,500 MTCO$_2$e per year (for non-stationary sources). The Project's GHG emissions are well below this threshold and the CAPCOA 900 MTCO$_2$e per year threshold. Furthermore, operational emissions from electricity use would be reduced compared to existing conditions because the Project would replace some existing light poles with bollard lighting and would utilize LEDs, resulting in a more energy efficient lighting system and an overall downward trajectory of GHG emissions associated with operation of the Project site when compared to existing conditions.

Taking into account potential measures that are currently being contemplated by the state to meet the 2030 and 2050 reduction goals, and because the Project does not represent a significant source of GHG emissions, would comply with future regulations necessary to meet the 2030 and 2050 reduction goals, and demonstrates a downward trajectory in Project-related GHG emissions, it is not anticipated to impede the implementation of the Executive Orders and would comply with the same. Therefore, the Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing emissions of GHGs, and the impact would be less than significant.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

VIII. HAZARDS AND HAZARDOUS MATERIALS

Environmental Setting

The Project site is located on the San Diego Bay. SIBLF has been at the location since 1956. The Project site is not located on any federal, state, or local environmental databases (California Department of Toxic Substances Control 2014).

Thresholds of Significance

A project may be deemed to have significant adverse hazards and hazardous materials impact if it results in any of the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or,
- Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

<u>Analysis of Environmental Impacts</u>

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. Construction of the Project would require landside and waterside earthwork that would include grading, excavation, pile driving, and other standard construction practices. Additionally, partial removal of the existing rock jetties would be required to install the new bulkhead walls. Some of these activities are expected to require routine use, transport, or disposal of potentially hazardous materials typically used during construction activities such as oils, gasoline, solvents, concrete and asphalt products, and other potentially hazardous materials. These activities would take place within the bay and upland areas within the SIBLF, and would be of a relatively short duration. Such transport, use, and disposal would be compliant with applicable regulations, such as the Resource Conservation and Recovery Act and U.S. Department of Transportation Hazardous Materials Regulations. Furthermore, as described in Title 49 of the Code of Federal Regulations and implemented by Title 13 of the California Code of Regulations (CCR), the U.S. Department of Transportation Office of Hazardous Materials Safety has established strict regulations for the safe transportation of hazardous materials. It is possible that hazardous materials may be brought to and from the Project site during construction of the Project. Appropriate documentation for all hazardous materials and waste that is transported in connection with Project activities would be provided as required for compliance with existing hazardous materials regulations. Hazardous materials and wastes produced on site during construction are subject to requirements associated with accumulation time limits, proper storage locations and containers, and proper labeling. Compliance with applicable regulations would reduce impacts associated with the use, transport, and storage of hazardous materials during construction of the Project.

Construction of the Project would disturb the sediments contained within the jetties and within the bottom of the basin. Two studies were performed to characterize the sediments in the Project area. The first study, *Shelter Island Launch Basin Sediment Quality Investigation* (TDI 2013a, Appendix B-1) analyzed sediment core samples from the Project footprint for a full suite of chemicals of concern including metals, chlorinated pesticides, polychlorinated biphenyls (congeners), polycyclic aromatic hydrocarbons, organotins (chemical compounds based on tin with hydrocarbon substituents), total petroleum hydrocarbons (TPH) and general chemistry (total organic carbon and total solids) using EPA approved methods. Physical testing included grain size analysis on a singular composite sample. Sampling occurred in March 2013 at six locations within the breakwater of the SIBLF. Results of chemical analyses of the Project area sediments were compared to effects range-low (ERL) and effects range median (ERM) values developed as part of the National Status and Trends program, and are currently promulgated by NOAA as Screening Quick Reference Tables. Chemical and physical laboratory testing data reports are included as attachments to Appendix B-1.

Results of chemical and physical testing in the SIBLF Project area indicate concentrations of organic and inorganic contaminants are below corresponding ERL screening levels for most compounds tested. Inorganic contaminants exceeding the respective ERL include copper and zinc. Organic contaminants exceeding the corresponding ERL screening value include Total Aroclors (a trade name for polychlorinated biphenyls [PCBs] manufactured by Monsanto Corporation), 4-4'-dichlorodiphenyldichloroethylene (DDE), and total detectable dichlorodiphenyltrichloroethanes (DDTs). Physical and chemical analysis suggests the SIBLF sediments are comprised of silts and clay, and do exhibit slightly elevated levels of contaminants typically associated with the activities of the site. These contaminants include the metals copper and zinc. Copper is often used in boat bottom paints and can be scraped off during docking or trailering activities, and then deposited in the basin sediments. Zinc is a common constituent in many sacrificial anodes used to inhibit boat motor corrosion, and this is the likely source of zinc in the SIBLF sediments. Organics contaminants were generally low with the exception of Aroclor 1254 and Aroclor 1260 (trade names for polychlorinated biphenyls [PCBs] manufactured by Monsanto Corporation). Aroclor 1254 and Aroclor 1260 are ubiquitous in southern California embayments, and are often associated with the manufacturing of electrical components and parts. The only chlorinated pesticide constituent detected and above ERL screening values was 4-4'-DDE, a DDT derivative. DDT and derivatives are a persistent problem in San Diego Bay, and are often introduced through stormwater inputs from upland sources. However, no ERM screening criteria were exceeded for any analytes tested, and in cases where the ERL was exceeded for a particular chemical of concern, exceedances were marginal, and well below the corresponding ERMs. Because no ERM screening criteria were exceeded, these sediments are not considered to be hazardous and disturbance of these sediments would have no effect on the public or environment during construction or operation, as further detailed below.

Subsequent to the Tierra Data study, sediments in the SIBLF were analyzed to determine if they met landfill disposal parameters. Sediments from within the basin and rock jetties were sampled by AMEC in October 2013 (AMEC 2015, Appendix B-4). The analytical chemistry parameters analyzed for this study include total solids, extended range TPH and metals regulated under Title 22 of the California Code of Regulations. Laboratory analytical reports are included in Appendix B-4. The results of the sampling found that some samples within the rock jetties contained elevated lead and TPH (AMEC 2015). These sediments met the disposal acceptance criteria for the Copper Mountain Landfill in Arizona.

As identified above, during construction, these sediments would be disturbed. To prevent the release of these materials into the San Diego Bay, a silt curtain would be installed around the area of disturbance during the Project construction period. Disturbed sediments would also be contained by the temporary cofferdam, which would allow the new launch ramp to be constructed in dry conditions. It is anticipated that between 1,150 and 1,350 cubic yards of the jetty riprap, jetty core fill, and dredged materials would be beneficially reused on the site for various Project improvements. The remaining riprap, jetty core fill, and dredged material (approximately between 13,150 and 13,350 cubic yards) would be disposed at a licensed landfill (Copper Mountain Landfill) with controls in place to prevent the leaching of hazardous materials into the environment. All trucks transporting the soil and sediment to the landfill are required by the California Highway Patrol to be covered, so the Project would not result in a significant hazard to the public or the environment through the transport of the soil and sediment. Therefore, construction of the Project would not result in significant impacts associated with the use, transport, or storage or hazardous materials.

The SIBLF is currently and would continue to operate as a boat launching facility, which includes a boat launching ramp, jetties, and floating docks that are available to the public. Fueling and maintenance of boats are not allowed at the facility, and the only hazardous materials are the fuel and oils/lubricants in use on the boats and towing vehicles. Compliance with applicable federal, state, and local laws regulating these materials would ensure that a significant hazard to the public or environment related to the transport and use of hazardous materials does not occur. Impacts would be less than significant.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐

Refer to Checklist response VIII. a).

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

No existing or proposed school is located within a 0.25 mile radius of the Project site. Cabrillo Elementary School, located at 3120 Talbot Street, is the nearest school to the Project site. This school is located approximately 0.7 mile northwest of the Project site. Because there are no schools located within 0.25 mile of the Project site, no impact would occur from construction or operation of the Project.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
d) Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

According to the Department of Toxic Substances Control's Hazardous Waste and Substance Site (Cortese) List, the Project site does not contain any underground storage tanks, hazardous waste generators, landfills, or other sites included on a list of Government Code section 65962.5 (California Department of Toxic Substances Control 2014). Because the Project site is not listed on the Cortese List, no impact associated with this issue would occur from construction or operation of the Project.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐

The nearest public use airport to Project site is the San Diego International Airport, located approximately 2 miles northeast of the Project site. Airport Influence Area boundaries around the San Diego International Airport have been adopted by San Diego County Regional Airport Authority in its Airport Land Use Compatibility Plan (ALUCP). Based on the ALUCP, the Project is not located within Airport Influence Area for San Diego International Airport (SDCRAA 2014). Shelter Island is located within Review Area 2. Airport Land Use Commission review is required for land use plans and regulations within Review Area 2 proposing increases in height limits and for land use projects that:

- Have received from the FAA a Notice of Presumed Hazard, a Determination of Hazard or a Determination of No Hazard subject to conditions, limitations or marking and lighting requirements and/or
- Would create any of the following hazards:
  - Glare
  - Lighting
  - Electromagnetic interference
  - Dust, water vapor, and smoke
  - Thermal plumes
  - Bird attractants

Because the Project is not located within an airport influence area and would not create an increase in height limits or other hazards required for Airport Land Use Commission review, construction and operation of the Project would not result in any additional safety hazards for users of the SIBLF or those working in the area (refer to Checklist response I. d). Therefore, impacts would be less than significant.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐

The nearest private use airport to Project is NAS North Island, which is located approximately 0.8 miles to the southeast of the Project site. Although the Project site is in proximity to NAS North Island, the Project would continue existing uses (i.e., boat launching facility) and would not change or create any new uses at the site. No residences exist or are proposed on the Project site. Therefore, implementation of the Project would not result in any new Project-related safety hazards for users of the SIBLF or those working in the Project area.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
g) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐

During construction, the west driveway to the existing boat trailer parking lot (east of the launch ramp) and a small portion of the west portion of the parking lot (up to 15 parking spaces) would be closed. These spaces would be used for a staging and laydown area. Site-specific activities, including temporary construction activities, are reviewed and approved on a project-by-project basis by the District when development plans are submitted. The District ensures that emergency access is maintained during construction through its project review and approval process. Thus, emergency access would be maintained during construction of the Project. After construction, the equipment would be removed and access to the driveway and parking would be restored. Also, as described in Checklist response XVI. e) below, the addition of traffic from haul trucks would result in a significant impact at the Rosecrans Street/Lytton intersection during the AM and PM peak hours because there would be an increase of delay of more than 1.0 second in the AM peak hours when the intersection is at LOS F and an increase of delay of more than 2.0 seconds in the PM peak hours when the intersection is at LOS E (Urban Crossroads 2013c, Appendix E). This delay could also affect emergency response times if haul trucks are used in the AM and PM peak hours. Implementation of Mitigation Measure T-1 would reduce this impact to a less-than-significant level.

Operation of the Project would not include any characteristics (e.g., permanent road closures, long-term obstruction of road access) that would physically impair or otherwise interfere with emergency response or evacuation in the Project vicinity. No impact would occur during operation of the Project.

h) Would the project expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

The Project site is located in an urbanized area removed from wildlands. As such, construction and operation of the Project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires. No impact would occur.

Required Mitigation Measures

T-1 Construction truck traffic hauling sediment or materials to or from the Project site shall not occur between the AM peak hours of 7 a.m. and 9 a.m., and shall be limited to no more than five loads per hour during the PM hours of 4 p.m. to 6 p.m. The Project Applicant shall include this restriction in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval. The contractor shall maintain hauling/delivery logs on the site for the District's review, and the Project Applicant shall submit a copy of the contractor's hauling/delivery logs to the District's Environmental and Land Use Management department for review.

IX. HYDROLOGY AND WATER QUALITY

Environmental Setting

The Project site is located on and adjacent to the San Diego Bay. The Project site is subject to wave forces from tides, winds, boats and ships, and periodic sea-level rise. Tidal data from the National Oceanic and Atmospheric Administration (NOAA) indicate that the highest recorded sea level at the nearest gauge (La Jolla Pier) was 7.81 feet above the mean lower low water (MLLW). On average, the lowest tide is about 1.16 feet MLLW and the highest tide is about 7.1

feet MLLW. Tides can be affected by large-scale Pacific Ocean-wide warming periods related to the El Niño weather phenomenon. During these events, average sea levels in southern California can rise up to 0.5 foot above normal, and severe winter storms can also produce storm surge and storm waves.

The SIBLF area is exposed to wind-driven waves from the south through the main harbor entrance and from the east from the Embarcadero between north Island and Harbor Island. Boat- or ship-induced waves are also present in the Project area. Within San Diego Bay, the Navy's sea tractor tug likely generates the normal worst-case ship-induced wave, with measured waves approaching 3 feet in height (Terra Costa 2012).

The Project site is within a 100-year flood plain. The shoreline portion of the SIBLF is located in Zone X, which is an area outside of the 500-year floodplain. The bay itself is located in Zone AE, which is a special flood hazard area inundated by the 100 year flood (FEMA 2012). In addition to general flooding, tsunamis are considered likely hazards at the Project site. The Project site is located within the tsunami inundation area for San Diego Bay. This inundation area considers potential tsunamis generated by local sources as well as distant sources. Recently, tsunamis generated by distant sources such as the 2010 Chilean earthquake and the 2011 Honshu, Japan earthquake have caused damage within San Diego Bay, created by rapid changes in water surface elevations as the tsunami waves have passed into and out of the bay (Terra Costa 2012).

During the geotechnical investigation, groundwater was encountered in the onshore borings at a depth of approximately 7 feet below ground surface (2 feet MLLW). The depth to groundwater is likely directly related to the level of water within the bay and is expected to vary with the tides. The geotechnical investigation estimated that the groundwater table will vary between a maximum groundwater elevation corresponding to the highest tide elevation at 7.8 feet MLLW and a minimum groundwater elevation corresponding to the lowest tide at minus 2.2 feet MLLW (Terra Costa 2012; Appendix C).

Thresholds of Significance

A project may be deemed to have a significant adverse hydrology and water quality impact if it results in any of the following:

- Violate any water quality standards or waste discharge requirements;
- 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);
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site;
- Create or contribute runoff water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff;

- Substantially degrade water quality;
- 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;
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or,
- Be subject to inundation by seiche, tsunami, or mudflow.

Analysis of Environmental Impacts

a) Would the project violate any water quality standards or waste discharge requirements?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. Construction of the Project would require landside and waterside earthwork that would include grading, excavation, pile driving, and other standard construction practices. Additionally, partial removal of the existing rock jetties would be required to install the new bulkhead walls. Because the Project is limited to modifications to the existing SIBLF, it would not substantially alter drainage patterns or stormwater flows on the Project site. During operation of the Project, stormwater will be contained on site as required by the Jurisdictional Urban Runoff Management Program (JURMP), which has been developed in accordance with the requirements of the municipal storm water NPDES permit issued by the San Diego RWQCB, the Port Watershed Urban Runoff Management Program (WURMP), and other applicable District standards and regulations. Operation of the Project would not result in significant changes in absorption rates, drainage patterns, or the rate and amount of surface runoff because it would redevelop an existing developed site. Therefore, operation of the Project would not violate any water quality standards or waste discharge requirements.

The Project would require the handling and disposal of hazardous materials including oils, gasoline, solvents, concrete and asphalt products, and other potentially toxic materials during construction activities. Use of these materials could contribute to polluted runoff entering the stormwater system or the bay. As part of District's project review and approval requirements, the Project would be required to demonstrate compliance with the District's existing stormwater regulations and standards to ensure that there would be no violation of water quality standards or waste discharge requirements. Because these are requirements implemented by the District as part of their stormwater program, the handling storage, and disposal of hazardous materials would not increase runoff pollution into San Diego Bay.

The sediments in the Project area were sampled in two studies to assess sediment quality of the material to be removed as part of the Project (TDI 2013a, Appendix B-1 and AMEC 2015, Appendix B-4). These studies are summarized in the Checklist response for VIII. a), above. No ERM screening criteria were exceeded for any of the analytes tested, and in cases where the

ERL was exceeded for a particular chemical of concern, exceedances were marginal and well below the ERM (TDI 2013a). Because no ERM screening criteria were exceeded, these sediments are not considered to be hazardous. As such, disturbance of these sediments would not violate any water quality standards or waste discharge requirements during construction or operation, as further detailed below.

Sediments within the SIBLF basin and rock jetties were further analyzed in a second study to determine if they met landfill disposal parameters (AMEC 2015, Appendix B-4). The analytical chemistry parameters analyzed for this study include total solids, extended range TPH and metals regulated under Title 22 of the California Code of Regulations. The results of the sampling found that some samples within the rock jetties contained elevated lead and TPH, consistent with the site's ongoing use as a boat launch facility (AMEC 2015). These sediments met the disposal acceptance criteria for and would be disposed of at the Copper Mountain Landfill in Arizona.

As identified above, during construction, these sediments would be disturbed. To prevent the release of these materials into the San Diego Bay, a silt curtain would be installed around the area of disturbance during the construction period, as part of the design of the Project. Disturbed sediments would also be contained by the use of a temporary cofferdam, which would allow the new launch ramp to be constructed in dry conditions. It is anticipated that between 1,150 and 1,350 cubic yards of the jetty riprap, jetty core fill, and dredged materials would be beneficially reused on the site for various Project improvements. The remaining riprap, jetty core fill, and dredged material (approximately between 13,150 and 13,350 cubic yards) would be disposed of at a licensed landfill (Copper Mountain Landfill) with controls in place to prevent the leaching of hazardous materials into the environment. In addition, construction of the new concrete launching ramp would require installation of a temporary cofferdam to allow the ramp to be constructed in dry conditions. The area behind (landward of) the cofferdam would be dewatered during construction in compliance with regulatory requirements, such as those of the San Diego RWQCB. Therefore, because the Project includes construction and disposal methods to contain sediments during construction and would be subject to all applicable regulatory requirements, the Project would not violate any water quality standards or waste discharge requirements. Impacts would be less than significant.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Would the project 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)?	☐	☐	☐	☒

The Project is located on and adjacent to the San Diego Bay. The Project does not propose to use groundwater resources or to otherwise affect any groundwater resources that are used for water supply. The Project would not result in an increase in impervious surface area on the Project site, so it would not interfere with the existing level of groundwater recharge. Therefore, the Project would not deplete groundwater supplies or interfere substantially with groundwater recharge. No impact would occur as a result of construction or operation of the Project.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. Construction of the Project would involve landside and waterside earthwork that would include grading, excavation, pile driving, and other standard construction practices. However, because the Project is limited to modifications to the existing SIBLF, it would not substantially alter drainage patterns or storm water flows on the Project site. As discussed above, the Project would not result in significant changes in absorption rates, drainage patterns, or the rate and amount of surface runoff. In addition, no waterways flow through the Project site; therefore, the alteration of a stream or river would not occur.

During construction, the Project would be required to comply with the BMPs contained in its SWPPP, a regulatory requirement of the NPDES permit issued by the San Diego RWQCB, which would identify the BMPs required to properly control erosion and siltation impacts during construction of the Project. These BMPs may include, but not be limited to, gravel asphalt surfacing, equipment wash-out areas, and haul truck covers. During operation, disturbance of exposed soil would not occur because all activity would be on paved areas or on the waters of the bay. Therefore, impacts related to changes in the drainage pattern, including changes related to erosion and/or siltation, would be less than significant.

d) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Refer to Checklist response IX. c) above.

e) Would the project create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Refer to Checklist response IX. a) above. Implementation of the Project would not result in significant changes in absorption rates, drainage patterns, or the rate and amount of surface runoff because it would redevelop an existing developed site. Therefore, the Project would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Impacts would be less than significant.

f) Would the project otherwise substantially degrade water quality?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Refer to Checklist response IX. a) above.

g) Would the project 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?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

According to the FEMA's Flood Insurance Rate Map (FIRM), the shoreline portion of the Project site is located in Zone X, which is an area outside of the 500-year floodplain. The San Diego Bay portion of the Project site is located in Zone AE, which is a special flood hazard area inundated by a 100-year flood (FEMA 2012). The Project does not propose the construction of housing and would therefore not result in the placement of housing within a 100-year flood hazard area. As such, no impact would occur from implementation of the Project.

h) Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Refer to Checklist response IX. g) above. The Project involves the repair, maintenance, and replacement of several elements comprising the existing SIBLF. The proposed improvements would occur within a 100-year flood hazard area. However, the Project would not construct any new structures that would impede or redirect flood flows. Because the Project would only modify elements comprising the existing SIBLF, flood flows would not be impeded or redirected with implementation of the Project. Therefore, impacts would be less than significant.

i) Would the project expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

There is a low risk of flooding at the Project site from a levee or dam failure because the nearest reservoirs are the Murray Reservoir and the Sweetwater Reservoir, which are located approximately 12 miles and 13 miles, respectively, from the Project site (City of San Diego 2008). Furthermore, the Project is limited to modifications to an existing SIBLF and does not propose an increase in capacity that would expose additional people or structures to flooding. Therefore, implementation of the Project would not expose people or structures to a significant risk of loss, injury or death involving flooding as a result of the failure of a levee or dam. Impacts would be less than significant.

A California judicial decision, *Ballona Wetland Foundation v. City of Los Angeles* 201 Cal App. 4th 455 2011, holds that a lead agency is not required to analyze the impacts of sea level rise on a project, because CEQA does not require an analysis of "impacts of the environment on a project." However, the District has included an analysis of sea level rise as it relates to global climate change because the Project would be located in a water area that, while speculative, could be affected by flooding from sea level rise. It should be noted that the District is developing guidance for future planning and development related to sea level rise. However, because this guidance has not been finalized, this analysis relies on the California Climate Change Center's study *Climate Change-Related Impacts in San Diego Region by 2050* (California Climate Change Center 2009). This study modeled three climate change scenarios to develop a range of potential long-term sea level rise values in San Diego County. The mean sea level rise value estimates range from approximately 12 to 18 inches by 2050. The existing elevation of the Project site is approximately 10 feet (120 inches) above Mean Lower Low Water (MLLW) for the existing breakwater jetty and 8 feet (96 inches) above MLLW for the top of the existing boat launch ramp. The highest high tide recorded for San Diego Bay was 7.79 feet (93.5 inches) above MLLW. Assuming a conservative sea level rise of 18 inches by 2050, the maximum water line is estimated to be 9.29 feet (111.5 inches) above MLLW.

Because the existing elevation of the Project site is 8 to 10 feet (96 to 120 inches) above MLLW, projected sea level rise could affect the Project. Design recommendations from the Geotechnical Study (Terra Costa 2012, Appendix C) have been incorporated into the Project to accommodate for sea level rise and the potential for increased wave forces from more intense storms on the proposed SIBLF structures. These design measures include increasing the height of the new breakwater to an elevation of 11 feet (132 inches) above MLLW and the top of the new boat launch ramp to an elevation of 10 feet (120 inches) above MLLW. Because the Project would include design recommendations to accommodate for sea level rise, the Project would not be exposed to significant loss from flooding due to sea level rise. Impacts would be less than significant.

j) Would the project be subject to inundation by seiche, tsunami, or mudflow?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

The Project site would not be subject to inundation by seiche as this phenomenon is typically associated with land-locked bodies of water, none of which occur near the Project site. The Final Draft San Diego County Multi-Jurisdiction Hazard Mitigation Plan identifies that the Project site is located in area with a low risk of flooding from dam failure or rail-induced landslide. Typically, mudflows occur when unvegetated soils on steep slopes become heavily saturated. The area surrounding the Project site is relatively flat and contains developed or vegetated surfaces. Thus, the Project would not be affected by mudflows. The Project site is located on the San Diego Bay, which does present some risk for tsunami events. The State of California Tsunami Inundation Map for Emergency Planning indicates that the Project site is located within the tsunami inundation area for the San Diego Bay (Terra Costa 2012). This inundation area considers potential tsunamis caused by both local and distant sources. For this reason, the Project site is considered at risk for tsunami-related flooding due to distant and local fault rupturing and/or subaqueous land sliding offshore of southern California and/or distant sources. A site-specific geotechnical investigation recommended design features that would best protect the SIBLF against inundation by tsunami (Terra Costa 2012). These design recommendations, described above, include increasing the height of the new breakwater and boat launch ramp and have been incorporated into the Project. Therefore, impacts related to inundation by tsunami would be less than significant.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

X. LAND USE AND PLANNING

<u>Environmental Setting</u>

The Project site is located within the Bay Corridor subarea of Planning District 1, Shelter Island/La Playa, of the certified PMP. This subarea (subarea 13) is the largest in Planning District 1 and allows for mixed uses including hotels, marinas, restaurants, and various public recreational facilities including parks, beaches, fishing piers and boat launching facilities. The specific land and water use designations for the Project site include Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade (District 2013b).

Figure 4 in Section 2 shows the existing land uses surrounding the Project site. Adjacent to the SIBLF, there are approximately 113 oversized parking spaces for vehicles with boat trailers and approximately 239 standard vehicles parking spaces for general use; a single-story comfort station building (restrooms); and a small single-story building of the Outboard Boating Club of San Diego, Inc. Kayak loading/unloading areas exist adjacent to the boat launching area. The Project would not permanently change the capacity or use of the SIBLF. Therefore, no changes to parking or ancillary facilities are proposed.

The neighboring areas are recreational park areas (Shelter Island Shoreline Park) with landscaped areas, walkways, outdoor park furniture and other amenities. Beyond the park areas there are hotels, restaurants, and boat repair facilities. The nearest hotel is the Bay Club Hotel and Marina approximately 300 feet northwest of the Project site (Section 2, Figure 4).

<u>Thresholds of Significance</u>

A project may be deemed to have a significant adverse land use impact if it results in any of the following:

- Physically divide an established community;
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the Port Master Plan, general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or,
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

<u>Analysis of Environmental Impacts</u>

a) Would the project physically divide an established community?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Implementation of the Project would not divide an established community because the Project would be completely contained within the existing SIBLF. No established communities exist on the Project site or in the immediate Project area. The Project site is currently bordered by commercial, marine-related, and recreational land uses. Therefore, no impact would occur.

		Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the Port Master Plan, general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

The applicable land use plans governing the Project site are the certified PMP, including the PMP Precise Plan. The Project site is located within the Bay Corridor subarea of Planning District 1, Shelter Island/La Playa of the certified PMP. The land and water use designations underlying the Project site are Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade. The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. The Project would not change the existing land and water uses identified in the PMP because the Project is compatible with the Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade land and water use designations. As such, the Project would not conflict with the land and water use designations of the PMP. Table 4-6 summarizes the Project's consistency with relevant plans and policies. As detailed in the table below, the Project would be consistent with the PMP, the California Eelgrass Mitigation Policy, and the Coastal Act. Accordingly, the Project would not conflict with the Chapter 3 or Chapter 8 policies of the Coastal Act.

Pursuant to Chapter 8 of the Coastal Act, the Project involves a PMPA because it is considered an appealable development that requires sufficient detail to be able to determine its consistency with the policies of Chapter 3 of the Coastal Act. The PMPA includes a detailed description of the Project in the Planning District 1 subarea text. The PMPA includes updating the Shelter Island Planning District 1 text and updating the Shelter Island Planning District 1 Project List table (Table 7) to include the Project. The Project also requires the issuance of an appealable Coastal Development Permit in compliance with the Coastal Act. Because the Project is consistent with the goals and objectives of the PMP and the policies of Chapters 3 and 8 of the Coastal Act (see Table 4-6), the Project would not conflict with any applicable land use plan, policy, or regulation. In addition, approval of the PMPA and subsequent issuance of an appealable Coastal Development Permit in compliance with the Coastal Act would further ensure that the Project would not conflict with any applicable land use plan, policy, or regulation. Impacts would be less than significant.

Checklist response VII. b) above discusses the Project's consistency with the District's CAP.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
Port Master Plan	
Port Master Plan: The Port District's Port Master Plan provides the official planning policy for the physical development of the tidelands and submerged lands conveyed in trust to the District.	The underlying land and water use designations for the Project site are Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade. The Project is consistent with these land and water use designations because after implementation it would a boat launching facility. The Project would provide accessibility for users with disabilities, provide more navigable water area within the breakwater to launch and retrieve boats, to improve boat maneuverability, to reduce boat congestion, and to improve safety. An increase in the operational capacity of the SIBLF would not occur.
Port Master Plan Goal I: Provide for the present use and enjoyment of the Bay and tidelands in such a way as to maintain options and opportunities for future use and enjoyment.	The Project would provide greater opportunities for use and enjoyment of the bay because it would add accessibility for users with disabilities and improve safety for all users. It would not preclude future use and enjoyment of the bay and tidelands because it would be constructed within the same footprint and would not increase the footprint of the SIBLF. Therefore, the Project is consistent with Goal I of the Port Master Plan.
Port Master Plan Goal II: The Port District, as trustee for the people of the State of California, will administer the tidelands so as to provide the greatest economic, social, and aesthetic benefits to present and future generations.	The Project would allow for greater accessibility for users with disabilities and would provide increased safety at the SIBLF, whose users include commercial and recreational fishermen and boaters. The Project would provide social and economic benefits by improving an existing public boat launching facility. Therefore, the Project is consistent with Goal II of the Port Master Plan.
Port Master Plan Goal IV. The Port District, in recognition of the possibility that its actions may inadvertently tend to subsidize or enhance certain other activities, will emphasize the general welfare of State-wide considerations over more local ones and public benefits over private ones. - Foster and encourage the development of commerce, navigation, fisheries and recreation by the expenditure of public moneys for the preservation of lands in their natural state, the reclamation of tidelands, the construction of facilities, and the promotion of its use.	The SIBLF would continue to be used by commercial and recreational vessels and boaters. The Project would provide increased access for users with disabilities and increased safety at the SIBLF. Overall, the Project would improve an existing public boat launching facility. Therefore, the Project is consistent with Goal IV of the Port Master Plan.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
Port Master Plan Goal V. The Port District will take particular interest in and exercise extra caution in those uses or modifications of the bay and tidelands that constitute irreversible action or loss of control. - Bay fills, dredging, and granting of long-term leases will be taken only when substantial public benefit is derived.	The Project involves repair, maintenance, and replacement of several elements comprising the existing SIBLF, which would require dredging and construction within the bay. The Project would result in a substantial public benefit by improving access for disabled users and the overall safety of the SIBLF. Overall, the Project would improve an existing public boat launching facility. Therefore, the Project would be consistent with Port Master Plan Goal V.
Port Master Plan Goal VII. The Port District will remain sensitive to the needs, and cooperate with adjacent communities and other appropriate governmental agencies in bay and tidal development.	The Project is consistent with the surrounding community uses and would not disproportionately affect surrounding jurisdictions. Therefore, the Project would be consistent with Goal VII of the Port Master Plan.
Port Master Plan Goal VIII. The Port District will enhance and maintain the Bay and tidelands as an attractive physical and biological entity. - Each activity, development, and construction project should be designed to best facilitate its particular function, which function should be integrated with and related to the site and surroundings of the activity. - Establish guidelines and standards facilitating the retention and development of an aesthetically pleasing tideland environment free of noxious odors, excessive noise and hazards to the health and welfare of the people of California.	The Project involves improvements to an existing boat launching facility. The improvements will facilitate the function of the existing SIBLF by providing safety improvements and greater access for the disabled. Implementation of the Project, with the inclusion of appropriate mitigation measures, would not significantly affect any biological community, existing view corridors, conflict with the visual character of the community, result in excessive noise or odor, or cause hazards to the health and welfare of the people of California. Therefore, the Project would be consistent with Goal VIII of the Port Master Plan.
Port Master Plan Goal IX. The Port District will insure physical access to the Bay except as necessary to provide for safety and security, or to avoid interference with waterfront activities.	The Project would improve physical access to the SIBLF by providing safety improvements and greater access for the disabled. Therefore, the Project would be consistent with Port Master Plan Goal IX.
Port Master Plan Goal X. The quality of water in San Diego Bay will be maintained at such a level as will permit human water contact activities.	Implementation of the Project would not result in water quality impacts that would prevent human water contact activities. Therefore, the Project would be consistent with Port Master Plan Goal X.
Port Master Plan Goal XI. The District will protect, preserve, and enhance natural resources, including natural plant and animal life in the Bay as a desirable amenity and ecological necessity, and a valuable and usable resource.	Project impacts to marine biological resources would be reduced to less than significant with the implementation of appropriate mitigation. Therefore, the Project would be consistent with Goal XI of the Port Master Plan.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
Port Master Plan Precise Plan Text. The Project is located in Planning District 1, Shelter Island/La Playa, Subarea 13 (Bay Corridor), which is delineated on Precise Plan Map Figure 4 in the Port Master Plan. The Port Master Plan land and water use designations in the Project area are Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade. The Precise Plan concept text notes Shelter Island's "strong historic functional ties to the boating community of the San Diego region." It states that "the major emphasis of the development program is directed toward the renovation of obsolete structures, improvement in the quality of landscape, visual, and physical access to the bayfront	The Project is consistent with the PMP Precise Plan text because it would renovate an existing boat launching facility. The Project would renovate existing structures and improve physical access to the bayfront. Therefore, the Project would be consistent with the Port Master Plan Precise Plan text.
California Eelgrass Mitigation Policy	
California Eelgrass Mitigation Policy. The California Eelgrass Mitigation Policy offers specific guidelines and mitigation measures for activities that threaten eelgrass vegetated habitats.	Impacts to eelgrass would occur with the Project. However, these impacts would be mitigated through creation of eelgrass habitat on the site, following the guidance in the California Eelgrass Mitigation Policy. No conflict would occur.
California Coastal Act – Chapter 3	
30210 Access; recreational opportunities; posting: In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.	The Project would improve access and recreational opportunities consistent with public safety needs by providing access to the SIBLF for users with disabilities and improving access and increasing safety for all users of the SIBLF. The Project would also include signage, which would be conspicuously posted, and operational and safety lighting for the SIBLF. The Project is located on public tidelands and therefore, would not conflict with public rights and the rights of private property owners. Overall, it would provide additional and improved public access and would not encroach on private property outside of the SIBLF.
30211 Development not to interfere with access: Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.	The Project would enhance public access by providing accessibility for users with disabilities, providing more navigable water area within the breakwater basin to launch and retrieve boats, improving boat maneuverability, reducing boat congestion, and improving boat safety and operations at the SIBLF. The Project would include approximately 5-foot-wide ADA-compliant accessible walkways with widened overlook areas along the top of the bulkhead walls to provide pedestrian access and views of the bay similar to the path that exists on the top of the existing SIBLF jetties.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
30212 New development projects: a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects except where: 1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources, 2) adequate access exists nearby, or 3) agriculture would be adversely affected. Dedicated accessway shall not be required to be opened to public use until a public agency or private association agrees to accept responsibility for maintenance and liability of the accessway.	The Project, which involves redevelopment of an existing public boat launching facility, would enhance public access to the shoreline as described above under Section 30211. The Project would maintain existing access from the nearest public roadway to the shoreline.
30212.5 Public facilities; distribution: Wherever appropriate and feasible, public facilities, including parking areas or facilities, shall be distributed throughout an area so as to mitigate against the impacts, social and otherwise, of overcrowding or overuse by the public of any single area.	The SIBLF is one of four public boat launching facilities within San Diego Bay. The Project would mitigate against overuse and overcrowding of public boat launching facilities by making improvements to the existing SIBLF, thereby extending its useful life. This would ensure that members of the public can continue to use the SIBLF along with the other three public boat launching facilities within San Diego Bay.
30213 Lower cost visitor and recreational facilities; encouragement and provision; overnight room rentals: Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred.	The Project would provide lower-cost visitor and recreational facilities by providing access to the SIBLF for users with disabilities and improving access and increasing safety for all users of the SIBLF, a free public boat launching facility. In addition, the Project would include approximately 5-foot-wide ADA-compliant accessible walkways with widened overlook areas along the top of the bulkhead walls to provide pedestrian access and views of the bay similar to the path that exists on the top of the existing SIBLF jetties. The Project does not involve overnight room rentals are associated with the Project.
30214 Implementation of public access policies; legislative intent: a) The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case including, but not limited to, the following: 1) Topographic and geologic site characteristics. 2) The capacity of the site to sustain use and at what level of intensity. 3) The appropriateness of limiting public access to the right to pass and repass depending on such factors as the fragility of the natural resources in the area and the	The Project would make improvements to the SIBLF. The SIBLF would continue to be regulated consistent with the District's Port Code and the Coastal Act.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
proximity of the access area to adjacent residential uses. 4) The need to provide for the management of access areas so as to protect the privacy of adjacent property owners and to protect the aesthetic values of the area by providing for the collection of litter. b) It is the intent of the Legislature that the public access policies of this article be carried out in a reasonable manner that considers the equities and that balances the rights of the individual property owner with the public's constitutional right of access pursuant to Section 4 of Article X of the California Constitution. Nothing in this section or any amendment thereto shall be construed as a limitation on the rights guaranteed to the public under Section 4 of Article X of the California Constitution. c) In carrying out the public access policies of this article, the commission and any other responsible public agency shall consider and encourage the utilization of innovative access management techniques, including, but not limited to, agreements with private organizations which would minimize management costs and encourage the use of volunteer programs.	
30220 Protection of certain water-oriented activities: Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.	The Project would protect water-oriented recreational activities by making improvements to the existing SIBLF, thereby extending the useful life of an existing public boat launching facility within San Diego Bay.
30221 Oceanfront land; protection for recreational use and development: Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.	The Project site is not located on oceanfront land; therefore, this section does not apply.
30222 Private lands; priority of development purposes: The use of private lands suitable for visitor-serving commercial recreational facilities designed to enhance public opportunities for coastal recreation shall have priority over private residential, general industrial, or general commercial development, but not over agriculture or coastal-dependent industry.	The Project does not involve privately-owned lands; therefore, this section does not apply.
30222.5 Oceanfront lands; aquaculture facilities; priority: Oceanfront land that is suitable for coastal dependent aquaculture shall be protected for that use, and proposals for aquaculture facilities located on those sites shall be given priority, except over other coastal dependent developments or uses.	The Project site is not located on oceanfront land; therefore, this section does not apply.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
30223 Upland areas: Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.	The Project site does not include upland areas; however, the Project would enhance public access from upland areas to the bayfront by providing accessibility for users with disabilities, providing more navigable water area within the breakwater basin to launch and retrieve boats, improving boat maneuverability, reducing boat congestion, and improving boat safety and operations at the SIBLF. The Project would include approximately 5-foot-wide ADA-compliant accessible walkways with widened overlook areas along the top of the bulkhead walls to provide pedestrian access and views of the bay similar to the path that exists on the top of the existing SIBLF jetties.
30224 Recreational boating use; encouragement; facilities: Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, by developing dry storage areas, increasing public launching facilities, providing additional berthing space in existing harbors, limiting non-water-dependent land uses that congest access corridors and preclude boating support facilities, providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land.	The Project would encourage recreational boating use of coastal waters by making improvements to the existing SIBLF, thereby extending the useful life of an existing public boat launching facility within San Diego Bay. Although the Project would not increase the size or capacity of the SIBLF, it would provide accessibility for users with disabilities, provide more navigable water area within the breakwater basin to launch and retrieve boats, improve boat maneuverability, reduce boat congestion, and improve boat safety and operations at the SIBLF.
30230 Marine resources; maintenance: Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.	The Project involves renovation of the existing SIBLF, which would require dredging and construction within a portion of the bay that supports marine resources. Impacts to eelgrass would occur with the Project. However, the Project would maintain and enhance marine resources through the implementation of appropriate mitigation, including the creation of eelgrass habitat on the site following the guidance in the California Eelgrass Mitigation Policy, as described in Section IV. Biological Resources above.
30231 Biological productivity; water quality: The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface waterflow, encouraging waste water reclamation,	The Project would not result in impacts related to water quality or biological productivity that would affect marine organisms or human health. Project impacts to marine biological resources would be less than significant with the implementation of appropriate mitigation. In addition, the Project would comply with all required stormwater and water quality regulations and would not alter natural streams, as described in Section IX. Hydrology

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.	and Water Quality above.
30232 Oil and hazardous substance spills: Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.	The Project would protect against the spillage of crude oil, gas, petroleum products, or hazardous substances because fueling and maintenance of boats are not allowed at the SIBLF. Compliance with applicable laws regulating fuel and oils/lubricants in use on the boats and towing vehicles would further protect against the spillage of crude oil, gas, petroleum products, or hazardous substances, as described in Section VIII. Hazards and Hazardous Materials above.
30233 Diking, filling or dredging; continued movement of sediment and nutrients: (a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following: (l) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities. (2) Maintaining existing, or restoring previously dredged, depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps. (3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities. (4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines. (5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas. (6) Restoration purposes. (7) Nature study, aquaculture, or similar resource dependent activities. (b) Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for	The Project involves renovation of the existing SIBLF, which would require dredging and construction within the bay. The SIBLF is a coastal-dependent boat launching facility that provides public access and recreational opportunities and serves both the commercial fishing and recreational boating industries. There are no other feasible or less environmentally damaging alternatives as development of a new facility would likely result in increased dredging, and appropriate mitigation would be required to minimize adverse environmental impacts related to implementation of the Project. The Project would also include design features, such as use of a silt curtain during in-water construction activities and implementation of soft-start pile driving techniques, to minimize disruption to marine and wildlife habitats and water circulation. Furthermore, appropriate reuse and disposal of all dredged materials is included as part of the Project. Finally, the Project does not involve dredging within wetlands or estuaries or the construction of erosion or flood control facilities, as described in Section IV. Biological Resources above.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
these purposes to appropriate beaches or into suitable longshore current systems. (c) In addition to the other provisions of this section, diking, filling, or dredging in existing estuaries and wetlands shall maintain or enhance the functional capacity of the wetland or estuary. Any alteration of coastal wetlands identified by the Department of Fish and Game, including, but not limited to, the 19 coastal wetlands identified in its report entitled, "Acquisition Priorities for the Coastal Wetlands of California", shall be limited to very minor incidental public facilities, restorative measures, nature study, commercial fishing facilities in Bodega Bay, and development in already developed parts of south San Diego Bay, if otherwise in accordance with this division. For the purposes of this section, "commercial fishing facilities in Bodega Bay" means that not less than 80 percent of all boating facilities proposed to be developed or improved, where the improvement would create additional berths in Bodega Bay, shall be designed and used for commercial fishing activities. (d) Erosion control and flood control facilities constructed on watercourses can impede the movement of sediment and nutrients that would otherwise be carried by storm runoff into coastal waters. To facilitate the continued delivery of these sediments to the littoral zone, whenever feasible, the material removed from these facilities may be placed at appropriate points on the shoreline in accordance with other applicable provisions of this division, where feasible mitigation measures have been provided to minimize adverse environmental effects. Aspects that shall be considered before issuing a coastal development permit for these purposes are the method of placement, time of year of placement, and sensitivity of the placement area.	
30234 Commercial fishing and recreational boating facilities: Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible, upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.	The Project would renovate the existing SIBLF, thereby protecting and upgrading a boat launching facility that serves both the commercial fishing and recreational boating industries. The Project would not reduce the size of the facility or interfere with the needs of the commercial fishing industry.

Table 4-6. Project Consistency with Applicable Land Use Plans

Applicable Plan, Policy, or Goal	Project Consistency
30234.5 Economic, commercial, and recreational importance of fishing: The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.	The Project would recognize and protect the economic, commercial, and recreational importance of fishing activities by renovating the existing SIBLF, thereby extending the useful life of a facility that enables fishing activities.
30235 Construction altering natural shoreline: Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fishkills should be phased out or upgraded where feasible.	The Project would remove existing rock jetties and replace them with concrete sheetpile bulkhead walls in order to protect a boat launching ramp and extend the useful life of the SIBLF, a coastal-dependent use as it requires access to the bay to allow for the launching of vessels.
30236 Water supply and flood control: Channelizations, dams, or other substantial alterations of rivers and streams shall incorporate the best mitigation measures feasible, and be limited to (l) necessary water supply projects, (2) flood control projects where no other method for protecting existing structures in the flood plain is feasible and where such protection is necessary for public safety or to protect existing development, or (3) developments where the primary function is the improvement of fish and wildlife habitat.	The Project does not involve channelization, dams, or alteration of rivers and streams; therefore, this section does not apply.
30240 Environmentally sensitive habitat areas; adjacent developments: (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.	The Project involves renovation of the existing SIBLF, which would require dredging and construction within a portion of the bay that supports marine resources. Impacts to eelgrass would occur with the Project. However, the Project would protect against any significant disruption of habitat values through the implementation of appropriate mitigation, including the creation of eelgrass habitat on the site following the guidance in the California Eelgrass Mitigation Policy, as described in Section IV. Biological Resources above.
30241 Prime agricultural land; maintenance in agricultural production: The maximum amount of prime agricultural land shall be maintained in agricultural production to assure the protection of the areas' agricultural economy, and conflicts shall be minimized between agricultural and urban land uses through all of the following: (a) By establishing stable boundaries separating urban and rural areas, including, where necessary, clearly defined	The Project site is not located on agricultural land; therefore, this section does not apply.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
buffer areas to minimize conflicts between agricultural and urban land uses. (b) By limiting conversions of agricultural lands around the periphery of urban areas to the lands where the viability of existing agricultural use is already severely limited by conflicts with urban uses or where the conversion of the lands would complete a logical and viable neighborhood and contribute to the establishment of a stable limit to urban development. (c) By permitting the conversion of agricultural land surrounded by urban uses where the conversion of the land would be consistent with Section 30250. (d) By developing available lands not suited for agriculture prior to the conversion of agricultural lands. (e) By assuring that public service and facility expansions and nonagricultural development do not impair agricultural viability, either through increased assessment costs or degraded air and water quality. (f) By assuring that all divisions of prime agricultural lands, except those conversions approved pursuant to subdivision (b), and all development adjacent to prime agricultural lands shall not diminish the productivity of such prime agricultural lands.	
30241.5 Agricultural land; determination of viability of uses; economic feasibility evaluation: (a) If the viability of existing agricultural uses is an issue pursuant to subdivision (b) of Section 30241 as to any local coastal program or amendment to any certified local coastal program submitted for review and approval under this division, the determination of "viability" shall include, but not be limited to, consideration of an economic feasibility evaluation containing at least both of the following elements: (1) An analysis of the gross revenue from the agricultural products grown in the area for the five years immediately preceding the date of the filing of a proposed local coastal program or an amendment to any local coastal program. (2) An analysis of the operational expenses, excluding the cost of land, associated with the production of the agricultural products grown in the area for the five years immediately preceding the date of the filing of a proposed local coastal program or an amendment to any local coastal program. For purposes of this subdivision, "area" means a geographic area of sufficient size to provide an accurate evaluation of the economic feasibility of agricultural uses	The Project site is not located on agricultural land; therefore, this section does not apply.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
for those lands included in the local coastal program or in the proposed amendment to a certified local coastal program. (b) The economic feasibility evaluation required by subdivision (a) shall be submitted to the commission, by the local government, as part of its submittal of a local coastal program or an amendment to any local coastal program. If the local government determines that it does not have the staff with the necessary expertise to conduct the economic feasibility evaluation, the evaluation may be conducted under agreement with the local government by a consultant selected jointly by local government and the executive director of the commission.	
30242 Lands suitable for agricultural use; conversion: All other lands suitable for agricultural use shall not be converted to nonagricultural uses unless (l) continued or renewed agricultural use is not feasible, or (2) such conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any such permitted conversion shall be compatible with continued agricultural use on surrounding lands.	The Project site is not located on lands suitable for agricultural use; therefore, this section does not apply.
30243 Productivity of soils and timberlands; conversions: The long-term productivity of soils and timberlands shall be protected, and conversions of coastal commercial timberlands in units of commercial size to other uses or their division into units of noncommercial size shall be limited to providing for necessary timber processing and related facilities.	The Project site is not located on agricultural land or timberlands; therefore, this section does not apply.
30244 Archaeological or paleontological resources: Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required.	The Project would not adversely impact archaeological or paleontological resources, as described in Section II. Agriculture and Forestry Resources above.
30250 Location; existing developed area: (a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. In addition, land divisions, other than leases for agricultural uses, outside existing developed areas shall be permitted only where 50 percent of the usable parcels in the area have been developed and the created parcels would be no smaller than the average size of surrounding parcels.	The Project involves renovation of the existing SIBLF, visitor-serving facility, in its current location. Adequate public services exist to support the Project, as described in Section XIV. Public Services below. The Project would not involve the development of new hazardous industrial uses.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
(b) Where feasible, new hazardous industrial development shall be located away from existing developed areas. (c) Visitor-serving facilities that cannot feasibly be located in existing developed areas shall be located in existing isolated developments or at selected points of attraction for visitors.	
30251 Scenic and visual qualities: The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.	The Project involves renovation of the existing SIBLF. The Project would protect the scenic and visual qualities of the site and surrounding area by ensuring that the renovations are consistent with the scale and character of the existing SIBLF. In addition, the Project would include approximately 5-foot-wide ADA-compliant accessible walkways with widened overlook areas along the top of the bulkhead walls to provide pedestrian access and views of the bay similar to the path that exists on the top of the existing SIBLF jetties. Finally, the Project would not alter natural landforms or be sited within a highly scenic area.
30252 Maintenance and enhancement of public access: The location and amount of new development should maintain and enhance public access to the coast by (1) facilitating the provision or extension of transit service, (2) providing commercial facilities within or adjoining residential development or in other areas that will minimize the use of coastal access roads, (3) providing nonautomobile circulation within the development, (4) providing adequate parking facilities or providing substitute means of serving the development with public transportation, (5) assuring the potential for public transit for high intensity uses such as high-rise office buildings, and by (6) assuring that the recreational needs of new residents will not overload nearby coastal recreation areas by correlating the amount of development with local park acquisition and development plans with the provision of onsite recreational facilities to serve the new development.	The Project would enhance public access by providing accessibility for users with disabilities, providing more navigable water area within the breakwater basin to launch and retrieve boats, improving boat maneuverability, reducing boat congestion, and improving boat safety and operations at the SIBLF. The Project would include approximately 5-foot-wide ADA-compliant accessible walkways with widened overlook areas along the top of the bulkhead walls to provide pedestrian access and views of the bay similar to the path that exists on the top of the existing SIBLF jetties. Since the Project does not involve an increase in size or capacity of the SIBLF, the existing parking lot serving the SIBLF would be sufficient to support the Project.
30253 Minimization of adverse impacts: New development shall do all of the following: (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard. (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.	The Project involves renovation of the existing SIBLF. The Project would not increase risks to life or property due to geologic, flood, or fire hazards because it would not increase the size or capacity of the existing SIBLF, and appropriate design features would be incorporated into the Project to protect from flooding associated with tsunamis and sea level rise, as described in Section IX. Hydrology and Water Quality above. The Project would be designed to be structurally sound and would

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
(c) Be consistent with requirements imposed by an air pollution control district or the State Air Resources Board as to each particular development. (d) Minimize energy consumption and vehicle miles traveled. (e) Where appropriate, protect special communities and neighborhoods that, because of their unique characteristics, are popular visitor destination points for recreational uses.	not require the construction of protective devices that would alter natural landforms along bluffs and cliffs. Furthermore, the Project would not violate any air quality standards of the SDAPCD. The Project would minimize energy consumption by installing energy-efficient LED lighting for safety and operational purposes. Finally, the Project will enhance the SIBLF, a popular visitor destination.
30254 Public works facilities: New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall not be precluded by other development.	The Project does not involve new or expanded public works facilities, such as public facilities for water, wastewater, electrical, telephone, or public transportation. Furthermore, the Project site is not located near State Highway Route 1. Therefore, this section does not apply.
30254.5 Terms or conditions on sewage treatment plant development; prohibition: Notwithstanding any other provision of law, the commission may not impose any term or condition on the development of any sewage treatment plant which is applicable to any future development that the commission finds can be accommodated by that plant consistent with this division. Nothing in this section modifies the provisions and requirements of Sections 30254 and 30412.	The Project does not involve the development of any sewage treatment plant; therefore, this section does not apply.
30255 Priority of coastal-dependent developments: Coastal-dependent developments shall have priority over other developments on or near the shoreline. Except as provided elsewhere in this division, coastal-dependent developments shall not be sited in a wetland. When appropriate, coastal-related developments should be accommodated within reasonable proximity to the coastal-dependent uses they support.	The Project involves renovation of a coastal-dependent boat launching facility within the development footprint of the existing SIBLF. The Project would not be sited in a wetland, as described in Section IV. Biological Resources above.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
30260 Location or expansion: Coastal-dependent industrial facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with this division. However, where new or expanded coastal-dependent industrial facilities cannot feasibly be accommodated consistent with other policies of this division, they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if (1) alternative locations are infeasible or more environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental effects are mitigated to the maximum extent feasible.	The Project does not involve the development or expansion of coastal-dependent industrial facilities; therefore, this section does not apply.
30261 Tanker facilities; use and design: Multi-company use of existing and new tanker facilities shall be encouraged to the maximum extent feasible and legally permissible, except where to do so would result in increased tanker operations and associated onshore development incompatible with the land use and environmental goals for the area. New tanker terminals outside of existing terminal areas shall be situated as to avoid risk to environmentally sensitive areas and shall use a monobuoy system, unless an alternative type of system can be shown to be environmentally preferable for a specific site. Tanker facilities shall be designed to (1) minimize the total volume of oil spilled, (2) minimize the risk of collision from movement of other vessels, (3) have ready access to the most effective feasible containment and recovery equipment for oil spills, and (4) have onshore deballasting facilities to receive any fouled ballast water from tankers where operationally or legally required.	The Project does not involve the use of existing or development of new tanker facilities; therefore, this section does not apply.
30262 Oil and gas development: a) Oil and gas development shall be permitted in accordance with Section 30260, if the following conditions are met: (1) The development is performed safely and consistent with the geologic conditions of the well site. (2) New or expanded facilities related to that development are consolidated, to the maximum extent feasible and legally permissible, unless consolidation will have adverse environmental consequences and will not significantly reduce the number of producing wells, support facilities, or sites required to produce the reservoir economically and with minimal environmental impacts. (3) Environmentally safe and feasible subsea completions are used when drilling platforms or islands would substantially degrade coastal visual qualities unless use of those structures will result in substantially less	The Project does not involve the development of oil or gas; therefore, this section does not apply.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
environmental risks. (4) Platforms or islands will not be sited where a substantial hazard to vessel traffic might result from the facility or related operations, as determined in consultation with the United States Coast Guard and the Army Corps of Engineers. (5) The development will not cause or contribute to subsidence hazards unless it is determined that adequate measures will be undertaken to prevent damage from such subsidence. (6) With respect to new facilities, all oilfield brines are reinjected into oil-producing zones unless the Division of Oil and Gas, Geothermal Resources of the Department of Conservation determines to do so would adversely affect production of the reservoirs and unless injection into other subsurface zones will reduce environmental risks. Exceptions to reinjections will be granted consistent with the Ocean Waters Discharge Plan of the State Water Resources Control Board and where adequate provision is made for the elimination of petroleum odors and water quality problems. (7)(A) All oil produced offshore California shall be transported onshore by pipeline only. The pipelines used to transport this oil shall utilize the best achievable technology to ensure maximum protection of public health and safety and of the integrity and productivity of terrestrial and marine ecosystems. (B) Once oil produced offshore California is onshore, it shall be transported to processing and refining facilities by pipeline. (C) The following guidelines shall be used when applying subparagraphs (A) and (B): (i) "Best achievable technology," means the technology that provides the greatest degree of protection taking into consideration both of the following: (I) Processes that are being developed, or could feasibly be developed, anywhere in the world, given overall reasonable expenditures on research and development. (II) Processes that are currently in use anywhere in the world. This clause is not intended to create any conflicting or duplicative regulation of pipelines, including those governing the transportation of oil produced from onshore reserves. (ii) "Oil" refers to crude oil before it is refined into products, including gasoline, bunker fuel, lubricants, and asphalt. Crude oil that is upgraded in quality through	

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
residue reduction or other means shall be transported as provided in subparagraphs (A) and (B). (iii) Subparagraphs (A) and (B) shall apply only to new or expanded oil extraction operations. "New extraction operations" means production of offshore oil from leases that did not exist or had never produced oil, as of January 1, 2003, or from platforms, drilling island, subsea completions, or onshore drilling sites, that did not exist as of January 1, 2003. "Expanded oil extraction" means an increase in the geographic extent of existing leases or units, including lease boundary adjustments, or an increase in the number of well heads, on or after January 1, 2003. (iv) For new or expanded oil extraction operations subject to clause (iii), if the crude oil is so highly viscous that pipelining is determined to be an infeasible mode of transportation, or where there is no feasible access to a pipeline, shipment of crude oil may be permitted over land by other modes of transportation, including trains or trucks, which meet all applicable rules and regulations, excluding any waterborne mode of transport. (8) If a state of emergency is declared by the Governor for an emergency that disrupts the transportation of oil by pipeline, oil may be transported by a waterborne vessel, if authorized by permit, in the same manner as required by emergency permits that are issued pursuant to Section 30624. (9) In addition to all other measures that will maximize the protection of marine habitat and environmental quality, when an offshore well is abandoned, the best achievable technology shall be used. b) Where appropriate, monitoring programs to record land surface and near-shore ocean floor movements shall be initiated in locations of new large-scale fluid extraction on land or near shore before operations begin and shall continue until surface conditions have stabilized. Costs of monitoring and mitigation programs shall be borne by liquid and gas extraction operators. c) Nothing in this section shall affect the activities of any state agency that is responsible for regulating the extraction, production, or transport of oil and gas.	
30263 Refineries or petrochemical facilities: (a) New or expanded refineries or petrochemical facilities not otherwise consistent with the provisions of this division shall be permitted if (1) alternative locations are not feasible or are more environmentally damaging; (2) adverse environmental effects are mitigated to the maximum extent feasible; (3) it is found that not permitting	The Project does not involve the development of new or expanded refineries or petrochemical facilities; therefore, this section does not apply.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
such development would adversely affect the public welfare; (4) the facility is not located in a highly scenic or seismically hazardous area, on any of the Channel Islands, or within or contiguous to environmentally sensitive areas; and (5) the facility is sited so as to provide a sufficient buffer area to minimize adverse impacts on surrounding property. (b) New or expanded refineries or petrochemical facilities shall minimize the need for once-through cooling by using air cooling to the maximum extent feasible and by using treated waste waters from in-plant processes where feasible.	
30264 Thermal electric generating plants: Notwithstanding any other provision of this division, except subdivisions (b) and (c) of Section 30413, new or expanded thermal electric generating plants may be constructed in the coastal zone if the proposed coastal site has been determined by the State Energy Resources Conservation and Development Commission to have greater relative merit pursuant to the provisions of Section 25516.1 than available alternative sites and related facilities for an applicant's service area which have been determined to be acceptable pursuant to the provisions of Section 25516.	The Project does not involve the construction of new or expanded thermal electric generating plants; therefore, this section does not apply.
California Coastal Act – Chapter 8	
30703 Protection of commercial fishing harbor space: The California commercial fishing industry is important to the State of California; therefore, ports shall not eliminate or reduce existing commercial fishing harbor space, unless the demand for commercial fishing facilities no longer exists or adequate alternative space has been provided. Proposed recreational boating facilities within port areas shall, to the extent it is feasible to do so, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.	The Project would not eliminate or reduce existing commercial fishing harbor space. The Project would renovate the existing SIBLF, thereby protecting and upgrading a boat launching facility that serves both the commercial fishing and recreational boating industries. The Project would not reduce the size of the facility or interfere with the needs of the commercial fishing industry.
30705 Diking, filling or dredging water areas: (a) Water areas may be diked, filled, or dredged when consistent with a certified port master plan only for the following: (1) Such construction, deepening, widening, lengthening, or maintenance of ship channel approaches, ship channels, turning basins, berthing areas, and facilities as are required for the safety and the accommodation of commerce and vessels to be served by port facilities. (2) New or expanded facilities or waterfront land for port-related facilities. (3) New or expanded commercial fishing facilities or	The Project involves renovation of the existing SIBLF, which would require dredging and construction within the bay. The Project uses are consistent with the certified PMP. The Project involves a PMPA pursuant to Chapter 8 of the Coastal Act because it is considered appealable development that requires sufficient detail to be able to determine its consistency with Chapter 3 of the Coastal Act. The SIBLF is a coastal-dependent boat launching facility that provides public access and recreational opportunities and serves both the commercial fishing and recreational boating industries. The Project would also include design features,

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
recreational boating facilities. (4) Incidental public service purposes, including, but not limited to, burying cables or pipes or inspection of piers and maintenance of existing intake and outfall lines. (5) Mineral extraction, including sand for restoring beaches, except in biologically sensitive areas. (6) Restoration purposes or creation of new habitat areas. (7) Nature study, mariculture, or similar resource-dependent activities. (8) Minor fill for improving shoreline appearance or public access to the water. (b) The design and location of new or expanded facilities shall, to the extent practicable, take advantage of existing water depths, water circulation, siltation patterns, and means available to reduce controllable sedimentation so as to diminish the need for future dredging. (c) Dredging shall be planned, scheduled, and carried out to minimize disruption to fish and bird breeding and migrations, marine habitats, and water circulation. Bottom sediments or sediment elutriate shall be analyzed for toxicants prior to dredging or mining, and where water quality standards are met, dredge spoils may be deposited in open coastal water sites designated to minimize potential adverse impacts on marine organisms, or in confined coastal waters designated as fill sites by the master plan where such spoil can be isolated and contained, or in fill basins on upland sites. Dredge material shall not be transported from coastal waters into estuarine or fresh water areas for disposal. (d) For water areas to be diked, filled, or dredged, the commission shall balance and consider socioeconomic and environmental factors.	such as use of a silt curtain during in-water construction activities and implementation of soft-start pile driving techniques, to minimize disruption to fish and bird breeding and migrations, marine habitats, eel grass, and water circulation. In addition, physical and chemical analyses of the SIBLF basin sediments and of the material within the rock jetty have been conducted for the Project. Appropriate mitigation would be required to minimize adverse environmental impacts related to implementation of the Project. Finally, appropriate reuse and disposal of all dredged materials is included as part of the Project.
30706 Fill: In addition to the other provisions of this chapter, the policies contained in this section shall govern filling seaward of the mean high tide line within the jurisdiction of ports: (a) The water area to be filled shall be the minimum necessary to achieve the purpose of the fill. (b) The nature, location, and extent of any fill, including the disposal of dredge spoils within an area designated for fill, shall minimize harmful effects to coastal resources, such as water quality, fish or wildlife resources, recreational resources, or sand transport systems, and shall minimize reductions of the volume, surface area, or circulation of water.	The Project does not involve filling seaward of the mean high tide line; therefore, this section does not apply.

Table 4-6. Project Consistency with Applicable Land Use Plans	
Applicable Plan, Policy, or Goal	**Project Consistency**
(c) The fill is constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters. (d) The fill is consistent with navigational safety.	
30707 Tanker terminals: New or expanded tanker terminals shall be designed and constructed to do all of the following: (a) Minimize the total volume of oil spilled. (b) Minimize the risk of collision from movement of other vessels. (c) Have ready access to the most effective feasible oil spill containment and recovery equipment. (d) Have onshore deballasting facilities to receive any fouled ballast water from tankers where operationally or legally required.	The Project does not involve the development of new or expanded tanker terminals; therefore, this section does not apply.
30708 Location, design and construction of port-related developments: All port-related developments shall be located, designed, and constructed so as to: (a) Minimize substantial adverse environmental impacts. (b) Minimize potential traffic conflicts between vessels. (c) Give highest priority to the use of existing land space within harbors for port purposes, including, but not limited to, navigational facilities, shipping industries, and necessary support and access facilities. (d) Provide for other beneficial uses consistent with the public trust, including, but not limited to, recreation and wildlife habitat uses, to the extent feasible. (e) Encourage rail service to port areas and multi-company use of facilities.	The Project involves renovation of the existing SIBLF, a port-related development that supports recreational uses consistent with the public trust. The Project would include appropriate mitigation to minimize adverse environmental impacts related to implementation of the Project. The Project would also include design features, such as use of a silt curtain during in-water construction activities and implementation of soft-start pile driving techniques, to minimize disruption to marine and wildlife habitats and water circulation. The Project would also provide more navigable water area within the breakwater basin to launch and retrieve boats, improve boat maneuverability, reduce boat congestion, and improve boat safety and operations at the SIBLF, which would help to minimize traffic conflicts between vessels.

c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Refer to Checklist response IV. f) above.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

XI. MINERAL AND ENERGY RESOURCES

Environmental Setting

The Project is not located in an area where mineral resources are known to exist and is also not in an area designated by the State of California or the PMP as a minerals resource zone. San Diego Gas & Electric (SDG&E) provides electrical services to the Project site

Thresholds of Significance

A project may be deemed to have a significant adverse impact on mineral and energy resources if it results in any of the following:

- Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or in the inefficient use of energy resources; or,
- Result in the loss of availability of a locally-important mineral resource recovery site delineated on the Port Master Plan, local general plan, specific plan or other land use plan.

Analysis of Environmental Impacts

a)	Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or in the inefficient use of energy resources?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
		☐	☐	☐	☒

No commercial mining operations currently exist on the Project site or within the San Diego Bay. The site does not contain aggregate resources and is not located in a mineral resource zone that contains important resources, as designated by the California Department of Conservation Division of Mines and Geology (City of San Diego 2008). In addition, there are no designated plans for mineral resource extraction nor has there been any important mineral resources identified by the PMP. As such, the Project would not result in a loss of availability of a known mineral resource or locally-important mineral resource recovery sites. In addition, the Project would not result in the inefficient use of energy resources. The consumption of electricity associated with the Project is anticipated to be reduced compared to current conditions because the LED lighting proposed is more energy efficient. No other ongoing energy resources would be required for the Project. Therefore, no impacts would occur.

b) Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on the Port Master Plan, local general plan, specific plan or other land use plan?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist response XI. a) above.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

XII. NOISE

Environmental Setting

Existing Noise Levels. A Project-specific noise study was conducted (Urban Crossroads 2013b [Appendix D]), which was used, along with other substantial evidence, in this section. Noise measurements were taken at ten locations on Shelter Island and along the haul truck route. Five long-term, 24-hour measurements and five short-term noise measurements were taken. These noise level measurements are summarized in Tables 4-7 and 4-8.

Table 4-7. Long Term Noise Level Measurements

Receiver Identifier	Location Description[1]	Hourly Noise Level (Leq dBA)[2]		
		Daytime (7am to 10pm)	Nighttime (10pm to 7am)	Proposed Project Construction Time (9am to 7pm)
LT-1	Located approximately 75 feet northeast of the restrooms on the median island near the SIBLF	59.2-68.2	46.2-57.8	59.2-68.2
LT-2	Located in the parkway between southbound Shelter Island Drive and the Humphrey's Half Moon Inn and Suites Hotel	62.7-69.9	49.2-63.8	64.5-69.9
LT-3	Adjacent to the Ramada Hotel located at 1403 Rosecrans Street	66.8-74.6	56.2-70.9	69.2-74.6
LT-4	Single-family detached residential area located adjacent to Rosecrans Street near West Bainbridge Road	69.3-73.7	57.4-72.9	71.8-73.7

Table 4-7. Long Term Noise Level Measurements				
Receiver Identifier	Location Description[1]	Hourly Noise Level (Leq dBA)[2]		
		Daytime (7am to 10pm)	Nighttime (10pm to 7am)	Proposed Project Construction Time (9am to 7pm)
LT-5	Single-family detached residential area located at the corner of Rosecrans Street and Kingsley Street	67.5-72.2	56.2-72.8	69.9-71.3

Source: Urban Crossroads 2013b; Appendix D
Notes: [1]See Appendix D for maps of the monitoring site locations and study area photos
[2] Leq = An average noise level over a given length of time
dBA = A-weighted decibel scale, which is weighted to account for the range of human hearing.

Table 4-8. Short Term Noise Level Measurements						
Receiver Identifier	Start Time	Duration (Minutes)	Location Description[1]	Noise Level (dBA)[2]		
				Leq	Lmax	Lmin
ST-1	11:10 AM	15	Front parking area of Le Rondelet, a 6-story residential living building	56.7	71.6	47.2
ST-2	11:35 AM	15	Bay Club Hotel room located at 2131 Shelter Island Drive facing the SIBLF	61.4	75.7	51.1
ST-3	11:53 AM	15	On the southwest corner of the existing jetty at the SIBLF	59.7	67.8	52.8
ST-4	4:26 PM	15	First floor hotel room (Building I Room 161) of the Best Western Island Palms, facing the SIBLF	61.3	74.7	50.7
ST-5	4:46 PM	15	Beach recreation area west of the SIBLF	63.3	75.14	54.2

Source: Urban Crossroads 2013b; Appendix D
Notes: [1]See Appendix D for maps of the monitoring site locations and study area photos
[2] dBA = A-weighted decibel scale, which is weighted to account for the range of human hearing.
Leq = An average noise level over a given length of time.
Lmax = The maximum noise level measured within a given length of time.
Lmin = The minimum noise level measured within a given length of time.

The primary noise sources for both the long-term and short-term noise level measurements were traffic noise from neighboring roadways, aircraft overflights from NAS North Island, and background noise from boating activities.

The District has not adopted noise standards or thresholds. Therefore, this analysis relies on the City of San Diego noise standards to determine the Project's potential noise impacts.

Noise-Sensitive Receptors. The City of San Diego Municipal Code Section 59.5.0404 states "that it shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m." The nearest property zoned residential is located over 2,000 feet northwest of the SIBLF construction site. Additionally, there are residential-zoned properties on the haul truck route on Rosecrans Street, within the City of San Diego's Point Loma neighborhood.

In addition, the City's General Plan Noise Element identifies residential uses, hospitals, nursing facilities, intermediate care facilities, libraries, museums, places of worship, child care facilities, and certain types of passive recreational parks and open spaces as noise-sensitive land uses. While the neighboring hotel uses are not zoned residential or specifically identified as a noise-sensitive land use according to the definition provided in the noise element, hotels are considered by the City of San Diego to be transient housing and are a noise-sensitive land use during the evening and nighttime hours between 7 p.m. and 7 a.m. when guests would be sleeping. The District does not consider the hotels to be sensitive receptors, and the analysis included in this Initial Study as it relates to hotels is for discussion purposes only. The SIBLF itself is located within an area designated as Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade. Several amenities associated with Shelter Island Shoreline Park are located within 200 feet of the SIBLF construction area, and the park walkway is directly adjacent to the construction area in some locations.

Thresholds of Significance

A project may be deemed to have a significant adverse noise impact if it results in any of the following:

- Expose persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The Port District uses the City of San Diego noise compatibility guidelines and the City of San Diego noise ordinance requirements, which are further discussed in the analysis section;
- Expose persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. This is defined as exceeding the construction noise levels allowed in the City's municipal code;
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels; or,
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

Analysis of Environmental Impacts

a) Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☒	☐	☐

The District has not adopted noise standards or thresholds. Therefore, this analysis relies on the City of San Diego noise standards to determine the Project's potential noise impacts.

City of San Diego General Plan. To control transportation-related noise sources such as arterial roads, freeways, airports, and railroads, the City of San Diego has established noise compatibility guidelines in the General Plan Noise Element for all land use categories. The noise compatibility guidelines are used to assess the long-term traffic noise impacts on nearby land uses. According to the City's Land Use-Noise Compatibility Guidelines, noise sensitive land uses include residential uses, hospitals, nursing facilities, intermediate care facilities, child educational facilities, libraries, museums, places of worship, child care facilities, and certain types of passive recreational parks and open space. The noise sensitive land uses are considered compatible with exterior noise levels below 60 dBA CNEL and conditionally compatible with exterior noise levels below 65 dBA CNEL.

City of San Diego Municipal Code. The City of San Diego Municipal Code Section 59.5.0404 states that it "shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m." The City of San Diego does not identify any noise criteria to control single-event noise level impacts, such as those associated with pile driving activities. The 75-dBA construction noise criteria averages the construction noise level impacts over 12 hours during the daytime (7 a.m. to 7 p.m.).

Project Significance Criteria. According to the City of San Diego *Significance Determination Thresholds,* temporary construction noise that exceeds 75 dBA L_{eq} at a sensitive receptor would be considered significant. Additionally, where temporary construction noise would substantially interfere with normal business communication, or affect sensitive receptors, a significant noise impact may be identified. For noise associated with haul trucks, impacts are considered significant if project-generated truck traffic noise would create a 3 dBA or greater increase in ambient exterior noise levels. The use of the 3 dBA or greater increase is consistent with the City of San Diego *Significance Determination Thresholds*, as well as the Federal Highway Administration and Caltrans standards, all of which identify a 3 dBA change as the level at which noise level changes become discernible for most people. The City's General Plan establishes long-term operational noise impact compatibility guidelines.

Noise Analysis. A temporary increase in noise associated with the Project would occur during construction only. Operation of the SIBLF would not change as a result of the Project because an increase in capacity would not occur; therefore, operational noise levels are not anticipated to change from current conditions. Noise impacts would occur from construction on the SIBLF site, as well as from haul trucks traveling on local streets on the way to the Copper Mountain Landfill in Arizona.

Construction Site Noise Analysis. Calculations of the Project construction noise level impacts were completed, as detailed in Appendix D. The mix of construction equipment would vary by phase; however, the analysis assumed overlapping uses of the appropriate equipment for each phase to obtain cumulative noise levels. At a distance of 50 feet from the site, cumulative hourly construction noise levels are expected to range from 72.0 dBA L_{eq} during the paving phase to 98.8 dBA L_{eq} during the sheet/batter/guide pile installation phase. When compared with the City of San Diego's 75 dBA L_{eq} 12-hour construction noise level limit, the Project's construction noise level is expected to exceed the 75 dBA L_{eq} noise limit up to 777 feet beyond the Project construction area during the use of impact pile driving hammers. This would have potentially-significant impacts to noise-sensitive land uses located within 777 feet of the Project's construction area. Noise-sensitive land uses that occur in this area include the passive recreational areas associated with Shelter Island Shoreline Park. Impacts would be reduced to a less-than-significant level with the implementation of Mitigation Measures N-1 and N-2. As detailed in Checklist responses XIV. a) and XV. a), sufficient park areas are located along Shelter Island outside of the noise impact area that offer similar public recreational activities. Nearby hotels (the Bay Club Hotel and Marina and Humphrey's Half Moon Inn and Suites Hotel) are within 777 feet of the Project's construction area. However, hotel land uses are not considered to be sensitive noise receptors by the District during the evening and nighttime hours of 7 pm to 7 am. Therefore, the analysis included in this Initial Study as it relates to hotels is for discussion purposes only. In any event, no construction activities would occur during these hours, and no impact would occur to hotel users.

Construction Traffic Noise Analysis. Peak construction-related traffic activity would be during the partially-overlapping grading and site preparation phases of construction. The site preparation phase would require approximately 40 haul truck trips over the course of 15 working days. The grading phase requires approximately 1,335 haul truck trips over the course of 30 working days. During the peak period of construction, the Project would add up to 135 daily truck trips. The trucks would travel from the SIBLF construction site on Shelter Island Drive, Rosecrans Street, and ultimately the I-8 freeway to Copper Mountain Landfill in Arizona. Project-related traffic noise was modeled using the Federal Highway Administration (FHWA) noise prediction model. According to the noise analysis, SIBLF off-site construction traffic would increase traffic noise level by 0.1 dBA CNEL. Based on the traffic noise analysis significance threshold of 3 dBA, no significant off-site traffic noise impacts are expected to sensitive receptors (residential uses along Rosecrans Street). A less-than-significant impact would occur.

Operational Noise Analysis. Noise associated with operation of the existing SIBLF includes engine noise from haul vehicles and boats, as well as noise from loading and unloading activities. The operational capacity and general operations of the SIBLF would not change with implementation of the Project, and there would be no increase in noise. No impact would occur from operational noise.

b) Would the project result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment. The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Some common sources of groundborne vibration are trains, and construction activities such as blasting, pile driving, and heavy earth-moving equipment. The primary source of groundborne vibration occurring as part of the Project would be construction activity, particularly the use of heavy machinery and pile driving equipment (FTA 2006).

The California Department of Transportation (Caltrans) and the Federal Transit Administration (FTA) are the main sources of study of vibration impacts, because construction and operation of transportation facilities are major sources of vibration. According to Caltrans, a threshold of 0.2 inches per second (in/sec) threshold PPV should be used for continuous vibration, and a 2 in/sec PPV threshold should be used for single-event pile driving to avoid architectural damage (Caltrans 2002). The FTA also measures the threshold for conventional sensitive structures as 0.2 in/sec PPV (FTA 2006). With the exception of a few instances involving pavement breaking and pile driving, all Caltrans construction vibration measurements have been below this threshold. The highest measured vibration level for construction equipment was 2.88 in/sec PPV at 10 feet from a pavement breaker. Other typical construction activities and equipment, such as D-8 and D-9 Caterpillars, earthmovers, and trucks have not exceeded 0.10 in/sec PPV at 10 feet from the source. In general, the probability of causing architectural damage from continuous vibration from construction is very low. However, if vibration sources involve pavement breaking or pile driving 25 feet or less from residences, buildings, or unreinforced structures, or if these activities would occur within 100 feet of a historical building, buildings in poor condition, or buildings previously damaged by earthquakes, damage could occur (Caltrans 2002). The nearest structures to the SIBLF are the Outboard Boating Club building and the restroom building, both located approximately 75 feet from the actual boat launching facilities. Because these buildings are located more than 25 feet from potential pile driving locations and are modern buildings in good condition, damage from vibration is not likely and a less-than-significant impact would occur.

Major construction within 200 feet and pile driving within 600 feet may also be potentially disruptive to vibration-sensitive operations, which include aerospace and electronic laboratories, close tolerance manufacturing, calibration of sensitive instruments, radio and television stations, and similar land uses (Caltrans 2002). None of these uses occur within 600 feet of the Project, and impacts would be less than significant.

Potential sources of vibration during operation include idling vehicles; however, implementation of the Project would not expand or change operational activities associated with the SIBLF. As such, no new operational vibration activities would occur, and vibration impacts associated with operation of the Project would be less than significant.

c) Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist response XII. a) above. The Project would not result in a change or expansion of the SIBLF's existing use. Therefore, a substantial permanent increase in ambient noise levels would not occur. No impact would occur.

d) Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☒	☐	☐

Refer to Checklist response XII. a) above. A substantial temporary or periodic impact is anticipated for passive recreational users within 777 feet of the Project construction site during impact-type pile driving activities. Impacts would be less-than-significant with the incorporation of Mitigation Measures N-1 and N-2. Other temporary noise impacts during construction would be less than significant.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

The nearest public use airport to Project site is the San Diego International Airport, located approximately 2 miles northeast of the Project site. Airport Influence Area boundaries around the San Diego International Airport have been adopted by San Diego County Regional Airport Authority in its ALUCP. Based on the ALUCP, the Project is outside the identified noise contours for the airport (SDCRAA 2014). Because the Project is not located within the identified noise contours for the airport, the Project would not expose people residing or working in the Project area to excessive noise levels related to a public use airport. Therefore, no impact would occur.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

The nearest private use airport to Project is NAS North Island, which is located approximately 0.8 mile southeast of the Project site. Although the Project site is in close proximity to NAS North Island, the Project would result in the continuation of existing uses (i.e., boat launching facility) and would not change or create any new uses at the site. Therefore, implementation of the Project would not expose people working in the Project area to excessive noise levels related to a private airstrip. No impact would occur.

Required Mitigation Measures

N-1 To avoid noise impacts from impact-type pile driving, vibratory-type pile driving techniques or other quieter methods, such as jetting, shall be used in place of impact-type pile driving to the extent feasible. The Project Applicant shall include this measure in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval.

N-2 If impact-type pile driving construction techniques cannot be avoided, the use of all passive recreational areas shall be restricted within a distance of 777 feet from the pile driving activity during all impact-type pile driving activities. Prior to the commencement of impact-type pile driving activities, the Project Applicant shall cordon off and post public notices informing of the construction activity in all public recreational areas within a distance of 777 feet from the pile driving activity. The Project Applicant shall include this measure in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval. Prior to the commencement of impact-type pile driving activities, the Project Applicant shall submit documentation to the District's Environmental and Land Use Management department demonstrating compliance with this measure.

XIII. POPULATION AND HOUSING

Environmental Setting

SIBLF is located in the City of San Diego within District jurisdiction. No residential uses exist within District jurisdiction, including on the Project site. The nearest residential uses to the Project site are located approximately 0.5 mile to the west-northwest within the City of San Diego's Point Loma neighborhood. There are also residential uses along Rosecrans Street, the Project's proposed haul route.

Thresholds of Significance

A project may be deemed to have a significant adverse impact to population and housing if it results in any of the following:

- Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

Analysis of Environmental Impacts

a) Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Typically, the growth-inducing potential of a Project would be considered significant if it fosters growth or a concentration of population in excess of what is assumed in pertinent land use plans. Significant growth impacts could also occur if the Project provides infrastructure or service capacity to accommodate growth beyond the levels currently permitted by local or regional plans and policies. The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. Construction of the Project would create approximately 12 short-term construction jobs during the Project's 6- to 10-month construction period. It is anticipated that the demand for these short-term construction jobs would be met by the local work force and would not result in substantial population growth. No permanent jobs would be created by the Project. Additionally, the Project would not increase the capacity of the SIBLF because it proposes to maintain SIBLF as a 10-lane boat launch facility. Thus, no growth inducement during operation of the Project would occur. Finally, infrastructure, including roads, sewers, water, and electricity already exist in and around the Project site. No extension or expansion this infrastructure is proposed that would indirectly induce population growth. Therefore, the Project would not result in substantial population growth in the area, either directly or indirectly. Impacts would be less than significant.

b) Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

No housing units are located on the Project site; therefore, the Project does not include displacement of existing housing. No impact would occur.

c) Would the project displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

No permanent or temporary housing units are located on the Project site; therefore, the Project does not include displacement of people. No impact would occur.

Required Mitigation Measures

No mitigation measures would be required because no significant impacts were identified.

XIV. PUBLIC SERVICES

Environmental Setting

Fire. The City of San Diego's Fire-Rescue Department (SDFRD) provides emergency and non-emergency fire, medical, and lifeguard services within the Project vicinity. The closest fire station to the Project site is Fire Station No. 22 located at 1055 Catalina Boulevard, approximately 1.5 miles northwest of the Project site.

Police. Law enforcement in the Project vicinity is provided by the Port District Harbor Police and the City of San Diego Police Department (SDPD). The San Diego Harbor Police Dock is the closest police facility to the Project site. It is located approximately 0.7 mile southwest of the Project site.

Schools. The Project site is located within the San Diego Unified School District (SDUSD). The closest school to the Project site is Cabrillo Elementary School, which is located 0.7 mile from SIBLF.

Parks. Shoreline Park extends along the bay side of Shelter Island. In some locations, it is adjacent to the Project site.

Other Facilities. The closest library is the James Edgar and Jean Jessop Hervey Public Library, located in Point Loma approximately 1.75 miles north of the Project site. The nearest hospital is Scripps Mercy Hospital located approximately 4.5 miles northeast of the Project site.

Thresholds of Significance

A project may be deemed to have a significant adverse impact on public services if it results in any of the following:

- Substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:
  - Fire Protection;
  - Police Protection;
  - Schools;
  - Parks; or,
  - Other Public Facilities.

Analysis of Environmental Impacts

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: • Fire Protection? • Police Protection? • Schools? • Parks? • Other Public Facilities?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☒	☐	☐

The Project includes the repair, maintenance, and replacement of several elements comprising the SIBLF. The purpose of the Project is to provide accessibility for users with disabilities, to provide more navigable water area within the existing breakwater basin to launch and retrieve boats, to improve boat maneuverability, to reduce boat congestion, and to improve boat safety and operations at the SIBLF. An increase in the operational capacity of the SIBLF would not occur. Furthermore, the Project does not include a residential component or a significant new job source; thus, it would not contribute to a direct increase in population. It is anticipated that the Project would use construction workers from the local labor force. Therefore, the Project would not generate a significant demand for increased fire protection or police protection. Furthermore, the Project would not generate a population increase that would affect schools, parks, libraries, or hospitals. Therefore, the Project would not result in significant environmental impacts associated with construction of new or physically altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for public services including fire protection, police protection, schools, parks, libraries, or hospitals. Impacts would be less than significant.

Nearby parks along Shelter Island would remain open during construction, except during impact-type pile driving activities. During the approximately 6- to 10-month construction period, it is estimated that impact-type pile driving could occur intermittently during a 15-week period. The portions of Shelter Island Shoreline Park located within 777 feet of the Project's construction area would be closed to the public during impact-type pile driving activities to avoid noise impacts to sensitive receptors. It is not anticipated that the unavailability of a portion of the park during this short period would result in a need for construction of a new park because sufficient park areas are located nearby along Shelter Island outside of the noise impact area that offer similar public recreational activities. Refer to Checklist response XV. a) below for a discussion regarding use of the SIBLF during Project construction. Therefore, a less-than-significant impact would occur.

Physical effects from construction and operation of the Project, a public facility, are discussed in this Initial Study. As discussed elsewhere in this Initial Study, impacts from the Project would be less than significant with the exception of biological resources, hazards and hazardous materials, noise, and transportation/traffic. Mitigation measures have been identified for biological resources, hazards and hazardous materials, noise, and transportation/traffic, which would reduce Project-related impacts to a less-than-significant level.

Required Mitigation Measures

Mitigation measures for impacts to biological resources, hazards and hazardous materials, noise, and transportation/traffic are identified in their respective Checklist sections.

XV. RECREATION

Environmental Setting

The Project site is located within the Bay Corridor subarea of Planning District 1, Shelter Island/La Playa, of the certified PMP. This subarea (subarea 13) is the largest in Planning District 1 and allows for mixed uses including hotels, marinas, restaurants, and various public recreational facilities including parks, beaches, fishing piers and boat launching facilities. The specific land and water use designations underlying the Project site include Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade. Figure 4 in Section 2 of the PMP shows the existing uses surrounding the Project site. The neighboring areas include a recreational park (Shelter Island Shoreline Park) with landscaped areas, walkways and promenades, outdoor park furniture, and other amenities. Beyond the park areas there are hotels, restaurants, and boat repair facilities. The nearest hotel is the Bay Club Hotel and Marina approximately 300 feet northwest of the Project site. Views of San Diego Bay, North Island across the bay, and the downtown San Diego skyline are all visible from the Project site.

Adjacent to the SIBLF, there are approximately 113 oversized parking spaces for vehicles with boat trailers and approximately 239 standard vehicles parking spaces for general use; a single-story comfort station building (restrooms); and a small single-story building of the Outboard Boating Club of San Diego, Inc. Kayak loading/unloading areas exist adjacent to the boat launching area.

Thresholds of Significance

A project may be deemed to have a significant adverse recreation impact if it results in any of the following:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or,
- Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

Analysis of Environmental Impacts

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

Refer to Checklist response XIII. a) above. It is anticipated that the demand for 12 short-term construction jobs would be met by the local work force. Therefore, the temporary construction jobs are not anticipated to increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. During the Project's approximately 6- to 10-month construction period, the SIBLF would not be operational and would be closed to the public. Other public recreational facilities located outside of the Project construction area, such as restrooms and parking areas, would remain open and available for use during the Project construction period. The users of SIBLF would be redirected to surrounding boat launching facilities located in Chula Vista, National City, Glorietta Bay, and Mission Bay. The Chula Vista Boat Launching Ramp is located at the J Street Marina Park in Chula Vista. The ramp has a large parking lot for vehicles with trailers, picnic facilities and restrooms. The National City Boat Launching Ramp is located adjacent to Pepper Park in National City. The ramp accesses San Diego Bay via the Sweetwater Channel. Restrooms, picnic facilities and a fishing pier are also located on the property. The Glorietta Bay Boat Launching Ramp is located in the City of Coronado. A 72-hour anchorage is located directly across the basin from the ramp. The South Shores boat launch is located on Mission Bay in South Shores Park, which includes a large parking lot, restrooms, and an RV Dump. Thus, the Project would result in a temporary increase in use of these boat launching facilities. However, because this increase in use would be temporary (approximately 6 to 10 months), it is not anticipated that substantial physical deterioration of the alternate boat launching facilities would occur. Thus, use of existing neighborhood and regional parks would not increase as a result of Project construction such that substantial physical deterioration of these facilities would occur or be accelerated.

Additionally, the portions of Shelter Island Shoreline Park located within 777 feet of the Project's construction area would be closed to the public during impact-type pile driving activities to avoid noise impacts to sensitive receptors. During the approximately 6- to 10-month construction period, it is estimated that impact-type pile driving could occur intermittently during a 15-week period. Although recreationists who would normally use Shelter Island Shoreline Park may use other parks instead during this period, including park areas located nearby along Shelter Island outside of the noise impact area that offer similar public recreational activities, it is not anticipated that this would result in substantial physical deterioration of other parks in the area. Thus, construction of the Project would not increase the use of existing parks or recreational facilities such that substantial physical deterioration would occur or be accelerated.

Finally, the Project would not involve the construction of housing or other amenities that would increase population. Also, no expansion or increase in the operational capacity of the SIBLF is proposed. As such, there would be no increase in the use of neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated due to population increases associated with operation of the Project. Impacts would be less than significant.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☒	☐	☐

The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF, which is an existing recreational facility. The Project's purpose is to improve the existing facility; however, no expansion of the existing facility is proposed. Physical effects from construction and operation of the Project are discussed in this Initial Study. As discussed elsewhere in this Initial Study, impacts from the Project would be less than significant with the exception of biological resources, hazards and hazardous materials, noise, and transportation/traffic. Mitigation measures have been identified for biological resources, hazards and hazardous materials, noise, and transportation/traffic, which would reduce Project-related impacts to a less-than-significant level.

Required Mitigation Measures

Mitigation measures for impacts to biological resources, hazards and hazardous materials, noise, and transportation/traffic are identified in their respective Checklist sections.

XVI. TRANSPORTATION/TRAFFIC

Environmental Setting

A Traffic Assessment was completed for the Project by Urban Crossroads, Inc. (Urban Crossroads, 2013c; Appendix E), which was used, along with other substantial evidence, in this section. This Traffic Assessment was updated in 2015 to evaluate a change in the estimated number haul truck trips for disposal of jetty riprap, jetty core fill, and dredged material. The results of the update were consistent with the 2013 traffic assessment (see Appendix E for additional details).

Traffic counts were taken and existing conditions were modeled at twelve intersections:

- Shelter Island Drive/Rosecrans Street;
- Shelter Island Drive/Scott Street;
- Shelter Island Drive/Shafter Street;
- Shelter Island Drive/Anchorage Lane;
- Rosecrans Street/North Harbor Drive;
- Rosecrans Street/Nimitz Boulevard;
- Rosecrans Street/Lytton Street;
- Rosecrans Street/Midway Drive;
- Midway Drive/Barnett Avenue;
- Sports Arena Boulevard-Rosecrans Street/Camino Del Rio;
- Camino Del Rio/I-5 and I-8 onramps; and
- I-5 southbound onramps/Pacific Highway.

Manual AM and PM peak hour turning movement counts were conducted at these intersections in May 2013 (Urban Crossroads 2013c, Appendix E). Existing peak hour traffic operations were evaluated for these intersections. The intersection analysis showed that all intersections are operating at an acceptable Level of Service (LOS) of D or better during the peak hour with the exception of the following intersections:

- Rosecrans Street/Nimitz Boulevard – LOS E for both the AM and PM peak hours; and
- Rosecrans Street/Lytton Street – LOS F for the AM peak hour and LOS E for the PM peak hour.

A traffic signal warrant analysis was conducted for the two unsignalized intersections in the study area (Shelter Island Drive/Shaffer Street and Shelter Island Drive/Anchorage Lane) based on the peak hour intersection volumes. Neither of the current unsignalized study area intersections warranted a traffic signal.

The District has not adopted transportation/traffic standards or thresholds. Therefore, this analysis relies on the City of San Diego Traffic Impact Study Manual thresholds to determine the Project's potential transportation/traffic impacts.

Thresholds of Significance

A project may be deemed to have a significant adverse transportation/traffic impact if it results in any of the following:

- Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. For the purposes of this Project, the City of San Diego Traffic Impact Study Manual thresholds will be used, which indicate the target for peak hour intersection operation is LOS D or better;
- Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways. For the purposes of this project, the City of San Diego Traffic Impact Study Manual thresholds will be used, as indicated below:

Level of Service with Project[1]	Allowable Change Due to Project Impact[2]					
	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (seconds)	Delay (minutes
E (or ramp meter delays above 15 minutes)	0.010	1.0	0.02	1.0	2.0	2.0
F (or ramp meter delays above 15 minutes)	0.005	0.5	0.01	0.5	1.0	1.0

Source: Urban Crossroads 2013a (Appendix E)

Notes: [1]All LOS measurements are based upon Highway Capacity Manual procedures for peak hour conditions. However, V/C ratios for roadway segments are estimated on an ADT/24-hour traffic volume basis (using Table 2 of the City's Traffic Impact Study Manual). The acceptable LOS for freeways, roadways, and intersections are generally D (C for undeveloped locations). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

[2]If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. The project applicant shall then identify feasible improvements (within the Traffic Impact Study) that will restore/maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see above note 1) or if the project adds a significant amount of peak hour trips to cause any traffic queues to exceed on-or off-ramp storage capacities, the project applicant shall be responsible for mitigating the project's direct significant and/or cumulatively considerable traffic impacts.

LOS = Level of Service
V/C = Volume to Capacity ratio

- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access;
- Result in inadequate parking capacity;

- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Analysis of Environmental Impacts

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a)	Would the project conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐

Construction. Peak construction-related traffic activity would occur during the partially-overlapping grading and site preparation phases of construction. During construction, workers would access the Project site on a daily basis from Rosecrans Street and Shelter Island Drive. The site preparation phase of Project construction would require approximately 40 haul truck trips over the course of 15 working days with 6 workers per day. The grading phase would require approximately 1,335 haul truck trips over the course of 30 working days with 6 workers per day. As specified by the construction schedule, construction would occur 8 hours per day, 5 days per week (Monday through Friday). In an effort to more conservatively assess the potential traffic impact of the Project, it has been anticipated that haul truck traffic would be spread out evenly throughout the workday with the same number of haul trucks traveling during AM and PM peak hours as during less congested mid-day periods. Passenger car traffic has also been estimated to occur only during the AM and PM peak hours to represent the worst case scenario of workers arriving to the construction site in the AM peak hour and leaving in the PM peak hour. Passenger car trips were calculated from the total number of workers estimated for both construction phases (6 workers per day, 12 workers total) and split among the AM and PM peak hours, with all passenger car trips arriving at the site in the morning and leaving the site in the evening (Urban Crossroads 2013c, Appendix E).

The City of San Diego has determined that intersections in the City should operate at an acceptable LOS of D or better. The traffic assessment determined that the Project would not cause any of the intersections currently operating at an acceptable LOS to drop to LOS E or F. Currently two intersections (Rosecrans Street/Nimitz Boulevard and Rosecrans Street/Lytton Street) operate at an unacceptable LOS, as follows:

- Rosecrans Street/Nimitz Boulevard – LOS E for both the AM and PM peak hours; and
- Rosecrans Street/Lytton Street – LOS F for the AM peak hour and LOS E for the PM peak hour.

For intersections that operate at a worse LOS (LOS E or F), the City has identified significance thresholds of 2.0 second delay for LOS E and 1.0 second delay for LOS F to determine if Project impacts would be significant. The traffic assessment showed that the Project would not cause a significant delay of 2.0 seconds or longer at the Rosecrans Street/Nimitz Boulevard intersection. Results of the traffic assessment show that the addition of haul truck traffic from construction of the Project would result in a significant impact of an increase of delay of more than 1.0 second at the Rosecrans Street/Lytton Street intersection during the AM peak hour (when the intersection operates at LOS F) and an increase of delay of more than 2.0 seconds at this intersection during the PM peak hour (when the intersection operates at LOS E). Implementation of Mitigation Measure T-1 would restrict haul truck trips from arriving or leaving from the construction site during the AM peak period (7 a.m. to 9 a.m.), and would limit haul truck traffic to more than 5 loads per hour during the PM peak hour. With implementation of this mitigation measure, it is anticipated that the increase in delay at this intersection would be reduced to 1.0 second or less during the AM peak hour and 2.0 seconds or less during the PM peak hour, resulting in a less-than-significant impact (Urban Crossroads 2013c, Appendix E).

The analysis also indicated that neither unsignalized study area intersection on Shelter Island Drive would require a traffic signal with the addition of the Project. A less-than-significant impact would occur (Urban Crossroads 2013c, Appendix E).

Operation. Traffic associated with the existing SIBLF includes vehicles used by SIBLF users to bring their boats to the site. These vehicles typically range from passenger vehicles transporting smaller boats, such as kayaks, to pickup trucks with trailers transporting larger boats. Implementation of the Project would not increase the capacity of the SIBLF, and traffic from Project operations would remain the same as with existing conditions. No net increase is anticipated, and no impact associated with operational traffic would occur.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Would the project conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☒	☐	☐

Construction. The City of San Diego uses the LOS system for their congestion management program. The City of San Diego target for peak hour intersection operation is LOS D or better. For intersections that operate at a worse LOS (LOS E or F), the City has identified significance thresholds of 2.0 second delay for LOS E and 1.0 second delay for LOS F. As discussed in Checklist response XVI. b) above, with implementation of the Project, the Rosecrans Street/Nimitz Boulevard intersection would have a LOS E AM and PM peak hours, and the delay would be less than 2.0 seconds; therefore, the impact would be less than significant. With implementation of the Project, the Rosecrans Street/Lytton Street would have a LOS F in the AM peak hour and LOS E in the PM peak hour, and the estimated delay would be more than 1.0 second during the AM peak hour and more than 2.0 seconds during the PM peak hour due to haul truck traffic. Impacts at this intersection would be significant. Implementation of Mitigation Measure T-1 would reduce the impact to a less-than-significant level (Urban Crossroads 2013c, Appendix E).

Operation. Traffic associated with the existing SIBLF includes vehicles used by SIBLF users to bring their boats to the site. These vehicles typically range from passenger vehicles transporting smaller boats, such as kayaks, to pickup trucks with trailers transporting larger boats. Implementation of the Project would not increase the capacity of the SIBLF, and traffic from Project operations would remain the same as with existing conditions. No net increase is anticipated, and no impact associated with operational traffic would occur.

c) Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

The Project includes improvements to the existing SIBLF. Federal law requires sponsors of Projects that would exceed height limits of 200 feet to file notice with the FAA (SDCRAA 2014). During construction, heavy equipment would be used at the Project site. The height of a standard pile driver, which would be the tallest piece of equipment, would be approximately 10 feet. Therefore, the construction equipment used at the site would not be of sufficient height to result in a change in air traffic patterns. After construction, use of the SIBLF would be the same as with existing conditions. Therefore, no impact would occur during construction or operation of the Project.

d) Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

The Project includes design improvements to the site's ADA access and the kayak launching area that would reduce existing design hazards at the SIBLF (District 2013b). The Project would not change the design of local roads or result in incompatible uses. Additionally, the Project would not change or expand the existing use or introduce any incompatible uses. No impact would occur as a result of construction or operation of the Project.

e) Would the project result in inadequate emergency access?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☒	☐	☐

Impacts to emergency access may occur during construction. During construction, the west driveway to the existing boat trailer parking lot (east of the launch ramp) and a small portion of the west portion of the parking lot (up to 15 parking spaces) would be closed. These spaces would be used for a staging and laydown area. Site-specific activities, including temporary construction activities, are reviewed and approved on a project-by-project basis by the District when development plans are submitted. The District ensures that emergency access is maintained during construction through its project review and approval process. Thus, emergency access would be maintained during construction of the Project. After construction, the equipment would be removed and access to the driveway and parking would be restored. Also, the addition of traffic from haul trucks would result in a significant impact at the Rosecrans Street/Lytton intersection because there would be an increase of delay of more than 1.0 second in the AM peak hour, when the intersection operates at LOS F, and more than 2.0 seconds during the PM peak hour, when the intersection operates at LOS E (Urban Crossroads 2013c; Appendix E). This delay could also affect emergency response times when haul trucks are used in the AM and PM peak hours. Implementation of Mitigation Measure T-1 would reduce this impact to a less-than-significant level.

Operation of the Project would not include any characteristics (e.g., permanent road closures, long-term blocking of road access) that would physically impair or otherwise interfere with emergency response or evacuation in the Project vicinity. No impact would occur during operation of the Project.

f) Would the project result in inadequate parking capacity?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

During construction, approximately 15 of the 113 parking spaces on the west side of the parking lot and the west driveway to the boat trailer parking lot east of the launch ramp would be temporarily inaccessible because this area would be used as a staging/laydown area for the Project. The temporary loss of approximately nine percent of the parking spaces is not expected to result in a significant impact because boat launch users would be temporarily rerouted to other boat launching facilities in the area during construction. These alternate boat launching facilities offer parking for users of those facilities. Furthermore, an increase in the operational capacity of the SIBLF would not occur as a result of the Project. Therefore, no permanent changes to parking facilities are required. A less-than-significant impact would occur during construction, and no impact would occur during operation.

g) Would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

The Project would not conflict with any adopted policies, plans, or programs regarding alternative transportation because it would not would not remove or relocate any alternative transportation access points. Instead, the Project would improve existing pedestrian facilities by installing walkways along the proposed bulkhead walls. Furthermore, the Project would not decrease the performance of such facilities because it would not increase demand on public transit, bicycle, or pedestrian facilities. Therefore, no impact would occur as a result of construction or operation of the Project.

Required Mitigation Measure

T-1 Construction truck traffic hauling sediment or materials to or from the Project site shall not occur between the AM peak hours of 7 a.m. and 9 a.m., and shall be limited to no more than five loads per hour during the PM hours of 4 p.m. to 6 p.m. The Project Applicant shall include this restriction in the construction specification documents for the Project. Prior to issuance of the construction specification documents for bid, the Project Applicant shall submit a copy of the construction specification documents to the District's Environmental and Land Use Management department for approval. The contractor shall maintain hauling/delivery logs on the site for the District's review, and the Project Applicant shall submit a copy of the contractor's hauling/delivery logs to the District's Environmental and Land Use Management department for review.

XVII. UTILITIES AND SERVICE SYSTEMS

Environmental Setting

There is one existing storm drain outfall in the SIBLF basin, west of the launch ramp. The outfall serves the upper parking lot/restroom area.

The City of San Diego's Point Loma Wastewater Treatment Plant (PLWTP), located at 1902 Gatchell Road, San Diego, provides wastewater services to the SIBLF. Approximately 175 million gallons per day (mgd) are treated in PLWTP and it has a capacity of 240 mgd of wastewater (City of San Diego 2013b).

The City of San Diego receives imported water supplies from the Colorado River. The City does not have full authority over the imported water supply. However, it is a member of the San Diego Water Authority (SDWA), which secures the San Diego region's water supply from the Metropolitan Water District of Southern California (MWD).

The District has identified Copper Mountain Landfill located at 34853 East County 12th St. Wellton, Arizona, approximately 200 miles east of the Project site, as the disposal site for riprap, jetty core fill, and dredged material from the Project (AMEC 2015). This landfill has a capacity of 60 million tons and is estimated to have approximately 56 million tons of remaining capacity. Approximately 200,000 tons of waste per year are disposed of at the landfill (Arizona Department of Environmental Quality 2012).

Thresholds of Significance

A project may be deemed to have a significant adverse impact on utilities and service systems if it results in any of the following:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

- Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- Have insufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed;
- Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or,
- Not comply with federal, state, and local statutes and regulations related to solid waste.

Analysis of Environmental Impacts

a) Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist response IX. a) for a discussion of dewatering activities associated with construction of the Project. The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. The Project would not change the use or capacity of the SIBLF, and the restrooms that serve the SIBLF would not be expanded. Therefore, implementation of the Project would not result in the generation of additional wastewater that would exceed wastewater treatment requirements of the RWQCB. No impact would occur.

b) Would the project require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist response XVII. a) above. The Project would not change the use or capacity of the SIBLF. Thus, the Project would not generate additional demand for wastewater treatment or potable water. The existing capacity of the PLWTP and imported water supplies would be sufficient to continue to serve the improved SIBLF. Therefore, the Project would not require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities. No impact would occur.

c) Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist response IX. a) above. The Project involves the repair, maintenance, and replacement of several elements comprising the SIBLF. The existing storm drain outfall in the basin, west of the launch ramp, would not be blocked, removed, or otherwise affected by the Project. Due to the nature of the Project (renovation of an existing boat launching facility), surface runoff is not anticipated to increase from existing conditions, and construction of new stormwater drainage facilities or the expansion of existing facilities would not be required. No impact would occur.

d) Would the project have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist response XVII. b) above. The Project would not change the use or capacity of the SIBLF. Thus, the Project would not generate additional demand for potable water that would necessitate new or expanded entitlements. The existing capacity of imported water supplies would be sufficient to continue to serve the improved SIBLF. Therefore, no impact would occur.

e) Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☐	☒

Refer to Checklist response XVII. b) above.

f) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
	☐	☐	☒	☐

Approximately between 13,150 and 13,350 cubic yards of riprap, jetty core fill, and dredged material from the existing SIBLF would be disposed of in the Copper Mountain Landfill, which is permitted to accept wastes with elevated lead and TPH (AMEC 2015). The Copper Mountain landfill has a total capacity of 60 million tons, of which approximately 56 million tons is available for disposal. Annual disposal at the landfill is approximately 200,000 tons per year (Arizona Department of Environmental Quality 2012). The maximum of 13,350 cubic yards of riprap, jetty core fill, and dredged material represents approximately 668 tons of material, which would be 0.3 percent of Copper Mountain Landfill's annual disposal and 0.001 percent of its total capacity (Reade 2015). Therefore, disposal of waste produced by the Project would not be expected to alter the permitted capacity of the landfill. The impact to landfill capacity during construction would be less than significant.

During operations, the capacity of the SIBLF would remain the same. Waste generated by users of the facility includes general trash and recyclables that are either removed from the site by the users or disposed of in District-provided trash cans near the facility. No net increase in waste volume or change in type of waste is expected. Therefore, no impact from operations would occur.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
g) Would the project comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

The Project would be required to comply with applicable elements of the Resource Conservation and Recovery Act (RCRA) (40 CFR Parts 239 to 282), the Toxic Substances Control Act (TSCA) (15 U.S.C. Section 2601 et seq.), California Department of Toxic Substances Control's hazardous waste regulations (CCR, Title 22, Division 4.5), AB 1327, Chapter 18 (California Solid Waste Reuse and Recycling Access Act of 1991), and other applicable local, state, and federal solid waste disposal standards. Riprap, jetty core fill, and dredged material would be disposed of at the Copper Mountain landfill. Soil and sediment sampling within the rock jetty concluded that the sediments that would be removed from the Project site are suitable for upland disposal at the Copper Mountain landfill based on the initial chemical and physical testing results (AMEC 2015). As such, the Project would comply with federal, state, and local statues and regulations related to solid waste. Impacts would be less than significant.

Required Mitigation Measures

No mitigation would be required because no significant impacts were identified.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

As discussed in this Initial Study, with the implementation of mitigation measures, the Project does not have a potential to degrade the quality of the environment, reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. Specific Project impacts and mitigation measures are summarized below.

Biological Resources. Impacts to biological resources would be less than significant with the exception of potential Project impacts to eelgrass and potential construction noise impacts to fish, birds, marine mammals, and sea turtles. Impacts to eelgrass from the Project would be minor (less than approximately 30 square meters) based on 2013 surveys. The actual level of impact to eelgrass will be determined during the pre-and post- construction eelgrass surveys, but the impact could be significant. Any significant impacts to eelgrass, as determined by these surveys, would be mitigated using the guidance from the California Eelgrass Mitigation Policy (NMFS 2014). Impacts would be less than significant with the implementation of Mitigation Measure B-1:

B-1 Impacts from effects to eelgrass shall be mitigated according to the California Eelgrass Mitigation Policy (CEMP), with replanting of eelgrass at a 1.2:1 ratio (NMFS 2014). Pursuant to the CEMP, pre- and post-construction surveys shall determine the exact amount of eelgrass affected by Project activities. Prior to the commencement of construction, the Project Applicant shall retain a qualified biologist to conduct a pre-construction eelgrass survey per the CEMP to quantify the amount of existing eelgrass within the Project area. The name of the retained contractor and proposed survey plan, including a schedule, shall be submitted to the District before initiation of survey work. A monitoring program consisting of a pre-construction eelgrass survey and three post-construction eelgrass surveys at the impact site and appropriate reference site(s) will be performed (NMFS 2014). The first post-construction eelgrass survey will be completed within 30 days following completion of construction to evaluate any immediate effects to eelgrass habitat. The second post-construction survey will be performed approximately one year after the first post-construction survey during the appropriate growing season. The third post-construction survey will be performed approximately two years after the first post-construction survey during the appropriate growing season. The second and third post-construction surveys will be used to evaluate if indirect effects resulted later in time due to altered physical conditions; the time frames identified above are aligned with growing season (attempting a survey outside of the growing season would show inaccurate results).

A final determination regarding the actual impact and amount of mitigation needed at the above-stated ratio, if any, to offset impacts should be made based upon the results of two annual post-construction surveys, which document the changes in the eelgrass habitat (areal extent, bottom coverage, and shoot density within eelgrass) in the vicinity of the action, compared to eelgrass habitat change at the reference site(s). Any impacts determined by these monitoring surveys would be mitigated. Two possible areas for on-site mitigation of eelgrass have been identified generally between the new east dock and the existing east jetty. Before implementation of the mitigation, the Project Applicant shall submit a mitigation plan to the District's Environmental and Land Use Management department and resource agencies for review and approval.

Additionally, airborne and underwater construction noise from pile driving may directly or indirectly affect the eastern Pacific green sea turtle, sensitive fish species, bird species, and marine mammals. Level A Harassment (physical injury) could occur immediately adjacent to the point of impact. Level B Harassment (disruption of behavioral patterns) could occur further away from the point of impact. Impacts would be less than significant with the implementation of Mitigation Measure B-2:

B-2 To mitigate potentially significant impacts to sensitive fish species, bird species, eastern Pacific green sea turtles and marine mammals to less than significant, the following measures shall be implemented:

1. An on-site biological observer shall be present during pile driving activities with the authority to stop construction if a sensitive fish species, green sea turtles, or marine mammal approaches or enters the shutdown zone. The shutdown zone is the area within 10 meters of construction activities or inside the 190 dB rms isopleths for green sea turtles and marine mammal cetaceans or 180 dB rms for marine mammal pinnipeds. Prior to the start of pile-driving activities, the biological observer shall monitor the shutdown zone for 15 minutes to ensure that sensitive fish species, green sea turtles, and marine mammals are not present. If a sensitive fish species, green sea turtle, or marine mammal approaches or enters the shutdown zone during the pile-driving activities, the biological observer shall notify the construction contractor to stop the activity. The pile-driving activities shall be stopped and delayed until the biological observer visually confirms either that the animal has voluntarily left the shutdown zone and is beyond the shutdown zone, or 15 minutes have passed without re-detection of the animal. If the on-site biological observer determines that weather conditions prevent the visual detection of sensitive fish species, green sea turtles, or marine mammals in the shutdown zone, such as heavy fog, in-water construction activities with the potential to result in Level A Harassment (injury) shall not be conducted until conditions change.
2. Biological monitoring shall be conducted by qualified observers. The observer shall be placed in the best vantage point practicable to monitor, and when

applicable, shall communicate directly with the construction superintendent and/or hammer operator.

3. During all observation periods, observers shall use binoculars and the naked eye to scan continuously for sensitive fish species, green sea turtles, and marine mammals. As part of the monitoring process the observer shall collect sighting data and behavioral responses to construction from sensitive fish species, green sea turtles, and marine mammals observed in the Project area of activity during the period of construction. The observer shall record any sensitive fish species, marine mammal, green sea turtle, or California least tern sightings, and submit the sighting records to the District within 60 days of the completion of the mitigation monitoring with a summary of observations.

Cultural Resources. No significant historic of prehistoric resources are known to occur on the Project site. The Project is situated on an artificial landform area created by bay infill and is within an environment that has been severely disturbed by development; thus, the potential for any buried resources on land or underwater to exist on the Project site is low. (District 2012). Furthermore, no excavation of the Old Paralic Deposits, Unit 6 formation underlying the Project site, a formation that has the potential to contain unique paleontological resources, is proposed. Therefore, it is unlikely that the Project would eliminate important examples of the major periods of California history or prehistory. Impacts would be less than significant.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐

CEQA Guidelines Section 15130 (b) states that either of the following approaches to addressing cumulative impacts is acceptable: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency. The analysis below uses the list of cumulative projects approach.

Table 4-9 consists of a list of all the past, present, and probable future projects within the vicinity of the Project known to the District, the City of San Diego, and the U.S. Navy as of April 2015. The cumulative projects that are considered within the vicinity of the proposed Project are those located in the neighborhoods adjacent to the Project site.

Table 4-9. Cumulative Projects List			
	Project Name (Estimated Completion)	**Location**	**Description**
1	Kona Kai Resort Expansion Project (Phase 1 construction began in 2014 and will be completed by 2015; Phase 2 construction anticipated to commence in 2018)	1551 Shelter Island Drive, San Diego, CA	The project involves expansion and renovation of the existing Kona Kai Resort, as follows: 1) construction of 41 new guest rooms in two new buildings; 2) construction of a new two-story marina facility retail building; 3) construction of a new pool and pool deck; 4) expansion of the existing pool deck and construction of a new pool bar; and 5) renovation of the existing restaurant, spa and fitness center, conference and meeting facilities, guest rooms, lobby marina facility building, dock master building, beach, parking lot, and landscaping.
2	Intrepid Landing Buildings A and B (Construction is expected be begin in February 2015 and be completed by fall 2015)	2702 Shelter Island Drive, San Diego, CA 92106	The project involves construction of approximately 6,240 square feet of commercial buildings made up of Building A and B with parking, pedestrian walkway of 10-foot width, hardscape, and landscaping.
3	Intrepid Landing Building C (Construction began in 2014 and will be completed by summer 2015)	2702 Shelter Island Drive, San Diego, CA 92106	The project involves Construction of a 5,000-square-foot marine sales and service building (Building C), up to 52 boat slips, shoreline pedestrian walkway of 10-foot width, public plazas and gathering areas, and required parking.
4	Best Western Island Palms Exterior Renovation (construction began in 2014 and will be completed in several phases within two years)	2951 Shelter Island Drive, San Diego, CA 92106	The project involves exterior renovation of the Best Western Plus Island Palms Hotel & Marina in support of a lease extension.
5	Humphrey's Half Moon Inn and Suites Renovation (construction began in 2014 and will be completed in several phases within two years)	2303 Shelter Island Drive, San Diego, CA 92106	The project involves interior and exterior renovation of the Humphrey's Half Moon Inn and Suites in support of a new lease.
6	Shelter Island Boat Yard Crane Replacement and Pier Addition Project (construction began in 2014 and is anticipated to be complete by May 2015)	2330 Shelter Island Drive, San Diego, CA 92106	The project would result in the construction of new floating docks and new piers to support a larger capacity boat gantry crane, the removal of existing maintenance storage sheds and timber frame structure, the removal of floating docks and finger docks, and repairs to the existing bulkhead wall.

Table 4-9. Cumulative Projects List			
	Project Name (Estimated Completion)	**Location**	**Description**
7	North Harbor Drive Realignment (broke ground in 2014 and will be completed by 2015)	North Harbor Drive between Scott Street and Nimitz Boulevard, San Diego, CA 92106	The project would improve the North Harbor Drive roadway between Scott Street and Nimitz Boulevard in the District's tidelands area of Shelter Island, amend the Point Loma Marina lease (Amendment No. 3 to the PLM Lease), which allows for certain improvements on the leasehold, and apply a two-inch asphalt-concrete overlay and restripe the Westy's parking lot.
8	Navy Miramar Pipeline Repair and Relocation (construction anticipated to begin in December 2015 and two years and one month to complete)	Between Naval Base Point Loma (NBPL) Defense Fuel Support Point (DFSP) in the NBPL Complex (south end of the pipeline) and the first 5 miles of pipeline extending out into the City of San Diego	The project would involve the repair and relocation of the existing Navy owned 8-inch Miramar Fuel Pipeline along various locations in the City of San Diego within the first five miles of the pipeline. The project is needed to maintain the safe, consistent, and continuous use of the pipeline between Defense Fuel Support Point Loma and Marine Corps Air Station Miramar. This project would repair various pipeline anomalies and mitigate potential geohazards to provide for the continued fueling needs of existing and future Navy ships.
9	Humphrey's Half Moon Inn and Suites Marina Redevelopment (construction anticipated to begin in 2016 and be completed in five months)	2303 Shelter Island Drive, San Diego, CA 92106	The project involves replacement of the existing wood docking system comprising the Humphrey's Half Moon Inn and Suites marina with a recycled aluminum docking system, as well as minor reconfiguration of the marina to support a new Americans with Disabilities Act compliant gangway. The project will not require the installation of any new piles.
10	Tonga Landing Redevelopment (construction to begin in late 2016)	2385 Shelter Island Drive, San Diego, CA 92106 and 2353 Shelter Island Drive, San Diego, CA 92106	The project would modernize the existing two-story Tonga Landing building, demolish and replace the one-story Gold Coast building, update the Gold Coast dock, enhance the entire site layout, and operate as one entity as Tonga Partners, Inc.

The cumulative impacts analysis determines if the Project's incremental effects would be cumulatively considerable. Cumulatively considerable means that the incremental effects of an individual project would be considerable when viewed in connection with the effects of past, current, or probable future projects. A cumulative impact is not deemed significant if the effect would be essentially the same whether the Project is implemented or not. Further, in discussing the cumulative impacts, one question and a possible follow-up question will be answered for each environmental topic: Overall, will there be a significant cumulative impact? If it is determined that a significant cumulative impact exists, the next question is whether or not the

Project's contribution to this significant impact is cumulatively considerable?

The following discussion of cumulative impacts is organized by each environmental topic addressed for the Project. At the beginning of each topical discussion, a description of the area of influence for each topic is provided followed by an analysis of the cumulative effects.

Aesthetics

The aesthetics discussion includes scenic views and vistas, general negative aesthetic effect, and light and glare. The area of projects that would be considered for the aesthetics cumulative effects analysis is defined as the viewshed for the Project site. The Project site and surrounding area is located in urbanized area surrounded by San Diego Bay to the south and east and by developed park and commercial uses, including hotels, restaurants, and marine sales and services uses, to the north and west. Due to their distance from and orientation related to the Project site, none of the projects listed in Table 4-9 would be clearly visible within the Project's viewshed. In addition, none of the cumulative projects would change the existing use or character of their respective projects sites in a manner that would negatively affect aesthetics.

The Kona Kai Resort Expansion project is located approximately 0.6 mile southwest of the Project site and is not visible within the Project's view shed due to its distance from the Project site and because it is blocked from view by existing structures. Similarly, the Intrepid Landing projects are located approximately 0.5 mile northwest of the Project site and are not visible within the Project's view shed due to their distance from the Project site and because they are blocked from view by existing structures. The Best Western Island Palms Exterior Renovation project, located approximately 0.2 mile west of the Project site, involves exterior landscape and aesthetic enhancements to the hotel property and would therefore not result in a negative aesthetic impact. The Humphrey's Half Moon Inn and Suites Renovation project, located approximately 0.05-mile north of the Project site, involves interior and exterior renovations to the hotel property and would therefore not result in a negative aesthetic impact. The Shelter Island Boat Yard Crane Replacement project, located approximately 0.2-mile north of the Project site, is blocked from the Project's viewshed by existing buildings and security fencing as well as other marina piers and structures. The North Harbor Drive Realignment project, located approximately 0.6-mile north of the Project site, involves the realignment of an existing roadway, the addition of parking, and landscape enhancements and would therefore not result in negative aesthetic effects. It is also not clearly visible within the Project's viewshed. Similarly, the Navy Miramar Pipeline Repair and Relocation project would involve the repair and relocation of an existing underground fuel pipeline and would therefore not result in negative aesthetic effects. Next, the Humphrey's Half Moon Inn and Suites Marina Redevelopment project, located 0.1-mile northwest of the Project site, is located in the marina portion of the hotel site and would be blocked from view by the existing hotel structures. The marina project would also not change the visual character or quality of the site because no change in use, size, or character of the existing marina is proposed. Finally, the Tonga Landing Redevelopment project, located approximately .22-mile northwest of the Project site, would involve the modernization of two existing developed leaseholds. Similar to the Shelter Island Board Yard project, the Tonga Landing Redevelopment project area is blocked from the Project's view shed by existing buildings as well as other marina piers and structures. Also, this project is compatible with the character and quality of the existing marine sales and services developments. Furthermore, minor lighting modifications and improvements associated with some of the projects listed in Table 4-9 would not represent new significant sources of substantial light or glare because

Shelter Island and the Peninsula community are existing urbanized areas developed with several sources of light and glare. As discussed above in Section I. Aesthetics of this Initial Study, the Project would result in less-than-significant impacts to aesthetics, including lighting. As such, the impact on aesthetics from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative aesthetics impacts would be less than cumulatively considerable.

Agriculture and Forestry Resources

The area of projects that would be considered for the agriculture and forestry resources cumulative effects analysis is defined as the San Diego region. As discussed in Section II. Agriculture and Forestry Resources of this Initial Study, the Project is not located on or zoned for farmland or forest land. Therefore, the Project would not result in the loss of or conflict with zoning for farmland or forest land. Similarly, none of the projects listed in Table 4-9 involve the conversion of farmland or forest land to non-agricultural or non-forest land use. Also, none of the cumulative projects are located on or zoned for farmland or forest land. The Project and all the cumulative projects would occur in urbanized, developed areas. Therefore, a significant cumulative agriculture and forestry resources impact would not occur.

Air Quality

As discussed in Section III. Air Quality of this Initial Study and shown in Table 4-2, criteria pollutant emissions are expected to be below San Diego County screening level thresholds for all nonattainment criteria pollutants and their precursors. Due to their regional nature and the fact that they take in account past, present, and future projects and set a regional threshold in consideration of current and future projects, these San Diego County screening-level thresholds serve as thresholds for both direct and indirect project-related impacts and as an indication of whether a project's cumulative contribution would be significant. Because the Project would not result in an increase in stationary or mobile source emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation, the Project's operation would have no potential to contribute to cumulative air quality impacts.

Furthermore, as indicated under Table 4-2, the Project would not have a cumulatively considerable contribution to a regional cumulative air quality impact during the construction phase. However, it is still possible that the Project, when combined with current construction projects, could result in localized air quality impacts such as the effects from dust (i.e., PM_{10}) and construction equipment operations associated with the use of diesel (i.e., $PM_{2.5}$). The radius for such localized emission impacts is approximately 0.25 mile. There are five cumulative projects that are located within 0.25 mile of the Project's construction boundaries, including the Best Western Island Palms Exterior Renovation project, the Humphrey's Half Moon Inn and Suites Renovation project, the Humphrey's Half Moon Inn and Suites Marina Redevelopment project, the Shelter Island Boat Yard Crane Replacement project, and the Tonga Landing Redevelopment project. The Best Western Island Palms Exterior Renovation project, Humphrey's Half Moon Inn and Suites Renovation, and Shelter Island Boat Yard Crane Replacement projects are expected to be completed before the Project begins construction. The Humphrey's Half Moon Inn and Suites Marina Redevelopment project would not involve the use of heavy construction equipment and would not require any major earthwork, grading, or dredging that would result in air quality impacts. The Tonga Landing Redevelopment project would be implemented in conformance with air quality regulations and, if required, mitigation measures identified in the environmental document that would be prepared for this project.

Moreover, this project would be subject to the same SDAPCD rules and regulations that reduce emissions from the Project, including fugitive dust control per Rule 55. Additionally, the Project would conform to SDACPD's relevant air quality plan, and, as discussed in Section XVI. Transportation/Traffic, with the implementation of Mitigation Measure T-1, the Project would not significantly affect roadways or intersection traffic. As such, the Project is not expected to result in a cumulatively considerable net increase in a nonattainment pollutant, and the Project's cumulative contribution would be less than cumulatively considerable.

Biological Resources

The discussion of biological resources includes flora and fauna and their related habitats for both terrestrial and marine habitats. The area of cumulative projects that would be considered for the biological resources cumulative effects analysis varies depending on the species or habitat that may be impacted. Because sensitive biological resources are identified due to their scarcity (e.g., threatened and endangered) throughout their range, impacts to these species, both terrestrial and marine, are considered cumulatively significant. There are a number of important biological communities and sensitive habitats identified in the City of San Diego in the City's MSCP Subarea Plan and identified in the San Diego Bay in the INRMP. The MSCP Subarea Plan does not identify any important communities or habitats in the Shelter Island or Peninsula community areas where the Project and the cumulative projects are located. Sensitive habitats identified in the INRMP are primarily located along the Silver Strand and in the South Bay. The land-side portion of the Project site is in a fully developed marine-related recreational facility that is disturbed and entirely paved. There are no areas of natural open space or areas of significant terrestrial biological resources and no species designated by the California Department of Fish and Wildlife (CDFW) or any riparian habitats or other sensitive natural communities identified by either the U.S. Fish and Wildlife Service (USFWS) or CDFW at the Project site. All of the cumulative projects, along with the Project, occur on previously developed areas that do not contain sensitive terrestrial biological resources or would occur outside of areas containing sensitive terrestrial biological resources.

Because of the proximity of the cumulative projects to San Diego Bay, marine biological resources in the bay may be affected by those projects that require work in the bay or that would result in runoff to the Bay. However, these projects would be required to comply with NPDES requirements and the Clean Water Act Sections 404 and 401 permit requirements prior to approval, which would minimize any cumulative impacts to marine species and habitats. Furthermore, any impacts to marine biological resources, including eelgrass, caused by the cumulative projects would be required to mitigate those impacts in accordance with the CEMP and other applicable policies and regulations. As discussed above in Section IV. Biological Resources of this Initial Study, with the implementation of Mitigation Measures B-1 and B-2, the Project's impacts to eelgrass and noise impacts to fishes, birds, marine mammals, and sea turtles would be reduced to a less-than-significant level. As such, the impact on biological resources from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative biological resource impacts would be less than cumulatively considerable.

Cultural Resources

The cultural resources discussion includes archeological, paleontological, and historic resources. The area of projects that are considered for the cultural resources cumulative effects analysis is defined as Shelter Island. The Project and the cumulative projects located on Shelter Island are underlain by an artificial landform area created by bay infill that is not considered sensitive for archaeological resources due to previous disturbance of the soil to create the fill. However, Old Paralic Deposits, Unit 6 formation underlies the surficial fill soils at the Project site and cumulative project sites. The Old Paralic Deposits, Unit 6 formation has a high sensitivity for paleontological resources. Buried paleontological deposits may exist in the cumulative project area and could be encountered during ground-disturbing activities. Due to the scarcity and sensitivity of archeological, paleontological, and historic resources, impacts to such resources could result in a significant cumulative impact to cultural resources. However, as discussed above in Section V. Cultural Resources of this Initial Study, the Project would have a less-than-significant impact on cultural resources because no excavation of Old Paralic Deposits, Unit 6 formation would occur. As such, the impact on cultural resources from past, present, and reasonably foreseeable future projects is considered significant; however, the Project's incremental contribution to cumulative cultural resource impacts would be less than cumulatively considerable.

Geology / Soils

The geology section discusses impacts to structures as a result of earthquakes and associated effects and stability of soils. The geographic context for the analysis of impacts resulting from seismic ground shaking is generally site-specific, rather than cumulative in nature, because each development site has unique geologic considerations that would be subject to uniform site development and construction standards. In this way, potential cumulative impacts resulting from geologic, seismic, and soil conditions would be minimized on a site-by-site basis to the extent that modern construction methods and code requirements provide. The structural design for all of the cumulative projects would be required to comply with all applicable public health, safety, and building design codes and regulations to reduce seismic and geologic hazards to an acceptable level. As such, the impact on geology and soils from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative geology and soils impacts would be less than cumulatively considerable.

Greenhouse Gases

GHG emissions are a cumulative global issue and accumulate in the earth's atmosphere for many years. Therefore, the cumulative study area is the entire globe. All of the cumulative projects would contribute varying amounts of GHG emissions, which, when combined, would be considered cumulatively significant. As discussed above in Section VII. Greenhouse Gas Emission of this Initial Study, the main source of GHG emissions associated with the Project would be combustion of fossil fuels during short-term construction activities from the use of heavy construction equipment and construction-related vehicle trips. The City's Draft Significance Thresholds for Greenhouse Gas Emissions identify that land use development projects that would emit more than 2,500 $MTCO_2e$ per year (Bright Line Threshold) would result in a cumulatively considerable contribution to climate change impacts (City of San Diego 2013a). As shown in Table 4-5 above, the amount of Project-related $MTCO_2e$ construction emissions would be 42.66 $MTCO_2e$ per year, well below the City's Bright Line Threshold of 2,500 $MTCO_2e$ per year. Furthermore, the Project's operational GHG emissions are anticipated to be reduced compared to existing conditions because the Project would not change the capacity of the SIBLF and more energy-efficient LED lighting is proposed. The Project is also consistent with the District's CAP. Although the CAP accounts for continued growth of District operations in an efficient and sustainable manner (meaning it is not a "net zero" GHG emission plan), the Project would not increase the size or capacity of the SIBLF because it proposes to maintain SIBLF as a 10-lane boat launch facility. Thus, net operational emissions would not increase as a result of the Project. The CAP has identified a GHG reduction goal of 25 percent less than 2006 levels by 2035 for new projects. While the CAP does not assign percent reductions to individual businesses or operations, the Project would be consistent with the goals of the CAP because it would reduce emissions from electricity use due to the introduction of bollard lighting and energy-efficient LEDs, and it would not expand or change operational activities associated with the SIBLF. The Project is further consistent with the CAP because it would replace light fixtures in a District-owned facility with lower energy bulbs (i.e., LED light bulbs), consistent with CAP reduction measure EL4, and would beneficially reuse approximately between 1,150 and 1,350 cubic yards of jetty riprap, jetty core fill, and dredged materials, consistent with CAP reduction measure SW1. Furthermore, the Project would comply with Executive Orders S-01-07, S-03-05, and B-30-15, as further detailed in Section VII. Greenhouse Gas Emissions of this Initial Study. As such, the Project's contribution to cumulative GHG emissions would be less than cumulatively considerable.

Hazards and Hazardous Materials

The hazards and hazardous materials section discusses the potential for the accidental release of hazardous materials, potential for the creation of a public health hazard, or the increased likelihood of a wildfire. The geographic context for the analysis of cumulative impacts from hazards is limited to the immediately surrounding area of the Project. Generally, hazards are site specific and would not combine with impacts from other projects to result in cumulative impacts. The projects listed in Table 4-9 are located in developed areas with minimal potential for wildfires. The cumulative projects consist of commercial, marina-related, and utility projects. Other than the Navy Miramar Pipeline Repair and Relocation project, none of the cumulative projects propose land uses that would require the transportation, use, or disposal of hazardous materials aside from oil and hydrocarbons associated with construction and operation, standard cleaning products during operation, and landscaping products during operation. As discussed in Section VIII. Hazards and Hazardous Materials of this Initial Study, the Project's use of design features including silt curtains and covered trucks would ensure less-than-significant hazards impacts associated with the excavation and transportation of soil and sediment. Furthermore, compliance with applicable laws regulating fuel and oils/lubricants in use on the boats and towing vehicles would ensure less-than-significant impacts during operation of the Project. Construction and operation of the Navy Miramar Pipeline Repair and Relocation project would be required to comply with federal, state, and local laws regulating fuel pipelines, which would ensure that hazardous materials impacts are minimized. Finally, all the other cumulative projects would be required to comply with the City of San Diego's and the District's JURMP and WURMP requirements, NPDES requirements, and federal, state, and local laws regulating fuel and oils/lubricants in use on the boats and towing vehicles, which would reduce this impact to a less-than-significant level. it is Finally, it is expected all past, present, and future projects would comply with the existing ALUCP, as would the Project. Therefore, the impact on hazards and hazardous materials from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative hazards and hazardous materials impacts would be less than cumulatively considerable.

Hydrology and Water Quality

The water discussion involves both surface water hydrology and water quality. The area of projects that would be considered for surface water cumulative effects analysis is defined as

Shelter Island.

Hydrology. Because the areas surrounding the Project and the cumulative projects are highly developed, the amount of impervious surfaces would not significantly increase with the development of the Project and past, present, and future projects. Furthermore, all projects within the City of San Diego and within District jurisdiction would be required to comply with the City's and the District's stormwater requirements, as appropriate, including the District's JURMP and WURMP. These stormwater programs require that projects maintain pre-project hydrology (i.e., maintain original runoff volume and velocity). Surface water hydrology would not be altered from its existing condition from the Project. Furthermore, the Project and cumulative projects would not deplete groundwater supplies or place housing within 100-year flood hazard area. Finally, the Project would not expose people or structures to risks involving flooding, and each of the cumulative projects would be required to address flooding at each of the project sites. Therefore, the impact on hydrology from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative hydrology impacts would be less than cumulatively considerable.

Water Quality. Surface water quality may be affected by an increase in activities that generate pollutants which, in turn, could result in additional water quality impacts to the San Diego Bay. Future development projects within the City's and the District's jurisdiction would be subject to the standards of the San Diego Regional Water Quality Control Board and NPDES permit regulations, which would require that source control and nonpoint source BMPs be employed to control potential effects on water quality and that storm water quality control devices be incorporated into project design to collect sediment and other pollutants. All of the land-side cumulative projects would comply with the District's or City's mandated measures to control pollution or they would not be approved. The water-side projects include the Intrepid Landing Building C, Shelter Island Boat Yard Crane Replacement and Pier Addition, Humphrey's Half Moon Inn and Suites Marina Redevelopment, and Tonga Landing Redevelopment projects. The Intrepid Landing Building C project was addressed in a Program Environmental Impact Report (PEIR) prepared for the America's Cup Harbor Redevelopment and Port Master Plan Amendment for Shelter Island Planning District, and water quality related design measures and mitigation measures were identified in the PEIR that are being implemented as part of the project. The Shelter Island Boat Yard Crane Replacement and Pier Addition project was addressed in a Negative Declaration (ND), and water quality related design measures were identified in the ND that are being implemented as part of the project. The Humphrey's Half Moon Inn and Suites Marina Redevelopment project also includes water quality design measures identified in the Categorical Exemption that would ensure impacts to water quality remain less than significant. The Tonga Landing Redevelopment project would be implemented in conformance with water quality regulations and, if required, mitigation measures identified in the environmental document that would be prepared for this project. These projects, as part of their development, would either improve existing surface water quality and runoff by implementing BMPs where the project site is an impervious surface, or minimize those water quality effects where the project site is a pervious surface. As discussed in Section IX. Hydrology and Water Quality, the Project would not violate any water quality standards or waste discharge requirements because it includes construction and disposal methods to contain sediments during construction and would be subject to all applicable regulatory requirements. Therefore, the impact on water quality from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative water quality impacts would be less than cumulatively considerable.

Land Use and Planning

The land use and planning discussion addresses consistency with adopted planning documents and compatibility with existing land uses. The area of projects that would be considered for the land use cumulative effects analysis is defined as Shelter Island and areas immediately adjacent to Shelter Island within the City of San Diego's Peninsula community. The cumulative projects identified in Table 4-9 are planned for this area by the District, District tenants, and U.S. Navy, consistent with the City of San Diego's current Peninsula Community Plan, and, for projects in the District's jurisdiction, consistent with the designations of the PMP. As part of the Project, and pursuant to Chapter 8 of the Coastal Act, an amendment to the PMP for Planning District 1 has been prepared to include a detailed description of the Project. However, the Project is consistent with the land and water use designations of the PMP. Therefore, the impact on land use and planning from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative land use and planning impacts would be less than cumulatively considerable.

Mineral and Energy Resources

The mineral and energy resources section discusses whether the amount of energy proposed to be used is substantial and the potential impact to mineral resources highly valued by the state of California would be substantial. The area of projects that would be considered for the energy and mineral resources cumulative effects analysis is defined as the San Diego region. The City of San Diego's General Plan indicates that no significant mineral resources highly valued by the State of California are located within the Shelter Island or nearby Peninsula community (City of San Diego 2008). No mineral resources are known to exist on the cumulative project sites and the cumulative projects would not impact the region's supply of mineral resources.

According to CEQA Section 15064 (h) (3), a Project's incremental contribution to a cumulative effect is not cumulatively considerable if the project would comply with a previously approved plan or program which avoids or substantially lessens the cumulative problem. The Project would have a cumulative impact on energy resources if the cumulative energy demands of the projects listed in Table 4-9 would result in the wasteful, inefficient and unnecessary use of energy or were inconsistent with adopted energy planning documents for the San Diego Region. The consumption of electricity associated with the Project is anticipated to be reduced compared to current conditions because the Project would replace some existing light poles with bollard lighting and would install LEDs, resulting in a more energy efficient lighting system. The Project is also consistent with adopted energy planning documents for the San Diego region, including the SDG&E long term energy resources plans. The cumulative projects listed in Table 4-9 would also not result in the inefficient use of energy because the projects primarily involve the redevelopment of existing structures within developed areas and/or the relocation of existing infrastructure with only minor lighting features. Furthermore, all of the cumulative projects listed in Table 4-9 must adhere to the latest Title 24 energy standards, if applicable. Therefore, the impact on mineral and energy resources from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative mineral and energy resource impacts would be less than cumulatively considerable.

Noise

The noise section discusses increases in ambient noise. Noise, by definition, is a localized phenomenon and is progressively reduced as the distance from the source increases; specifically, noise levels decrease by 6 dB for every doubling of distance. Therefore, the area of projects that would be considered for the noise cumulative analysis would be only those projects in the immediate vicinity of the Project site. The Best Western Island Palms Exterior Renovation project is located approximately 0.2-mile from Project site, the Humphrey's Half Moon Inn and Suites Renovation and the Humphrey's Half Moon Inn and Suites Marina Redevelopment projects are located approximately 0.05-mile and 0.1-mile from the Project site, respectively, the Shelter Island Boat Yard Crane Replacement project is located approximately 0.2-mile from the Project site, and the Tonga Landing Redevelopment project is located approximately 0.22-mile from the Project site. The remaining five cumulative projects described in Table 4-9 are located at least 0.5-mile from the Project and would, therefore, not contribute to cumulative noise impacts from activities on the cumulative projects sites.

The Project's contribution to ambient noise from operations at the SIBLF would not increase from the existing condition because the Project does not propose an expansion in the capacity of the SIBLF. The SIBLF is currently and would remain a 10-lane boat launching facility. The sensitive receptors closest to the Project site are passive recreational areas associated with Shelter Island Shoreline Park; several amenities associated with Shelter Island Shoreline Park are located within 200 feet of the SIBLF. The Project represents a continuation of an existing use and would represent an existing noise source at these sensitive receptors. As a result, the Project's operational noise impacts would not add to the operational noise impacts of the cumulative projects. Furthermore, the cumulative projects listed in Table 4-9 primarily involve the redevelopment of existing structures within developed areas and/or the relocation of existing infrastructure and are not anticipated to significantly increase ambient noise levels during operation. Therefore, the combined operational noise impacts from past, present, and future projects are less than cumulatively significant, and the Project's contribution to cumulative operational noise impacts would be less than cumulatively considerable.

The City of San Diego's Noise Ordinance, Chapter 59.5 of the City's Municipal Code, regulates noise within the City of San Diego. Section 59.5.0404 states that it "shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 p.m." The City of San Diego does not identify any noise criteria to control single-event noise level impacts, such as those associated with pile driving activities. The 75-dBA construction noise criteria averages the construction noise level impacts over 12 hours during the daytime (7 a.m. to 7 p.m.). The Project and any future cumulative projects would be required to comply with these regulations. According to the analysis provided in Section XII. Noise of this Initial Study, with the implementation of Mitigation Measures N-1 and N-2, the Project's construction-related noise impacts would be reduced to a less-than-significant level. Furthermore, as discussed in Section XII. Noise of this Initial Study, the Project's calculated contribution of vehicular traffic noise from construction of the Project would at most be 0.1 dBA CNEL. For noise associated with haul trucks, impacts are considered significant if project-generated truck traffic noise would create a 3 dBA or greater increase in ambient exterior noise levels. The use of the 3 dBA or greater increase is consistent with the City of San Diego Significance Determination Thresholds, as well as the Federal Highway Administration and Caltrans standards, all of which identify a 3 dBA change as the level at which noise level changes become discernible for most people. The Project's contribution to either an existing impact above the 65 dBA threshold or a potential cumulative significant vehicular noise impact would be 0.1 dBA CNEL. This very small contribution from the Project would not be considerable because it would be at most a three percent contribution to the noise level. The Best Western Island Palms Exterior Renovation, Humphrey's Half Moon Inn and Suites Renovation, Navy Miramar Pipeline Repair and Relocation, Humphrey's Half Moon Inn and Suites Marina Redevelopment, and Tonga Landing Redevelopment projects would have overlapping construction schedules with the Project, as well as generate temporary construction-related traffic that would likely use a similar haul route as the Project. Although, the other projects included in the cumulative project list would also be required to comply with the San Diego Noise Ordinance, there is a potential that the cumulative projects could result in a cumulative noise impact on surrounding noise-sensitive land uses during construction. Therefore, the combined construction noise impacts from past, present, and future projects are potentially significant; however, for the reasons detailed above, the Project's contribution to cumulative construction noise impacts would be less than cumulatively considerable.

Population and Housing

The population and housing discussion addresses impacts to growth rates and existing housing. The area of projects that would be considered for the population and housing cumulative effects analysis is defined as those in the City of San Diego. The Project would have a-less-than significant impact on population and housing because it would not substantially induce population growth in the area. The Project would create approximately 12 short-term construction jobs during the Project's 6- to 10-month construction period. It is anticipated that the demand for these short-term construction jobs would be met by the local work force and would not result in substantial population growth. No permanent jobs would be created by the Project. Also, none of the projects listed in Table 4-9 would have the potential to result in substantial population growth. As such, the impact on population and housing from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative population and housing impacts would be less than cumulatively considerable.

Public Services

The public services discussion includes an analysis of physical impacts associated with the construction of new or physically altered governmental facilities for public services such as fire and police protection, schools, parks, and other public facilities. The area of projects that would be considered for the public services cumulative analysis is defined by the service areas for the City of San Diego Fire and Police Departments and the Harbor Police Department. All of the cumulative projects involve the redevelopment and/or relocation of existing structures and utilities. Therefore, none of the cumulative projects would impact public services in a manner that would require the construction of new or physically altered governmental facilities. None of the cumulative projects would affect fire protection services because these projects would conform to the current Peninsula Community Plan or the PMP, which are considered in developing the delivery of fire protection services. The Harbor Police Department is responsible for police protection in most tidelands areas and the San Diego Bay. The cumulative projects located within the City of San Diego would not impact police protection services because these projects would not increase the demand for police services beyond those that exist. All of the cumulative projects are located in developed urban areas currently served by the police and fire department. None of the service departments (the San Diego Fire Department, the Harbor Police Department, or the San Diego Police Department) would need to construct new facilities, or expand existing ones, in order to serve the Project and the cumulative projects, when considered together. As discussed in Section XIV. Public Services of this Initial Study, construction and operation of the Project, a public facility, would result in less-than-significant impacts related to biological resources, hazards and hazardous materials, noise, and transportation/traffic with the implementation of mitigation measures. Therefore, the impact on public services from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative public services impacts would be less than cumulatively considerable.

Recreation

The recreation discussion includes the potential for increased demand for recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated and the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment. The area of projects that would be considered for the recreation cumulative effects analysis is defined as the area within Shelter Island and boat launching facilities in Chula Vista, National City, Glorietta Bay, and Mission Bay. A less-than-significant impact to related to an increase in the use of existing neighborhood and regional parks or other recreational facilities was identified for the Project because, although it would generate 12 short-term construction jobs, these temporary employees would not significantly affect park space. The same logic applies to the cumulative projects; although the cumulative projects may generate short-term construction jobs, these temporary employees would not significantly affect park space. During construction, users of the SIBLF and Shelter Island Shoreline Park would be temporarily redirected to surrounding boat launching facilities for 6 to 10 months and parks for approximately 15 weeks, respectively. However, because the increase in use of other recreational facilities would be temporary, it is not anticipated that substantial physical deterioration of those facilities would occur. Finally, the Project, which involves redevelopment of an existing recreational facility, would result in less-than-significant impacts related to biological resources, hazards and hazardous materials, noise, and transportation/traffic with the implementation of mitigation measures. None of the cumulative projects would permanently remove existing recreational opportunities or permanently increase the local population in a manner that would cause substantial physical deterioration of recreational facilities to occur or be accelerated. Finally, the North Harbor Drive Realignment, the Humphrey's Half Moon Inn and Suites Marina Redevelopment, and Tonga Landing Redevelopment projects would enhance passive recreational opportunities within the Project's vicinity. As such, the impact on recreation from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative recreation impacts would be less than cumulatively considerable.

Transportation/Traffic

The transportation/traffic section discusses potential traffic congestion from construction and operational traffic and parking demand. The geographic context for the analysis of cumulative traffic impacts is the City of San Diego.

Short-Term Construction Traffic. Construction of the Project is expected to begin in late 2016 and take a total of approximately 6 to 10 months to complete. The Best Western Island Palms Exterior Renovation, Humphrey's Half Moon Inn and Suites Renovation, Navy Miramar

Pipeline Repair and Relocation, Humphrey's Half Moon Inn and Suites Marina Redevelopment, and Tonga Landing Redevelopment cumulative projects are anticipated to be under construction concurrently with construction of the Project and may utilize similar construction haul routes. The Best Western Island Palms Exterior Renovation and Humphrey's Half Moon Inn and Suites Renovation projects would be constructed in several small phases during the hotels' off-season and off-peak hours and are therefore not anticipated to generate a significant amount of construction traffic. Similarly, the Humphrey's Half Moon Inn and Suites Marina Redevelopment project would be construction in nine approximately two-week-long phases to minimize impacts to marina users and is therefore not anticipated result in a transportation/traffic impact. As identified in the Draft Environmental Assessment, the Navy Miramar Pipeline Repair and Relocation project would be constructed during off-peak hours to avoid transportation/traffic impacts and would comply with a City-approved traffic control plan so that impacts to traffic are minimized. Finally, the Tonga Landing Redevelopment project would implement appropriate mitigation measures, if required, that would be identified in the environmental document that would be prepared for this project. No other cumulative projects identified in Table 4-9 would be constructed concurrently with the Project. As discussed in Section XVI. Transportation/Traffic of this Initial Study, with the implementation of Mitigation Measure T-1, the Project's construction-related increase in delay at the Rosecrans Street/Lytton Street intersection would be reduced to 1.0 second or less in the AM peak hours and 2.0 seconds or less in the PM peak hours, resulting in a less-than-significant impact. Therefore, the impact on transportation/traffic from construction of past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative transportation/traffic impacts from construction would be less than cumulatively considerable.

Long-Term Operational Traffic. Most of the cumulative projects would increase traffic to varying degrees. Projects such as the Kona Kai Resort Expansion, Intrepid Landing Buildings A and B, and Intrepid Landing Building C would result in a permanent increase in operational traffic. As indicated in Section XVI. Transportation/Traffic of this Initial Study, there are intersections along Rosecrans Street that operate below an acceptable LOS. Therefore, the addition of more traffic from the introduction of new operational land uses would be cumulatively significant. The impact on transportation/traffic from past, present, and reasonably foreseeable future projects is considered cumulatively significant. However, as detailed in Section XVI. Transportation/Traffic of this Initial Study, implementation of the Project would not increase the capacity of the SIBLF, and traffic from Project operations would remain the same as with existing conditions. Thus, the Project would not contribute to a significant cumulative impact once operational.

<u>Utilities and Service Systems</u>

The public services discussion includes such service systems as electric power and natural gas, communications, water treatment facilities, sewer, solid waste, and storm water drainage. The geographic context for the cumulative analysis for public utilities encompasses the service area of each specific utility. As discussed above, the Project would not change the size or capacity of the SIBLF and would therefore not increase the demand on public utilities. Additionally, construction solid waste produced by the Project would be served by Copper Mountain Landfill, which has sufficient permitted capacity to accommodate the project's solid waste disposal needs. Furthermore, any increased consumption of energy by the cumulative projects has been accounted for in planning documents. As required by the California Public Utilities Commission (CPUC), California utilities, including SDG&E, are required to file long-term energy resources plans with the CPUC. SDG&E's plan was filed in April 2003 and includes 20-year plans and strategies to meet the future energy demands of its customers (SDG&E 2003). Similarly, the San Diego County Water Authority (SDCWA) has updated its 2010 Urban Water Management Plan (UWMP) as required by the California Water Code (SDCWA 2011). SDCWA released a draft of its 2010 UWMP (2010 Plan) for public review and comment May 6, 2011 through June 6, 2011. The Water Authority's Board of Directors adopted the final 2010 Plan on June 23, 2011. This plan uses 2030 population and growth projections provided by SANDAG to determine future water demand and plan future water supplies. The Project is consistent with the planning documents that are used by SANDAG to develop the 2030 population projections. Additional cumulative projects would also be subject to service provider approval prior to development. As such, the impact on utilities and service systems from past, present, and reasonably foreseeable future projects is less than cumulatively significant, and the Project's incremental contribution to cumulative utilities and service systems impacts would be less than cumulatively considerable.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Implementation of the Project would increase public safety and allow for greater access of the SIBLF by the disabled. Project impacts would be related only to construction, because the capacity of the SIBLF would not change with the Project. As discussed in this Initial Study and summarized below, direct and indirect Project impacts to human beings would be less than significant with the implementation of mitigation.

The Project does not include the construction of any new structures or features that would potentially affect scenic resources or vistas, including the seven Vista Areas in Planning District 1 (Shelter Island/La Playa). The Project would not result in significant impacts to air quality, including health risk, or GHG emissions. Effects to biological resources would be less than significant with the exception of potential impacts to eelgrass habitat. Impacts to eelgrass habitat would be less than significant with the implementation of Mitigation Measure B-1. Furthermore, impacts to noise would be less than significant with the implementation of Mitigation Measures N-1 and N-2.

Various materials, such as diesel fuel, hydraulic fluid, and other materials related to the use of heavy equipment would be used at the site during construction. Such transport, use, and disposal would be compliant with applicable regulations, such as the Resource Conservation and Recovery Act and U.S. Department of Transportation Hazardous Materials Regulations. In addition, the Project would disturb and transport soil and sediment determined to contain elevated levels of lead and TPH. To prevent the release of these materials into the San Diego Bay, a silt curtain would be installed around the area of disturbance during the construction period as part of the design of the Project. Disturbed sediments would also be contained by the temporary cofferdam, which would allow the new launch ramp to be constructed in dry conditions. Finally, trucks transporting the soil and sediment would be covered, as required by the California Highway Patrol. Therefore, construction of the Project would not result in significant impacts associated with the use, transport, or storage or hazardous materials.

As noted in Section XVII. Utilities and Service Systems, the Project would not result in an increase in water or wastewater generation. The solid waste that would be generated by the Project would be within the capacity limits of the Copper Mountain Landfill. The Project would not increase the electricity used at the SIBLF; electricity use is anticipated to decrease because the Project would replace some existing light poles with bollard lighting and would use LEDs, resulting in a more energy efficient lighting system. Therefore, the energy requirements associated with the Project would not represent an increase in demand for energy resources that would exceed available supplies or cause a need for new or expanded facilities that would directly or indirectly affect human beings.

As detailed above, the Project would not result in adverse effects to human beings. A less-than-significant impact would occur.

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ATTACHMENT B

DRAFT PORT MASTER PLAN AMENDMENT

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San Diego Unified Port District
Port Master Plan Amendment

DRAFT

SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS PROJECT AND PORT MASTER PLAN AMENDMENT

Existing/Proposed Plan
Text and Graphics

June 2015

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SHELTER ISLAND: Planning District 1

The Precise Plan Concept

Shelter Island has strong historic functional ties to the boating community of the San Diego region. Public discussions and evaluations made in the planning process have highlighted the following matters as being of paramount importance.

While there is general satisfaction with the present land use allocations, some improvement can be obtained by extensive renovation of older facilities as necessary or at the termination of leases. Additional people oriented spaces, providing vistas and accessibility to the water and waterside activities, are felt appropriate. In some subareas, the visual clutter of a proliferation of signs; disorganized automobile parking in side yards and setbacks; and a lack of continuity in architecture give evidence of deterioration in some portions of Shelter Island.

The basic concept of the Shelter Island Precise Plan is found in preserving and retaining flexibility in improving upon the best aspects of this man-made environment, which has been developed over the past 50 years.

The character of existing development is to be enhanced by a redevelopment program that emphasizes the continued provision of adequate public service, employment and investment opportunities.

Overall, the planned land and water uses for the Shelter Island area remain essentially unchanged from existing uses. The major emphasis of the development program is directed toward the renovation of obsolete structures, improvement in the quality of landscape, and visual and physical access to the bayfront.

Land and Water Use Allocations

Roughly 350 acres in the Shelter Island Planning District are tidelands under the jurisdiction of the Unified Port District. A summary, in tabular form, of the planned land and water use allocations is indicated in Table 6.

The following text explains and gives definition to the legend of the Land and Water Use Element Map of the Precise Plan. The map graphically portrays 20 different land or water use designations organized under four major headings—Commercial, Public Recreation, Public Facilities, and Military.

Shelter Island Planning Subareas

In the following narrative, the Planning District has been divided into seven subareas (Figure 5) to focus attention upon and give expression to the plan concepts that are suggested for the entire Planning District but with an emphasis on the relationship of precise planning proposals and specific sites.

Beach Corridor

This planning subarea includes a narrow band of shoreline extending from the Port District jurisdictional line bordering the US Navy facility on Point Loma to Canon Street. Two small beach areas, Kellogg and La Playa beaches, are illustrated as open space on the Land and Water Use Map, and are interspersed with two yacht clubs. Limited access to the beaches is to be maintained consistent with the existing isolated and low intensity~~ve~~ recreational use orientation, which is geared to serve the immediate neighborhood. Kellogg Beach, subject to erosion, is to be restored by State, Port and City action. The Kellogg Beach replenishment is intended to control excessive shoreline erosion and to preserve a public beach, street termination and adjacent private property. A quarry rock groin in conjunction with sand backfill will be on a replenishment basis at Kellogg Beach.

It is recommended that sometime in the future, the beach area be served by a pedestrian promenade and bike route to delineate the tideland/upland boundary and to provide access to the beach. Streets that stop at or on tidelands in the area provide excellent points of public access and vista. Whenever compatible with local community plan goals and traffic circulation and safety, appropriate street endings are to be enhanced by providing landscaped sitting and viewing areas, and rest stops for bicyclists and pedestrians using the trai~~a~~l system. The design of the street ending should be in conformance with any dominant architectural or natural theme of the surrounding area, and be preferably limited to accommodate passive public recreational activities.

More intensive modes of boating recreation and social activities occur at yacht clubs, shown on the Land and Water Use map under the category of Commercial Recreation, and the associated water use, Recreational Boat Berthing. The land-based activities of these quasi-public centers will continue to be confined to each parcel.

Anchorage A-1, Yacht Basin anchorage, is a special anchorage designated on Bay Charts. Single swing point anchoring will continue to be by vessel ground tackle. The water area allocated for the anchorage occupies approximately 9.4 acres and can accommodate up to about 20 vessels, depending upon their size. A-1 has a low intensity use orientation, and a landing site adjacent to an expanded park area at Anchorage Lane is proposed. Use is by permit of the Harbor Master. Control over the anchoring of vessels will continue to be exercised by the Port District pursuant to local ordinances. Anchorage A-1 is one of several small craft facilities discussed in Section III, Water Based Transportation System.

Shelter Island Point

The southwestern tip of Shelter Island is planned to continue as a center for maritime services and harbor regulatory activities including Harbor Police patrol and fire services, Customs inspection, pilot boat berthing, and limited Coast Guard functions. On the Land and Water Use Map, these public facilities that relate to the public's safety and general welfare are shown by symbol and by the Harbor Services designation.

The Harbor Police Station includes fire boat and patrol boat facilities. It occupies a strategic location on Shelter Island from which to monitor waterborne traffic and to render assistance as required in San Diego Bay. Activities and uses to be retained in the landscaped park and open space around the structures on the point include the Friendship Bell monument, public accessibility to the bay and access to the spectacular vista site overlooking the entrance to San Diego Bay.

Harbor Services is a category used on the Map to indicate the transient berthing space provided by the Port for coastal cruising. The transient berthing is used by vessels under permit of the Harbor Master (i.e., Senior Harbor Police Duty Officer).

The Pumpout Station is a public convenience provided for the drainage of wastes from holding tanks aboard vessels. The service, essential to water quality improvements, is expected to undergo increasing use and the upgrading of service is planned from time to time.

Customs services are provided to boaters, upon request, at the Harbor Master Pier. No expansion of this activity is anticipated.

Bay Corridor

This subarea deals with the land mass that separates the open bay from the protected yacht harbor, and is the largest developed subarea in the Planning District. The mixed use developments shown as Commercial Recreation and Recreational Boat Berthing on the Land and Water Use Map include hotels, marinas, restaurants and yacht clubs, balanced by public recreational facilities—park and beach, boat launching ramp, fishing pier, and people oriented spaces—set a standard to be emulated in other areas.

Suggested improvements in this subarea include street tree and landscape programs along Shelter Island Drive, in the Bayside Park, and the erection of impressive civic art features in the traffic circle. A low-cost food restaurant is proposed near the boat-launching ramp and a landing dock with pumpout facilities north of the traffic circle is under consideration in the long-term future.

A portion of the shoreline trailer-in-tow parking lot will be transformed into a waterfront park with children's playground and an open gathering area. The existing gazebo may be relocated. Redevelopment of the existing shoreline parking area will increase pedestrian access to and along the shoreline and provide passive shoreline recreational areas where none now exist. The parking lot area may be reconfigured to replace all of the existing trailer-in-tow parking spaces. All of the trailer-in-tow spaces will be retained if the parking area is reconfigured.

The Shelter Island Boat Launch Facility, constructed in 1956 and upgraded in 1975, is proposed to be renovated to improve launching efficiency and maneuverability, safety, public access to the water, and public recreation on the water. Renovation of the boat launch facility will include removal and replacement of the 10-lane boat launch ramp; partial removal of the rip rap mound jetties and replacement with vertical sheet pile bulkhead walls; installation of publicly accessible walking platforms with viewing areas atop the bulkhead walls; removal of the floating docks and replacement with interior perimeter floating docks; installation of new ramps to the floating docks; improvements to the kayak launching area; and minor re-grading of the beach area just west of the boat launch facility. A 10-lane launch ramp will continue to serve the boat launch facility after renovation. The renovated boat launch facility will address safety concerns related to boat maneuverability in the basin, reduce congestion and delays within the basin, reduce queuing outside of the basin, and continue to provide public access to the water. Continued heavy use of this public recreation area is anticipated for recreational boating and pedestrian access.

The Shelter Island Roadstead contains 46 swing moorings. The moorings occupy about 12.8 acres of water in three sites, identified as Special Anchorages A-1a, A-1b, and A-1c. The mooring area has been designated to resolve conflicts between anchored vessels and activities on the ship channel, public fishing pier, small craft launching ramp, and submerged pipeline. Although protected from the open areas, the moorings are exposed to the wakes of vessels using the ship channel. It is proposed that mooring users be the larger ocean-cruising and transient vessels for short periods of time. The boundaries of the mooring areas should be marked by lighted buoys. Shoreside facilities are limited to a beach dinghy landing and adjacent restroom and trash receptacles. Control over the mooring area will be exercised by the Port District.

TABLE 7: PROJECT LIST

SHELTER ISLAND: PLANNING DISTRICT 1

	SUBAREA↓	DEVELOPER↓	APPEALABLE↓	FISCAL YEAR
1. BEACH STABILIZATION AND REPLENISHMENT: (Kellogg Beach) Construct rock groin, backfill with sand	11	P	N	2003-20
2. SHORELINE PROTECTION: Channel side of peninsula; maintain revetment	13	P	N	2003-20
3. SHELTER ISLAND DRIVE: Modify street, curb and gutter; install landscaping, street trees, irrigation, street furnishings, sculpture	14	P	N	2003-05
4. PUBLIC SHORESIDE PARK: Shelter Island Drive at Anchorage Lane; remove paving; install landscaping, irrigation, promenade, park furnishings	14	P	N	2003-05
5. MARINE EQUIPMENT BUILDING: Remove, replace and relocate building and landscaping	14	T	N	2003-05
6. BOAT BUILDING AND REPAIR: Renovate and upgrade facilities	14	T	N	2003-05
7. BOAT SALES: Remove, replace and relocate structures and piers	14	T	N	2003-05
8. MARINE SERVICE CENTER: Remove existing building and construct new building for marine related services	14	T	N	2003-05
9. BOAT YARD: Renovate/replace building, piers and facilities	14	T	N	2003-05
10. SHORELINE PROTECTION: Break up and embed existing rubble; install filter blanket and rock revetment	16	P	N	2003-05
11. SHORELINE PARK: Reconfigure trailer-in-tow parking, construct park lawn area, relocate/renovate pavilion building	13	P	N	2005-07
12. KETTENBURG BOATYARD: Remove and replace obsolete structures and construct walk-up food plaza including through connecting pedestrian / bicycle access to Sportfish Landing promenade and Shelter Island Drive	15	P	N	2003-04
13. NO. HARBOR DRIVE: Partial street vacation, roadway realignment, landscaping, traffic calming, parking and pedestrian/bicycle access improvements	15	P	Y	2003-05
14. HOTEL EXPANSION: Add rooms, pedestrian/bicycle accessway and renovate structures, install landscaping and parking improvements	15	T	Y	2004-06
15. BAY CITY/SUN HARBOR REDEVELOPMENT: New restaurant, retail and marina services, public improvements including view corridors, pedestrian / bicycle access, open marina green park area with water taxi recreational boat access and new 50-slip marina.	15	T	Y	2004-06
16. SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS: Remove and replace 10-lane boat launch ramp, partially remove jetties and replace with vertical sheet pile bulkhead walls, install public walking platforms with viewing areas on bulkhead walls, remove floating docks and replace with interior perimeter floating docks, install new ramps to the floating docks, improve kayak launching area, and re-grade beach. Continue to maintain facility, as needed.	13	P	Y	2015-16

P- Port District N- No
T- Tenant Y- Yes

ATTACHMENT C

COMMENTS RECEIVED AND DISTRICT RESPONSES

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COMMENTS RECEIVED AND DISTRICT RESPONSES

The District appreciates the time and effort that agencies, organizations, and individuals have expended in providing comments on this Mitigated Negative Declaration. Unlike the requirements for an Environmental Impact Report (EIR), formal written responses to comments are not required for a Mitigated Negative Declaration (MND) under the California Environmental Quality Act (CEQA). CEQA Guidelines Section 15074(b) states: "[p]rior to approving the project, the decision-making body shall consider the proposed negative declaration or mitigated negative declaration together with any comments received during the public review process. The decision-making body shall adopt the proposed negative declaration or mitigated negative declaration only if it finds on the basis of the whole record before it (including the initial study and any comments received), that there is no substantial evidence that the project will have a significant effect on the environment and that the negative declaration or mitigated negative declaration reflects the lead agency's independent judgement and analysis."

The comment letters and District responses to the comments received have been provided to the Board of Port Commissioners for their consideration prior to making a decision with respect to adoption of the MND. The attached responses are provided so that commenters have a better understanding of the Project. The Final MND, and all documents referenced in the Final MND, are available for public review in the San Diego Unified Port District (District) Office of the District Clerk, 3165 Pacific Highway, San Diego, CA 92101.

All written comments on the Draft MND have been coded to facilitate identification and tracking. Each of the comment letters received during the public comment period was assigned an alphabetical letter, provided in the list below. Individual comments and the District responses to them were assigned corresponding numbers. Each comment document is the submittal of a single individual, agency, or organization. The comment number consists of two parts. The first part is the alphabetical letter of the document and the second is the number of the comment. Thus, Comment A-1 refers to the first comment (comment #1) of Comment Letter A. To aid the readers and commenters, comments have been reproduced in this document together with the corresponding District responses on the following pages.

Letter	Commenter	Date
A	Federal Emergency Management Agency	07/06/2015
B	California State Clearinghouse	07/14/2015
C	California State Clearinghouse	07/15/2015
D	California State Lands Commission	07/14/2015
E	County of San Diego	07/14/2015

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LETTER A: FEDERAL EMERGENCY MANAGEMENT AGENCY

Commenter: Gregor Blackburn, CFM, Branch Chief

Date: July 6, 2015

Letter A

ELUM 10 JUL '15AM11:

U.S. Department of Homeland Security
FEMA Region IX
1111 Broadway, Suite 1200
Oakland, CA. 94607-4052

FEMA

July 6, 2015

Mayra Medel
San Diego Unified Port District
Environmental & Land Use Management Department
3165 Pacific Highway
San Diego, California 92101-1128

Dear Ms. Medel:

This is in response to your request for comments regarding the Notice of Intent to Adopt a Mitigated Negative Declaration for the Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment (UPD #MND-2015-38), City and County of San Diego, California. A-1

Please review the current effective countywide Flood Insurance Rate Maps (FIRMs) for the City (060295) and County (060284) of San Diego, Maps revised May 16, 2012. Please note that the City of San Diego, San Diego County, California is a participant in the National Flood Insurance Program (NFIP). The minimum, basic NFIP floodplain management building requirements are described in Vol. 44 Code of Federal Regulations (44 CFR), Sections 59 through 65.

A summary of these NFIP floodplain management building requirements are as follows:

- All buildings constructed within a riverine floodplain, (i.e., Flood Zones A, AO, AH, AE, and A1 through A30 as delineated on the FIRM), must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map. A-2

- If the area of construction is located within a Regulatory Floodway as delineated on the FIRM, any ***development*** must not increase base flood elevation levels. **The term *development* means any man-made change to improved or unimproved real estate, including but not limited to buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials.** A hydrologic and hydraulic analysis must be performed *prior* to the start of development, and must demonstrate that the development would not cause any rise in base flood levels. No rise is permitted within regulatory floodways.

www.fema.gov

RESPONSE TO LETTER A
Federal Emergency Management Agency
Commenter: Gregor Blackburn, CFM, Branch Chief
Date: July 6, 2015

Response to Comment A-1:
The comment clarifies that the letter is in response to the Notice of Intent to Adopt a Mitigated Negative Declaration. The comment is introductory to the other comments in the letter and does not contain any substantive statements or questions about the Draft Initial Study and Mitigated Negative Declaration (Draft IS/MND) or the analysis therein. Therefore, no further response is provided.

Response to Comment A-2:
The comment requests that the District review the current effective countywide Flood Insurance Rate Maps (FIRMs) and summarizes the requirements for the construction of buildings and structures in floodplain management areas pursuant to the National Flood Insurance Program (NFIP). The District reviewed the FIRMs applicable to the Project site, and the findings are summarized in Section 4, Checklist Response IX. g) of the Initial Study. The shoreline portion of the Project site is located in Zone X, and the San Diego Bay portion of the Project site is located in Zone AE. The Project does not involve construction of any buildings in Flood Zone AE or a coastal high hazard area. The Project also does not include any development within a Regulatory Floodway or special flood hazard area. Therefore, the design and reporting requirements listed in this comment are not applicable to the Project. As such, no further response is provided.

Mayra Medel
Page 2
July 6, 2015

- All buildings constructed within a coastal high hazard area, (any of the "V" Flood Zones as delineated on the FIRM), must be elevated on pilings and columns, so that the lowest horizontal structural member, (excluding the pilings and columns), is elevated to or above the base flood elevation level. In addition, the posts and pilings foundation and the structure attached thereto, is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.

- Upon completion of any development that changes existing Special Flood Hazard Areas, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision. In accordance with 44 CFR, Section 65.3, as soon as practicable, but not later than six months after such data becomes available, a community shall notify FEMA of the changes by submitting technical data for a flood map revision. To obtain copies of FEMA's Flood Map Revision Application Packages, please refer to the FEMA website at http://www.fema.gov/business/nfip/forms.shtm. A-2

Please Note:

Many NFIP participating communities have adopted floodplain management building requirements which are more restrictive than the minimum federal standards described in 44 CFR. Please contact the local community's floodplain manager for more information on local floodplain management building requirements. The City of San Diego floodplain manager can be reached by calling Jamal Batta, Floodplain Manager, at (619) 553-7482. The San Diego County floodplain manager can be reached by calling Sara Agahi, Flood Control District Manager, at (858) 694-2665. A-3

If you have any questions or concerns, please do not hesitate to call Mark Delorey of the Mitigation staff at (510) 627-7057.

Sincerely,

Gregor Blackburn, CFM, Branch Chief
Floodplain Management and Insurance Branch

www.fema.gov

RESPONSE TO LETTER A
Federal Emergency Management Agency
Commenter: Gregor Blackburn, CFM, Branch Chief
Date: July 6, 2015

Response to Comment A-3:
The comment states that participating NFIP communities have adopted more restrictive floodplain management building requirements than the federal standards and provides contact information for the City of San Diego floodplain manager. This District is an independent jurisdiction with its own police powers and is not required to comply with the NFIP requirements of the City of San Diego. Nonetheless, as indicated in Response to Comment A-2, the Project does not involve construction of any buildings in Flood Zone AE or a coastal high hazard area. The Project also does not include any development within a Regulatory Floodway or special flood hazard area. Therefore, the design and reporting requirements listed in this comment are not applicable to the Project. As such, no further response is provided.

Mayra Medel
Page 3
July 6, 2015

cc:
Jamal Batta, CFM, P.E., Floodplain Manager, City of San Diego
Sara Agahi, Flood Control District Manager, San Diego County
Garret Tam Sing/Salomon Miranda, State of California, Department of Water Resources, Southern Region Office
Mark Delorey, NFIP Planner, DHS/FEMA Region IX
Alessandro Amaglio, Environmental Officer, DHS/FEMA Region IX

A-3

www.fema.gov

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CONTINUATION OF COMMENT LETTER

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LETTER B: GOVERNOR'S OFFICE OF PLANNING AND RESEARCH STATE CLEARINGHOUSE AND PLANNING UNIT

Commenter: Scott Morgan, Director

Date: July 14, 2015

Letter B

ELUM 20 JUL '15AM11:35

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

July 14, 2015

Mayra Medel
San Diego Unified Port District
3165 Pacific Highway
San Diego, CA 92101

Subject: Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment
SCH#: 2015061029

Dear Mayra Medel:

The State Clearinghouse submitted the above named Mitigated Negative Declaration to selected state agencies for review. The review period closed on July 13, 2015, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. B-1

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan

Scott Morgan
Director, State Clearinghouse

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Response to Letter B
Governor's Office of Planning and Research – State Clearinghouse and Planning Unit
Commenter: Scott Morgan, Director
Date: July 15, 2015

Response to Comment B-1:
The comment letter states that the District has complied with the State Clearinghouse requirements for review of draft environmental documents under CEQA and that the Draft IS/MND was sent to and reviewed by the following state agencies: Resources Agency; Department of Boating and Waterways; California Coastal Commission; Department of Fish and Wildlife, Region 5; Department of Parks and Recreation; Department of Water Resources; Caltrans, Division of Aeronautics; California Highway Patrol; Caltrans, District 11; Air Resources Board; Regional Water Quality Control Board, Region 9; Native American Heritage Commission; State Lands Commission; San Diego River Conservancy; and Department of Fish and Wildlife, Marine Region. Furthermore, the comment letter notes that the state agency review period began on June 12, 2015 and ended on July 13, 2015. The letter states that no state agencies submitted comments by the comment period closing date of July 13, 2015. No further response is provided.

Document Details Report
State Clearinghouse Data Base

SCH# 2015061029
Project Title Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment
Lead Agency San Diego Unified Port District

Type **MND** Mitigated Negative Declaration

Description The Project is the repair, maintenance, and replacement of several elements comprising the Shelter Island Boat Launch Facility (SIBLF), a free public boat launching facility that provides waterfront access opportunities to the public. The purpose of the Project is to provide accessibility for users with disabilities, to provide more navigable water area within the existing breakwater basin to launch and retrieve boats, to improve boat maneuverability, to reduce boat congestion, and to improve boat safety and operations at the SIBLF. The Project does not propose to increase the number of lanes comprising the existing boat launch ramp. Pursuant to Chapter 8 of the California Coastal Act, the Project involves a Project-specific Port Master Plan Amendment. Construction of the Project is expected to begin in late 2016 and take approximately 6 to 10 months to complete.

Lead Agency Contact

Name Mayra Medel
Agency San Diego Unified Port District
Phone 619 686 6283 *Fax*
email
Address 3165 Pacific Highway
City San Diego *State* CA *Zip* 92101

Project Location

County San Diego
City San Diego
Region
Lat / Long 32° 42' 56" N / 117° 13' 24" W
Cross Streets Shelter Island Drive
Parcel No. 002-034; 002-035; 002-036; 003-019
Township *Range* *Section* *Base*

Proximity to:

Highways I-5 and SR-75
Airports SD Int'l
Railways
Waterways San Diego Bay
Schools Cabrillo ES
Land Use Boat Launching Ramp, Boat Navigation Corridor, Park, and Promenade

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Coastal Zone; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Minerals; Noise; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Septic System; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Landuse; Cumulative Effects; Other Issues

Reviewing Agencies Resources Agency; Department of Boating and Waterways; California Coastal Commission; Department of Fish and Wildlife, Region 5; Department of Parks and Recreation; Department of Water Resources; Caltrans, Division of Aeronautics; California Highway Patrol; Caltrans, District 11; Air Resources Board; Regional Water Quality Control Board, Region 9; Native American Heritage Commission; State Lands Commission; San Diego River Conservancy; Department of Fish and Wildlife, Marine Region

Note: Blanks in data fields result from insufficient information provided by lead agency.

B-1

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CONTINUATION OF COMMENT LETTER

Document Details Report
State Clearinghouse Data Base

Date Received 06/12/2015 *Start of Review* 06/12/2015 *End of Review* 07/13/2015

B-1

Note: Blanks in data fields result from insufficient information provided by lead agency.

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CONTINUATION OF COMMENT LETTER

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LETTER C: GOVERNOR'S OFFICE OF PLANNING AND RESEARCH STATE CLEARINGHOUSE AND PLANNING UNIT

Commenter: Scott Morgan, Director

Date: July 15, 2015

Letter C

ELUM 20 JUL '15AM11:36

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

July 15, 2015

Mayra Medel
San Diego Unified Port District
3165 Pacific Highway
San Diego, CA 92101

Subject: Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment
SCH#: 2015061029

Dear Mayra Medel:

The enclosed comment (s) on your Mitigated Negative Declaration was (were) received by the State Clearinghouse after the end of the state review period, which closed on July 13, 2015. We are forwarding these comments to you because they provide information or raise issues that should be addressed in your final environmental document.

The California Environmental Quality Act does not require Lead Agencies to respond to late comments. However, we encourage you to incorporate these additional comments into your final environmental document and to consider them prior to taking final action on the proposed project. C-1

Please contact the State Clearinghouse at (916) 445-0613 if you have any questions concerning the environmental review process. If you have a question regarding the above-named project, please refer to the ten-digit State Clearinghouse number (2015061029) when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures
cc: Resources Agency

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Response to Letter C
Governor's Office of Planning and Research – State Clearinghouse and Planning Unit
Commenter: Scott Morgan, Director
Date: July 15, 2015

Response to Comment C-1:
The comment letter states that one comment letter was received by the State Clearinghouse after the end of the state review period, which closed on July 13, 2015. The comment letter notes that CEQA does not require Lead Agencies to respond to late comments. The attachment to the letter is a comment letter from the California State Lands Commission, dated July 14, 2015. A copy of the California State Lands Commission Letter, dated July 14, 2015, and the District's responses to comments to the letter, are provided in Letter D, Responses D-1 through D-21.

LATE
7-13-15
E

STATE OF CALIFORNIA EDMUND G. BROWN JR., *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

JENNIFER LUCCHESI, *Executive Officer*
(916) 574-1800 *Fax* (916) 574-1810
California Relay Service TDD Phone 1-800-735-2929
from Voice Phone 1-800-735-2922

Established in 1938

***Contact Phone:* (916) 574-1890**
***Contact FAX:* (916) 574-1885**

July 14, 2015

RECEIVED
JUL 14 2015
STATE CLEARING HOUSE

File Ref: SCH #2015061029

Mayra Medel
San Diego Unified Port District
P.O. Box 120488
San Diego, CA 92112-0488

Subject: Mitigated Negative Declaration (MND) for, Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment

Dear Ms. Medel:

The California State Lands Commission (CSLC) staff has reviewed the subject MND for the Shelter Island Boat Launch Facility (SIBLF) Improvements Project and Port Master Plan Amendment (Project), which is being prepared by the San Diego Unified Port District (SDUPD). The SDUPD, as a public agency proposing to carry out a project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The CSLC is a trustee agency for projects that could directly or indirectly affect sovereign lands and their accompanying Public Trust resources or uses. Additionally, because the Project involves work on sovereign lands, the CSLC will act as a responsible agency.

CSLC Jurisdiction and Public Trust Lands C-1

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership

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CONTINUATION OF COMMENT LETTER

extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

As the document notes, the SIBLF improvements are subject to CSLC Lease No. PRC 7987.1, a General Lease – Public Agency Use, so changes to the SIBLF as proposed will require an amendment to the Lease. The SDUPD has submitted an application requesting an amendment. The application will be scheduled for consideration by the Commission at a future public meeting after the application is deemed complete and the SDUPD has approved the MND and acted on the Project.

Project Description

SDUPD proposes the Project to improve and expand the existing SIBLF facilities for waterfront access and recreation to San Diego Bay and the Pacific Ocean. The Project meets the SDUPD's objectives and needs as follows:

- Provides needed repairs to aging structures (boat ramp, jetties, pedestrian walkways, etc.);
- Improves handicapped access for American Disabilities Act compliance;
- Provides an expanded navigation area for watercraft circulation and low water conditions;
- Implements a $9.35 million grant from the State of California Department of Boating and Waterways to finance the Project;
- Updates the existing SIBLF Port Master Plan for the Project and for compliance with the California Coastal Act. C-1

The Project includes the repair, maintenance, and replacement of several structures comprising the SIBLF as illustrated on Figure 3 of the MND. From the Project description, CSLC staff understands that the Project would include the following components:

- Replacement of the existing 10-lane boat launching ramp;
- Replacement of the existing rock jetties with concrete sheet pile (bulkhead) walls;
- Installation of publicly accessible walking platforms with viewing areas atop the bulkhead walls;
- Replacement of the existing floating docks;
- Installation of new gangways to the floating docks;
- Improvements to the existing kayak launching area;
- Construction of a sidewalk with curb and gutter;
- Re-grading and re-paving of the vehicle/trailer maneuvering area to raise the elevation of the upper area of the launch ramp;
- Installation of signage;
- Minor re-grading of the beach area to reinstate the pre-construction beach profile;
- Completion of rock slope protection measures within the basin; and
- Installation of updated launch ramp lighting.

The Project would not increase the number of lanes comprising the existing boat launching ramp; therefore, an increase in the operational capacity of the SIBLF would not occur.

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CONTINUATION OF COMMENT LETTER

Mayra Medel Page 4 July 14, 2015

and lessees have considered the eventual effects of sea level rise on facilities located within the CSLC's jurisdiction. (The Report can be found on the CSLC's website, www.slc.ca.gov.) One of the Report's recommendations directs CSLC staff to consider the effects of sea level rise on hydrology, soils, geology, transportation, recreation, and other resource categories in all environmental determinations associated with CSLC leases. When considering lease applications, CSLC staff will (1) request information from applicants concerning the potential effects of sea level rise on their proposed projects, (2) if applicable, require applicants to indicate how they plan to address sea level rise and what adaptation strategies are planned during the projected life of their projects, and (3) where appropriate, recommend project modifications that would eliminate or reduce potentially adverse impacts from sea level rise, including adverse impacts on public access. Because the CSLC will need to consider approval of an amended lease for the Project, staff suggests the SDUPD add more detailed information related to the entire proposed Project components in the context of sea level rise projections.

Aesthetics

With regard to proposed exterior lighting for various facilities, please include a discussion of whether the lighting design will conform to City of San Diego exterior lighting standards, or other applicable regulations.

Air Quality

The impact analysis for long-term operational emissions is limited to the intended recreational uses of the SIBLF, and does not disclose the need for long-term maintenance activities resulting from the Project, such as maintenance dredging, boat ramp and jetty repairs, etc. Please update the operational emissions analysis to include anticipated maintenance activities that will generate air quality impacts, and identify the significance of these impacts and if mitigation is required. C-1

This section should also reference how the Project will incorporate standard Best Management Practices required or recommended by the San Diego County Air Pollution Control District to minimize air quality impacts.

Biological Resources

Although the biological resources section provides a fairly comprehensive inventory of species common to San Diego Bay, it lacks identification of special status species with potential to occur in the specific Project area that could be affected by the Project. Please provide a stand-alone section or table for special status species and habitats, to better inform and support the "less than significant impact" conclusion listed under impact category (a) for biological resources in the Environmental Checklist (Appendix G of the CEQA Guidelines; referred hereafter as Environmental Checklist). Additionally, the MND does not make clear whether the SDUPD has consulted with applicable State and federal agencies (i.e., CA Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Oceanic Atmospheric Administration's National Marine Fisheries Service, etc.) for direction

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Thus, no changes to parking, sanitary facilities, or other ancillary facilities are proposed. Also, pursuant to Chapter 8 of the California Coastal Act, the Project involves a Project-specific Port Master Plan Amendment.

Environmental Review

CSLC staff requests that the SDUPD consider the following comments on the Project's MND.

Project Description

The Project description lacks a comprehensive description of construction methods. Much of this detail is hidden throughout the affected resources section, rather than described up front in the Project description, to better inform the public of the Project's potential impacts. For example, several of the affected resource subsections indicate that dredging is proposed with the Project, but dredging details are not mentioned as part of the Project description. The hydrology and water quality section indicates that a sheet pile coffer dam will be installed around the in-water construction area for isolation and drainage of the construction area from the surrounding waters of San Diego Bay, yet this is not identified in the Project description. Please update the Project description to include all construction methods and activities pertaining to the Project.

In general, the Project description and affected resources section lacks disclosure of the long-term maintenance needs of the SIBLF resulting from the Project, and if these activities would be subject to future permitting and environmental review. Such long-term maintenance activities could include maintenance dredging, boat ramp and jetty repairs, etc. Since the Project includes a master plan amendment to serve the future needs of the SIBLF, it seems reasonable that the MND should analyze long-term maintenance impacts. C-1

Sea Level Rise

With regard to sea level rise, although the MND states that the top of the launch ramp area would be raised by approximately two feet as compared to the existing ramp in order to accommodate expected sea level rise, there is no apparent discussion of the elevation of the proposed gangways, docks, bulkheads, and walkways, and whether those components were designed with sufficient clearance to remain safe and functional for the life of the Project given projected sea level rise.

Note that the State of California released the final "Safeguarding California: Reducing Climate Risk, an Update to the 2009 California Climate Adaptation Strategy" (Safeguarding Plan) on July 31, 2014, to provide policy guidance for state decision-makers as part of continuing efforts to prepare for climate risks. The Safeguarding Plan sets forth "actions needed" to safeguard ocean and coastal ecosystems and resources as part of its policy recommendations for state decision-makers.

In addition, at its meeting on December 17, 2009, the CSLC approved the recommendations made in a previously requested staff report, "A Report on Sea Level Rise Preparedness" (Report), which assessed the degree to which the CSLC's grantees

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on affected species, potential impacts, and appropriate mitigation; please provide this information.

The MND indicates that the existing facilities, particularly the jetties, pilings, and subtidal bottom provides habitat for a variety of biological resources (MND p. 1-2); however, the potential impacts to these resources from the removal of these structures (particularly the jetties' rip-rap habitat and pilings) are not discussed or analyzed in detail in the biological resources chapter. CSLC staff suggests the SDUPD provide additional discussion and clarification related to the particular species that may use the existing structures, whether those species are considered sensitive for purposes of CEQA, and the significance of impacts to these species from removing the jetties and other structures.

The Project includes the installation of a sheet pile coffer dam surrounding the in-water construction area for isolation and drainage of the construction area from the surrounding waters of San Diego Bay. The analysis however, lacks a discussion of how potential fish species will be removed, or how and where the water will be disposed. This discussion should also include consultation from the State and federal biological resource agencies referenced above.

Invasive Species

One of the major stressors in California waterways is introduced species. Therefore, the MND should consider the Project's potential to encourage the establishment or proliferation of non-native aquatic invasive species (AIS), such as fish, snails, clams, and aquatic and terrestrial plants. These types of AIS can be transported to the Project area via construction equipment and watercraft that have been in contact with other infested waterways. AIS can be transported and introduced via biofouling of watercraft and construction equipment that has not been cleaned, drained, and dried. If the analysis in the MND finds potentially significant AIS impacts, possible mitigation could include contracting with vessels and barges from nearby, requiring contractors to perform a certain degree of hull-cleaning, and ensuring that all construction equipment and watercraft are cleaned, drained, and dried prior to contact with Project area waterways and following completion of construction activities. The CDFW's Invasive Species Program could assist with this analysis as well as with the development of appropriate mitigation (information at www.dfg.ca.gov/invasives/). C-1

In addition, in order to protect at-risk fish species, the MND should examine if any elements of the Project (e.g., vegetation removal, sediment removal, etc.) would favor non-native species within the Project area.

Greenhouse Gases

Please see comment under Air Quality above. Please update the operational emissions analysis to include anticipated long-term maintenance activities that will generate GHG impacts, and identify the significance of these impacts and whether mitigation is required.

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CONTINUATION OF COMMENT LETTER

Mayra Medel Page 6 July 14, 2015

In addition, the MND should provide more explanation on how the Project will comply with GHG-related policies and other emission reduction mandates, such as Executive Order (E.O.) S-3-05, E.O. S-01-07, and E.O. B-30-15.

Hydrology and Water Quality

The impact analysis for long-term operations is limited to the intended recreational uses of the SIBLF, and does not disclose the need for long-term maintenance activities resulting from the Project, such as maintenance dredging, boat ramp and jetty repairs, etc. Please update the Hydrology and Water Quality impact analysis to include anticipated long-term maintenance activities that will generate potential impacts on hydrology and water quality, and identify the significance of these impacts and whether mitigation is required.

Recreation

Please update the recreation section to include public noticing of the proposed closure of the SIBLF during construction activities with direction for other boat launching facilities in the area. C-1

Thank you for the opportunity to comment on the MND for the Project. As a responsible and trustee agency, the CSLC will need to rely on the MND for the issuance of the lease amendment as specified above and, therefore, we request that you consider our comments prior to adopting the MND.

Please send copies of future Project-related documents, including electronic copies of the Final MND, Mitigation Monitoring and Reporting Program (MMRP), and Notice of Determination (NOD) when they become available, and refer questions concerning environmental review to Jason Ramos, Senior Environmental Scientist, at (916) 574-1814 or via e-mail at jason.ramos@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Drew Simpkin, Public Land Management Specialist, at (916) 574-2275, or via e-mail at drew.simpkin@slc.ca.gov.

Sincerely,

For Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
J. Ramos, CSLC
D. Simpkin, CSLC
J. Rader, CSLC

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LETTER D: CALIFORNIA STATE LANDS COMMISSION

Commenter: Cy R. Oggins, Chief

Date: July 14, 2015

Letter D

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STATE OF CALIFORNIA

EDMUND G. BROWN JR., *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

JENNIFER LUCCHESI, ***Executive Officer***
(916) 574-1800 ***Fax*** **(916) 574-1810**
California Relay Service TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

Established in 1938

Contact Phone: **(916) 574-1890**
Contact FAX: **(916) 574-1885**

July 14, 2015

File Ref: SCH #2015061029

Mayra Medel
San Diego Unified Port District
P.O. Box 120488
San Diego, CA 92112-0488

Subject: Mitigated Negative Declaration (MND) for, Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment

Dear Ms. Medel:

The California State Lands Commission (CSLC) staff has reviewed the subject MND for the Shelter Island Boat Launch Facility (SIBLF) Improvements Project and Port Master Plan Amendment (Project), which is being prepared by the San Diego Unified Port District (SDUPD). The SDUPD, as a public agency proposing to carry out a project, is the lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The CSLC is a trustee agency for projects that could directly or indirectly affect sovereign lands and their accompanying Public Trust resources or uses. Additionally, because the Project involves work on sovereign lands, the CSLC will act as a responsible agency.

D-1

CSLC Jurisdiction and Public Trust Lands

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-1:

The comment describes the role of the District as lead agency and the role of the California State Lands Commission (CSLC) as trustee agency and responsible agency for the Project. The comment also provides additional information on the jurisdiction of the CSLC. The comment is introductory to other comments in the letter and does not contain any substantive statements or questions regarding the Draft IS/MND or the analysis therein. Therefore, no further response is provided.

extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

As the document notes, the SIBLF improvements are subject to CSLC Lease No. PRC 7987.1, a General Lease – Public Agency Use, so changes to the SIBLF as proposed will require an amendment to the Lease. The SDUPD has submitted an application requesting an amendment. The application will be scheduled for consideration by the Commission at a future public meeting after the application is deemed complete and the SDUPD has approved the MND and acted on the Project. D-1

Project Description

SDUPD proposes the Project to improve and expand the existing SIBLF facilities for waterfront access and recreation to San Diego Bay and the Pacific Ocean. The Project meets the SDUPD's objectives and needs as follows:

- Provides needed repairs to aging structures (boat ramp, jetties, pedestrian walkways, etc.);
- Improves handicapped access for American Disabilities Act compliance;
- Provides an expanded navigation area for watercraft circulation and low water conditions;
- Implements a $9.35 million grant from the State of California Department of Boating and Waterways to finance the Project;
- Updates the existing SIBLF Port Master Plan for the Project and for compliance with the California Coastal Act.

The Project includes the repair, maintenance, and replacement of several structures comprising the SIBLF as illustrated on Figure 3 of the MND. From the Project description, CSLC staff understands that the Project would include the following components: D-2

- Replacement of the existing 10-lane boat launching ramp;
- Replacement of the existing rock jetties with concrete sheet pile (bulkhead) walls;
- Installation of publicly accessible walking platforms with viewing areas atop the bulkhead walls;
- Replacement of the existing floating docks;
- Installation of new gangways to the floating docks;
- Improvements to the existing kayak launching area;
- Construction of a sidewalk with curb and gutter;
- Re-grading and re-paving of the vehicle/trailer maneuvering area to raise the elevation of the upper area of the launch ramp;
- Installation of signage;
- Minor re-grading of the beach area to reinstate the pre-construction beach profile;
- Completion of rock slope protection measures within the basin; and
- Installation of updated launch ramp lighting.

The Project would not increase the number of lanes comprising the existing boat launching ramp; therefore, an increase in the operational capacity of the SIBLF would not occur.

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-2:

The comment summarizes the Project description, including Project objectives and the Project components. The comment does not contain any substantive statements or questions regarding the Draft IS/MND or the analysis therein. Therefore, no further response is provided.

Thus, no changes to parking, sanitary facilities, or other ancillary facilities are proposed. Also, pursuant to Chapter 8 of the California Coastal Act, the Project involves a Project-specific Port Master Plan Amendment. D-2

Environmental Review

CSLC staff requests that the SDUPD consider the following comments on the Project's MND.

Project Description

The Project description lacks a comprehensive description of construction methods. Much of this detail is hidden throughout the affected resources section, rather than described up front in the Project description, to better inform the public of the Project's potential impacts. For example, several of the affected resource subsections indicate that dredging is proposed with the Project, but dredging details are not mentioned as part of the Project description. The hydrology and water quality section indicates that a sheet pile coffer dam will be installed around the in-water construction area for isolation and drainage of the construction area from the surrounding waters of San Diego Bay, yet this is not identified in the Project description. Please update the Project description to include all construction methods and activities pertaining to the Project. D-3

In general, the Project description and affected resources section lacks disclosure of the long-term maintenance needs of the SIBLF resulting from the Project, and if these activities would be subject to future permitting and environmental review. Such long-term maintenance activities could include maintenance dredging, boat ramp and jetty repairs, etc. Since the Project includes a master plan amendment to serve the future needs of the SIBLF, it seems reasonable that the MND should analyze long-term maintenance impacts. D-4

Sea Level Rise

With regard to sea level rise, although the MND states that the top of the launch ramp area would be raised by approximately two feet as compared to the existing ramp in order to accommodate expected sea level rise, there is no apparent discussion of the elevation of the proposed gangways, docks, bulkheads, and walkways, and whether those components were designed with sufficient clearance to remain safe and functional for the life of the Project given projected sea level rise. D-5

Note that the State of California released the final "Safeguarding California: Reducing Climate Risk, an Update to the 2009 California Climate Adaptation Strategy" (Safeguarding Plan) on July 31, 2014, to provide policy guidance for state decision-makers as part of continuing efforts to prepare for climate risks. The Safeguarding Plan sets forth "actions needed" to safeguard ocean and coastal ecosystems and resources as part of its policy recommendations for state decision-makers. D-6

In addition, at its meeting on December 17, 2009, the CSLC approved the recommendations made in a previously requested staff report, "A Report on Sea Level Rise Preparedness" (Report), which assessed the degree to which the CSLC's grantees D-7

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-3:

The comment requests that information regarding construction methods be consolidated and added to the Project description, rather than described in the resource sections. Section II.A. of the MND and Section 2.2 of the Initial Study provide details on construction methods, including information on jetty removal, dredging, and installation of a cofferdam. Revisions to Section II.A. of the MND and Section 2.2 of the Initial Study have been made to further clarify and consolidate the discussion of the construction methods. These revisions do not change the analysis or conclusions contained in the Draft IS/MND and are insignificant modifications to the Draft IS/MND; therefore, recirculation is not necessary.

Response to Comment D-4:

The comment states that the Draft IS/MND should describe and analyze long-term maintenance activities required for the Shelter Island Boat Launch Facility (SIBLF) as a result of the Project. Long-term maintenance activities, such as repairs to ramps, docks, gangways, and bulkhead walls, are currently unknown, but are not anticipated to create any significant impacts. Moreover, while maintenance dredging may be required in the future, details of such dredging, including footprint, volume, timeframe and methods are currently unknown. If maintenance dredging or other long-term maintenance activities are required, such activities would require further environmental review and permitting. The District's General Services Department conducts quarterly preventative maintenance inspections to assess maintenance needs, and maintenance activities are funded through the District's Major Maintenance Program. Therefore, maintenance needs and projects for the SIBLF, if any, will be determined at a future time. No further response is provided.

Response to Comment D-5:

The comment requests information regarding whether Project components, including gangways, docks, bulkheads, and walkways, were designed with sufficient clearance to remain safe and functional given projected sea level rise. Gangways and docks are not affected by sea level rise in the same manner as bulkheads and ramps because they move up and down with the tide via guide piles. The effect of projected sea level rise on the remaining Project components is discussed in Section 4, Checklist response IX. i) of the Initial Study. The analysis, which is summarized below, identifies that mean sea level rise is estimated to be between 12 and 18 inches by 2050 and describes the design measures incorporated into the Project to accommodate this projected sea level rise. Assuming a conservative sea level rise of 18 inches by 2050, the maximum water line is estimated to be 9.29 feet above mean lower low water (MLLW). Therefore, the bulkheads, including the accessible walkways, have been designed to an elevation of 11 feet above MLLW, and the boat launch ramp has been designed to an elevation of 10 feet above MLLW. These elevations are sufficient to accommodate a conservative projected sea level rise of 18 inches by 2050, which is consistent with the anticipated life of the Project.

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CONTINUATION OF RESPONSE

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-6:

The comment notes that the final *Safeguarding California: Reducing Climate Risk, an Update to the 2009 Climate Adaption Strategy* was recently released by the State of California to provide policy recommendations for decision-makers to safeguard ocean and coastal ecosystems and resources. The comment does not contain any substantive statements or questions regarding the Draft IS/MND or the analysis therein. The Draft IS/MND bases its analysis on a San Diego-specific analysis from the California Climate Change Center (*Climate Change-Related Impacts in San Diego Region by 2050*), as well as a site-specific geotechnical study that also evaluated potential impacts from projected sea level rise and the potential for increased wave forces (refer to Appendix C of the Draft IS/MND). Therefore, no further response is provided.

Response to Comment D-7:

The comment identifies that the CSLC approved recommendations made in a staff report *A Report on Sea Level Rise Preparedness*, which assessed the degree to which the CSLC's grantees and lessees have considered the eventual effects of sea level rise on facilities located within CSLC's jurisdiction, including effects on hydrology, soils, geology, transportation, recreation and other resource categories in all environmental determinations associated with CSLC leases. The comment further describes that, when considering lease applications, CSLC staff will (1) request information from applicants on the potential effects of sea level rise on their proposed projects, (2) if applicable, require applicants to indicate how they plan to address sea level rise and what adaptation strategies are planned during the life of the project, and (3) where appropriate, recommend project modifications that would eliminate or reduce potentially adverse impacts from sea level rise, including adverse impacts on public access. The comment notes that the CSLC will need to consider approval of an amended lease for the Project and suggests the District add more detailed information related to the Project components in the context of sea level rise projections.

The Draft IS/MND did not find that sea level rise would result in significant effects to resource categories such as hydrology, geology/soils, transportation, or recreation. As stated above in Response to Comments D-5 and D-6, the effects of projected sea level rise on the Project, and the design measures incorporated into Project to address such rise, are discussed in Section 4, Checklist response IX. i) of the Initial Study. The Draft IS/MND bases its analysis on a San Diego-specific analysis from the California Climate Change Center (*Climate Change-Related Impacts in San Diego Region by 2050*), as well as a site-specific geotechnical study that also evaluated potential impacts from projected sea level rise and the potential for increased wave forces (Appendix C of the Draft IS/MND). The Project has been designed to accommodate the maximum estimated sea level rise through 2050, which is consistent with the anticipated life of the Project. Overall, the Project proposes to replace an existing public boat launching facility that may be negatively affected by projected sea level rise with a similar public facility designed to accommodate projected sea level rise through 2050, which would result in an overall benefit to public access and recreation over the life of the project.

and lessees have considered the eventual effects of sea level rise on facilities located within the CSLC's jurisdiction. (The Report can be found on the CSLC's website, www.slc.ca.gov.) One of the Report's recommendations directs CSLC staff to consider the effects of sea level rise on hydrology, soils, geology, transportation, recreation, and other resource categories in all environmental determinations associated with CSLC leases. When considering lease applications, CSLC staff will (1) request information from applicants concerning the potential effects of sea level rise on their proposed projects, (2) if applicable, require applicants to indicate how they plan to address sea level rise and what adaptation strategies are planned during the projected life of their projects, and (3) where appropriate, recommend project modifications that would eliminate or reduce potentially adverse impacts from sea level rise, including adverse impacts on public access. Because the CSLC will need to consider approval of an amended lease for the Project, staff suggests the SDUPD add more detailed information related to the entire proposed Project components in the context of sea level rise projections. D-7

Aesthetics

With regard to proposed exterior lighting for various facilities, please include a discussion of whether the lighting design will conform to City of San Diego exterior lighting standards, or other applicable regulations. D-8

Air Quality

The impact analysis for long-term operational emissions is limited to the intended recreational uses of the SIBLF, and does not disclose the need for long-term maintenance activities resulting from the Project, such as maintenance dredging, boat ramp and jetty repairs, etc. Please update the operational emissions analysis to include anticipated maintenance activities that will generate air quality impacts, and identify the significance of these impacts and if mitigation is required. D-9

This section should also reference how the Project will incorporate standard Best Management Practices required or recommended by the San Diego County Air Pollution Control District to minimize air quality impacts. D-10

Biological Resources

Although the biological resources section provides a fairly comprehensive inventory of species common to San Diego Bay, it lacks identification of special status species with potential to occur in the specific Project area that could be affected by the Project. Please provide a stand-alone section or table for special status species and habitats, to better inform and support the "less than significant impact" conclusion listed under impact category (a) for biological resources in the Environmental Checklist (Appendix G of the CEQA Guidelines; referred hereafter as Environmental Checklist). D-11 Additionally, the MND does not make clear whether the SDUPD has consulted with applicable State and federal agencies (i.e., CA Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Oceanic Atmospheric Administration's National Marine Fisheries Service, etc.) for direction D-12

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-8:

The comment requests a discussion of whether the Project lighting design will conform to City of San Diego exterior lighting standards or other applicable regulations. The Project is located entirely within the District's jurisdiction and is therefore, not subject to the City of San Diego's Municipal Code, including lighting standards. As discussed in the Draft IS/MND, the Project would have less-than-significant impacts to light and glare. To the extent possible, the new light fixtures would provide downcast, directional light to focus illumination on the SIBLF and minimize spillover light and glare impacts on surrounding development while still providing sufficient safety lighting for the facility. A more detailed description of the new Project lighting, including details of how the lighting would minimize light spillover and glare, is detailed in Section 4, Checklist response I. d).

Response to Comment D-9:

The comment requests that the Draft IS/MND be updated to include an analysis of air emissions from long-term maintenance activities resulting from the Project. Please see Response to Comment D-4.

Response to Comment D-10:

The comment requests that the Draft IS/MND be updated to include a discussion on how the Project will incorporate standard Best Management Practices required or recommended by the San Diego County Air Pollution Control District (SDAPCD) to minimize air quality impacts. The Project's air quality analysis assumed compliance with applicable SDAPCD rules, and those rules are listed in the Air Quality/Climate Change Technical Report for the Project (refer to pages 15 and 16 of Appendix A of the Draft IS/MND).

Response to Comment D-11:

The comment requests that the biological resources section of the Draft IS/MND be revised to identify special status species that could occur in the Project area to better inform and support the less than significant impact conclusion listed under Checklist Response VI. a) of the Initial Study. Section IV.A. of the Draft MND and Section IV. Biological Resources of the Initial Study have been revised to include a list of special status species that could occur in the Project area. These revisions do not change the analysis or conclusions contained in the Draft IS/MND and are insignificant modifications to the Draft IS/MND; therefore, recirculation is not necessary.

Response to Comment D-12:

The comment requests clarification on whether the District has consulted with applicable state and federal regulatory agencies (i.e., California Department of Fish and Wildlife [CDFW], U.S. Fish and Wildlife Service [USFWS], National Oceanic Atmospheric Administration's National Marine Fisheries Service [NMFS], etc.) for direction on affected species, potential impacts, and appropriate mitigation. **(response continued on following page)**

on affected species, potential impacts, and appropriate mitigation; please provide this information. D-12

The MND indicates that the existing facilities, particularly the jetties, pilings, and subtidal bottom provides habitat for a variety of biological resources (MND p. 1-2); however, the potential impacts to these resources from the removal of these structures (particularly the jetties' rip-rap habitat and pilings) are not discussed or analyzed in detail in the biological resources chapter. CSLC staff suggests the SDUPD provide additional discussion and clarification related to the particular species that may use the existing structures, whether those species are considered sensitive for purposes of CEQA, and the significance of impacts to these species from removing the jetties and other structures. D-13

The Project includes the installation of a sheet pile coffer dam surrounding the in-water construction area for isolation and drainage of the construction area from the surrounding waters of San Diego Bay. The analysis however, lacks a discussion of how potential fish species will be removed, or how and where the water will be disposed. This discussion should also include consultation from the State and federal biological resource agencies referenced above. D-14

Invasive Species

One of the major stressors in California waterways is introduced species. Therefore, the MND should consider the Project's potential to encourage the establishment or proliferation of non-native aquatic invasive species (AIS), such as fish, snails, clams, and aquatic and terrestrial plants. These types of AIS can be transported to the Project area via construction equipment and watercraft that have been in contact with other infested waterways. AIS can be transported and introduced via biofouling of watercraft and construction equipment that has not been cleaned, drained, and dried. If the analysis in the MND finds potentially significant AIS impacts, possible mitigation could include contracting with vessels and barges from nearby, requiring contractors to perform a certain degree of hull-cleaning, and ensuring that all construction equipment and watercraft are cleaned, drained, and dried prior to contact with Project area waterways and following completion of construction activities. The CDFW's Invasive Species Program could assist with this analysis as well as with the development of appropriate mitigation (information at www.dfg.ca.gov/invasives/). D-15

In addition, in order to protect at-risk fish species, the MND should examine if any elements of the Project (e.g., vegetation removal, sediment removal, etc.) would favor non-native species within the Project area. D-16

Greenhouse Gases

Please see comment under Air Quality above. Please update the operational emissions analysis to include anticipated long-term maintenance activities that will generate GHG impacts, and identify the significance of these impacts and whether mitigation is required. D-17

Response to Comment D-12 (continued from previous page):

The District has conducted early coordination with the NMFS and the U.S. Army Corps of Engineers (USACE). In addition, as identified in Section VIII. of the Draft MND, the District initiated informal early consultation with applicable resource agencies, including, but not limited to, the CDFW, USFWS, NMFS, and San Diego Regional Water Quality Control Board (RWQCB), in order to solicit their input on the Project and the corresponding aspects thereof in each agencies' area of expertise. As identified in the Draft IS/MND, the Project will require permits from the USACE and the RWQCB. Therefore, additional coordination with Resource Agencies, including the CDFW, USFW, NMFS, USACE, and RWQCB, will be required. Moreover, none of the agencies commented on the Draft MND.

Response to Comment D-13:

The comment requests additional clarification related to the particular species that may use the existing boat launch facility structures (particularly the jetties' rip-rap habitat and pilings), whether these species are sensitive, and whether there would be impacts to these species from Project construction. Several marine fish and invertebrate species, such as barnacles, seastars, and surfperches, use manmade structures, such as docks and pilings, for shelter and feeding. However, these species are not considered sensitive and are commonly found throughout San Diego Bay. As such, Project construction would not result in a significant impact to these species. Moreover, there are abundant rock and pile habitats located throughout San Diego Bay to support these species.

Similarly, benthic resources (invertebrates and fishes) are not considered sensitive and are commonly found throughout the San Diego Bay. Dredging effects on benthic resources are described in a dredging report available for download on the District's website (Merkel 2010). Effects on these non-sensitive communities are expected to be temporary, and recovery to pre-construction conditions will occur over a short period of time (6 to 24 months). As stated above, Project construction would not result in a significant impact to benthic resources because they are not considered to be sensitive species.

Response to Comment D-14:

The comment requests clarification on how fish species will be removed from the Project's temporary cofferdam and how and where water from within the cofferdam will be disposed. Installation of the temporary cofferdam to construct the cast-in-place ramp is a requirement of the Department of Boating and Waterways' grant for the Project. The SIBLF is an active boating area, and as such, it is not anticipated that abundant fish species are present near the boat ramp in the proposed location of the cofferdam. Furthermore, as described in the Draft IS/MND, soft start pile driving techniques will be used to warn marine mammals and fish and give them a chance to leave the construction area. Installation of the cofferdam is anticipated to occur during low tide, which will result in less water within the cofferdam a will further minimize the opportunity for fish to be in area. **(response continued on following page)**

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CONTINUATION OF RESPONSE

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-14 (continued from previous page):

As described in Response to Comment D-13 above, Project construction, including installation of the cofferdam, will not result in significant impacts to biological resources because fishes or invertebrates are not considered sensitive and are commonly found throughout San Diego Bay. As detailed in Response to Comment D-12 above, the Project will require a permit from the RWQCB. Installation and operation of the temporary cofferdam will be handled in accordance with the RWQCB permit for the Project, including methods for dewatering and disposal of the water.

Response to Comment D-15:

The comment requests that the Draft IS/MND consider the Project's potential to encourage the establishment of non-native aquatic invasive species (AIS), such as fish, snails, clams, and aquatic and terrestrial plants. The comment identifies that these types of AIS can be transported to the Project area via construction equipment and watercraft. The Project is not anticipated to encourage establishment of AIS during construction because standard construction requirements for all District in-water projects would prevent any potential for proliferation of AIS. The District's standard dredging specifications require the construction contractor to provide an Environmental Protection Plan (EPP) prior to construction, which is subject to approval by the District. The EPP requirements include equipment cleaning and employee training, including stop work clauses and permit requirements, to ward against introducing AIS. Furthermore, watercraft that utilize the SIBLF are generally from the local area and are not anticipated to have been in contact with other infested waterways. As identified in the Draft IS/MND, the SIBLF is currently an active public boat launching facility and would continue as an active public boat launching facility with implementation of the Project. Due to the implementation of standard construction requirements and the continuation of existing operational uses, the Project is not anticipated to encourage the establishment of AIS.

Response to Comment D-16:

The comment requests information regarding elements of the Project that may favor non-native species within the Project area. As discussed in Response to comment D-15 above, the SIBLF is currently an active public boat launching facility and would continue as an active public boat launching facility with implementation of the Project. No change in use is proposed, so there would be no potential to favor non-native species. Also, as indicated in Section IV. Biological Resources of the Initial Study, mitigation measures for potential impacts to eelgrass habitat would benefit native species. This analysis further explains that the Project would result in 2,800 square feet of new open water area that would benefit native species. As such, the Project site and Project elements provide no advantage to non-native species.

Response to Comment D-17:

The comment requests that the Draft IS/MND be updated to include a greenhouse gas emissions analysis for long-term maintenance activities. Please see Response to Comment D-4.

In addition, the MND should provide more explanation on how the Project will comply with GHG-related policies and other emission reduction mandates, such as Executive Order (E.O.) S-3-05, E.O. S-01-07, and E.O. B-30-15. D-18

Hydrology and Water Quality

The impact analysis for long-term operations is limited to the intended recreational uses of the SIBLF, and does not disclose the need for long-term maintenance activities resulting from the Project, such as maintenance dredging, boat ramp and jetty repairs, etc. Please update the Hydrology and Water Quality impact analysis to include anticipated long-term maintenance activities that will generate potential impacts on hydrology and water quality, and identify the significance of these impacts and whether mitigation is required. D-19

Recreation

Please update the recreation section to include public noticing of the proposed closure of the SIBLF during construction activities with direction for other boat launching facilities in the area. D-20

Thank you for the opportunity to comment on the MND for the Project. As a responsible and trustee agency, the CSLC will need to rely on the MND for the issuance of the lease amendment as specified above and, therefore, we request that you consider our comments prior to adopting the MND.

Please send copies of future Project-related documents, including electronic copies of the Final MND, Mitigation Monitoring and Reporting Program (MMRP), and Notice of Determination (NOD) when they become available, and refer questions concerning environmental review to Jason Ramos, Senior Environmental Scientist, at (916) 574-1814 or via e-mail at jason.ramos@slc.ca.gov. For questions concerning CSLC leasing jurisdiction, please contact Drew Simpkin, Public Land Management Specialist, at (916) 574-2275, or via e-mail at drew.simpkin@slc.ca.gov. D-21

Sincerely,

For

Cy R. Oggins, Chief
Division of Environmental Planning
and Management

cc: Office of Planning and Research
J. Ramos, CSLC
D. Simpkin, CSLC
J. Rader, CSLC

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-18:

The comment requests that the Draft IS/MND provide more explanation on how the Project will comply with greenhouse gas (GHG) emissions-related policies, such as Executive Orders S-3-05, S-01-07, and B-30-15. Executive Orders S-3-05, S-01-07, and B-30-15 were issued by the California executive branch with the purpose of reducing GHG emissions.

Consistency with Executive Order S-01-07

Executive Order S-1-07, also known as the Low Carbon Fuel Standard (LCFS), called for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. The Project would comply with the LCFS because it would not conflict with or impede the ability to achieve the targets set forth by S-01-07, nor impact the ability for a reduction in carbon intensity of transportation fuels. The Project does not propose a change in the use of the site that would eliminate the ability to achieve the targets. The Project also does not involve the production of fuel or alternative fuel. It is anticipated that boats and vehicles visiting the Project would use California transportation fuels that would be produced consistent with the S-01-07 targets.

Consistency with Executive Orders S-3-05 and B-30-15

In June 2005, Governor Arnold Schwarzenegger issued Executive Order S-3-05, which established the following goals for the State of California: GHG emissions should be reduced to 2000 levels by 2010; to 1990 levels by 2020; and to 80 percent below 1990 levels by 2050. The Executive Order's goal to reduce GHG emissions to 1990 levels by 2020 was codified by the California Legislature in AB 32 (Refer to Section 4, Checklist response VII. of the Initial Study for additional discussion of AB 32). As discussed in Section 4, Checklist responses VII. a) and b) of the Initial Study, the project is consistent with AB 32 and, therefore, is consistent with that portion of the Executive Order.

In April 2015, California Governor Brown issued Executive Order B-30-15, which did the following:

- Established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 as a "mid-term" benchmark needed to achieve the 80 percent below 1990 levels by 2050.
- Ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets.
- Directed the California Air Resource Board (CARB) to update the Climate Change Scoping Plan (Scoping Plan) to express the 2030 target in terms of metric tons of carbon dioxide equivalent.

CARB expressed its intention to initiate the Scoping Plan update during the summer of 2015, with adoption schedule for 2016. **(response continued on following page)**

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CONTINUATION OF RESPONSE

Response to Comment D-18 (continued from previous page):
Senate Bill 32, which recently was withdrawn in the Legislature, would have amended AB 32 to codify the 2030 and 2050 Executive Orders' GHG emission reduction targets (40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050). Thus, while the 2030 and 2050 GHG reduction goals of the Executive Orders are envisioned as part of California's overall GHG emission reduction strategy, they have not been codified as law. Additionally, there is very little guidance on how an individual project could comply with the 2030 and 2050 reduction goals. CARB has not yet issued business as usual projections for 2030 or 2050, which are necessary data points for quantitatively analyzing a CEQA project's consistency with these targets. Additionally, CARB has not issued detailed guidelines related to compliance. Due to technological shifts required and the unknown parameters or guidance of the regulatory framework, a quantitative analysis of the project's impacts on the 2030 and 2050 goals is not realistic. However, whether a project would impede California's 2030 and 2050 GHG emission goals depends on the amount of GHG emissions generated by the project and whether a downward trajectory of GHG emissions would be achieved.

Furthermore, studies have shown that in order to meet the 2030 and 2050 targets, aggressive technologies in the transportation and energy sector, including electrification and decarbonization of fuel will be required. In CARB's 2008 Scoping Plan, CARB acknowledged that the "measures needed to meet the 2050 goal are too far in the future to define in detail" (CARB, 2008 Scoping Plan, p. 117). In the 2014 First Update to the Scoping Plan (First Update), CARB generally described the type of activities that would be required to achieve the 2050 targets: "energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately" (CARB, First Update, p. 32). More recently, CARB has noted that the 40 percent goal set by Executive Order B-30-15 is achievable and that CARB was accelerating cuts to carbon output through 2030 to reduce continued temperature rise and shifting infrastructure priorities to protect against future climate change related impacts (CARB, Frequently Asked Questions About Executive Order B-30-15: 2030 Carbon Target and Adaptation, p. 1). An emphasis on public transit and sustainable communities will be required to achieve the 2030 and 2050 emission reduction goals (CARB, First Update, pp. 46, 49-50).

Statewide efforts, discussed below, are underway to facilitate California's achievements with the Executive Orders' 2030 and 2050 goals. These efforts are under the control of other agencies such as CARB. In assessing the Project's impacts, it is appropriate to consider the GHG control measures that other agencies have adopted or which are listed in the Scoping Plan and the First Update. Additionally, it is reasonable to expect that these agencies will implement such measures and promulgate regulations to decrease California's overall GHG emissions. **(response continued on following page)**

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CONTINUATION OF RESPONSE

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-18 (continued from previous page):

Consequently, it is reasonable to anticipate that the Project's emission levels would decrease as a result because users of the Project site and the District, as the project proponent, would be required to comply with future laws and regulations. In other words, the Project's GHG emissions at build-out would represent the maximum emissions inventory and as regulations – such as regulations that control fuel and energy – are passed and imposed on the Project and users of the same, the total Project GHG emissions would decrease.

The Scoping Plan recognizes that AB 32 establishes an emissions reduction trajectory that will allow California to achieve the more stringent 2050 target: "These [greenhouse gas emission reduction] measures also put the state on a path to meet the long-term 2050 goal of reducing California's greenhouse gas emissions to 80 percent below 1990 levels. This trajectory is consistent with the reductions that are needed globally to stabilize the climate." (CARB, Scoping Plan, p. 15). Also, the First Update provides that it "lays the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050," and many of the emission reduction strategies recommended by CARB would serve to reduce the Project's post-2020 emissions level to the extent applicable by law (CARB, First Update, pp. 4, 32-33, 94-00 [recent studies show that achieving the 2050 goal will require that the "electricity sector will have to be essentially zero carbon; and that electricity or hydrogen will have to power much of the transportation sector, including almost all passenger vehicles."]). CARB's recommended reduction strategies that may result in future Project-related GHG reductions include, but are not limited to, the following:

- Energy Sector: Additions to California's renewable resource portfolio would favorably influence the Project's emissions level as the electricity that would serve the Project site would include more renewable energy (CARB, First Update, pp. 40-41).

- Transportation Sector: Anticipated improved vehicle efficiency, zero emission technologies, lower carbon fuels and improvements to existing transportation systems would all serve to reduce the Project's future GHG emissions as vehicles and boats visiting the site would produce less GHG (CARB, First Update, pp. 55-56).

- Waste Management Sector: Plans to further improve recycling and reduction of solid waste would also reduce the Project's future GHG emissions (CARB, First Update, p. 69).

In addition to CARB's efforts, in January 2015, during his inaugural address, Governor Jerry Brown expressed a commitment to achieve "three ambitious goals" that he would like to see accomplished by 2030 to reduce the state's GHG emissions (1) increasing the state's Renewable Portfolio Standard from 33 percent in 2020 to 50 percent in 2030; (2) cutting the petroleum use in cars and trucks in half; and (3) doubling the efficiency of existing buildings and making heating fuels cleaner. **(response continued on following page)**

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CONTINUATION OF RESPONSE

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-18 (continued from previous page):

These expressions of Executive Branch policy may be manifested in adopted legislative or regulatory action through the state agencies and departments responsible for achieving the California's environmental policy objectives, particularly those relating to global climate change.

Recent studies have also shown that the state's existing and proposed regulatory framework will allow the state to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050 (Energy and Environmental Economics (E3), "Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios" (April 2015); Greenblatt, Jeffrey, Energy Policy, "Modeling California Impacts on Greenhouse Gas Emissions" (Vol. 78, pp. 158-172) (CARB, California Energy Commission, California Public Utilities Commission, and the California Independent System Operator engaged E3 to evaluate the feasibility and cost of a range of potential 2030 targets along the way to the state's goal of reducing GHG emissions to 80% below 1990 levels by 2050. With input from the agencies, E3 developed scenarios that explore the potential pace at which emission reductions can be achieved as well as the mix of technologies and practices deployed. E3 conducted the analysis using its California PATHWAYS model. Enhanced specifically for this study, the model encompasses the entire California economy with detailed representations of the buildings, industry, transportation, and electricity sectors.)). Even though these studies did not provide an exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies and regulations could allow California's emissions to remain low through 2050, allowing the state to meet the 2030 and 2050 goals. Some of these measures are likely to reduce the Project's GHG emissions as well. For example, the vehicles traveling to and from the Project site will continue to be subject to more stringent fuel standards, or future requirements for electrified engines or fuel cell technology, as determined by CARB. Additional more stringent regulations for boats and other waterborne vessels may also be developed. Therefore, by simply complying with future regulations, the Project's post-2020 emission trajectory is expected to follow a declining trend, consistent with the 2030 and 2050 targets.

Additionally, the Project's GHG emissions are very minor at 42.66 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year. The 900 $MTCO_2e$ per year threshold is the lowest, most conservative Bright Line threshold that has been referenced consistently by other lead agencies throughout the state. It was first introduced in the California Air Pollution Control Officers Association (CAPCOA) White Paper (2008), and was developed to ensure capture of 90 percent or more of likely future discretionary developments. CAPCOA acknowledged that the 900 $MTCO_2e$ per year was set low enough to capture most future developments that would be needed to accommodate statewide population growth and job growth, but set high enough to exclude small developments that would only contribute a small fraction of statewide GHG emissions in order to achieve the state's GHG reduction targets. Here, the District used the City's Draft Bright Line Threshold of 2,500 $MTCO_2e$ per year (for non-stationary sources). **(response continued on following page)**

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CONTINUATION OF RESPONSE

Response to Letter D
California State Lands Commission
Commenter: Cy R. Oggins, Chief
Date: July 14, 2015

Response to Comment D-18 (continued from previous page):

The Project's GHG emissions are well below the Draft IS/MND's threshold and the CAPCOA 900 $MTCO_2e$ per year threshold. Furthermore, operational emissions from electricity use would be reduced compared to existing conditions because the Project would replace some existing light poles with bollard lighting and would utilize LEDs, resulting in a more energy efficient lighting system and an overall downward trajectory of GHG emissions associated with operation of the Project site when compared to existing conditions.

Taking into account potential measures that are currently being contemplated by the state to meet the 2030 and 2050 reduction goals, and because the Project does not represent a significant source of GHG emissions, would comply with future regulations necessary to meet the 2030 and 2050 reduction goals, and demonstrates a downward trajectory in Project-related GHG emissions, it is not anticipated to impede the implementation of the Executive Orders and would comply with the same. No changes to the conclusions of the Draft IS/MND are necessary, and no significant impacts would occur.

Response to Comment D-19:

The comment requests that the Draft IS/MND be updated to include a hydrology analysis for long-term maintenance activities. Please see Response to Comment D-4.

Response to Comment D-20:

The comment requests additional information on public noticing of the proposed closure of the SIBLF during Project construction. As discussed in Section 4, Checklist response XV. a) of the Initial Study, the District has identified several alternative boat launching ramps for use by the public during the construction period. The District has been conducting ongoing outreach to the public regarding this Project, including the anticipated temporary closure, since 2007. The District will continue public outreach using multiple methods that will include, but not be limited to, press releases, signage at the Project site, Board meetings, District's website, etc. to notify the public of SIBLF closure during Project construction. This public outreach will begin several months in advance of construction and continue throughout Project construction.

Response to Comment D-21:

This comment notes that the CSLC will rely on the Draft IS/MND for issuance of the lease amendment and requests copies of future Project-related documents. The District will provide copies of future Project-related documents to the CSLC when available.

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LETTER E: COUNTY OF SAN DIEGO DEPARTMENT OF ENVIRONMENTAL HEALTH VECTOR CONTROL PROGRAM

Commenter: Karilyn A. Merlos, Program Coordinator

Date: July 14, 2015

Letter E

ELUM 14 JUL '15PM4:40

County of San Diego

ELIZABETH A. POZZEBON
DIRECTOR

DEPARTMENT OF ENVIRONMENTAL HEALTH
VECTOR CONTROL PROGRAM
5570 OVERLAND AVENUE, SUITE 102, SAN DIEGO, CA 92123
Phone: (858) 694-2888 Fax: (858) 571-4268
www.SDVector.com

AMY HARBERT
ASSISTANT DIRECTOR

July 14, 2015

Mayra Medel
San Diego Unified Port District
Environmental & Land Use Management Department
3165 Pacific Highway
San Diego, CA 92101
Mmedel@portofsandiego.org

Re: NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION FOR THE SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS PROJECT AND PORT MASTER PLAN AMENDMENT (UPD #MND-2015-38)

Dear Ms. Medel:

Thank you for the opportunity to review and comment on the Draft Mitigated Negative Declaration for the above referenced project. The County of San Diego Vector Control Program (VCP) is responsible for the protection of public health through the surveillance and control of mosquitoes that are vectors for human disease including West Nile virus (WNV). E-1

While there is no substantial evidence that the proposed project will have an effect on the environment which could lead to the creation of sources of mosquito breeding, the VCP respectfully submits the following general comment on mosquito breeding for consideration during project development. Potential sources of mosquito breeding include construction related depressions such as those created by demolition, grading activities, and wheel ruts. Any location that is capable of accumulating and holding at least ½ inch of water for more than 96 hours can support mosquito breeding and development. E-2

For your reference, the County of San Diego Guidelines for Determining Significance for Vectors can be accessed at http://www.sdcounty.ca.gov/pds/docs/Vector_Guidelines.pdf and the California Department of Public Health Best Management Practices for Mosquito Control in California is available at http://www.cdph.ca.gov/HealthInfo/discond/Documents/BMPforMosquitoControl07-12.pdf.

Thank you again for the opportunity to comment on the Draft Mitigated Negative Declaration. Please continue to include us in the interested parties list for future environmental notifications and documents. If you have any questions regarding the above comment, please contact me at (858) 495-5799 or Erin McCowen at (858) 688-9426. E-3

Sincerely,

Karilyn A. Merlos

KARILYN A. MERLOS, Program Coordinator
Vector Control Program

KLM:em

"Environmental and public health through leadership, partnership and science"

RESPONSE TO LETTER E
County of San Diego Department of Environmental Health Vector Control Program
Commenter: Karilyn A. Merlos, Program Coordinator
Date: July 14, 2015

Response to Comment E-1:
The comment notes the role of the County of San Diego Vector Control Program. This comment does not contain any substantive statement or questions about the Draft IS/MND or the analysis therein. Therefore, no further response is provided.

Response to Comment E-2:
The comment notes that there is no substantial evidence that the Project will lead to the creation of sources of mosquito breeding, provides information on potential sources of mosquito breeding, and provides references to State of California and County of San Diego guidelines and best management practices for vectors and mosquitoes. As noted by the comment, the Project is unlikely to have construction-related depressions created by demolition, grading activities, and wheel ruts that could hold water and potentially be a source of mosquito breeding. This comment does not contain any substantive statement or questions about the Draft IS/MND or the analysis therein. Therefore, no further response is provided.

Response to Comment E-3:
The comment requests that the County Vector Control Program continue to be included on the list of interested parties for future environmental notifications. The District will continue to notify the County Vector Control Program of future environmental notifications and documents.

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APPENDIX A

AIR QUALITY/CLIMATE CHANGE TECHNICAL REPORT

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URBAN CROSSROADS
41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

May 29, 2015

Anne Surdzial
ECORP CONSULTING, INC.
10575 Oakdale Drive
Rancho Cucamonga, CA 91730

SUBJECT: SHELTER ISLAND BOAT LAUNCH FACILITY CONSTRUCTION AQ & GHG ASSESSMENT UPDATE

Dear Ms. Anne Surdzial:

The firm of Urban Crossroads, Inc. is pleased to submit this Construction AQ & GHG Assessment Update for the proposed Shelter Island Boat Launch Facility development ("Project"), which is located in the northeasterly area of Shelter Island in the City of San Diego.

PURPOSE

The Shelter Island Boat Launch Facility Improvements Focused Construction Air Quality and Greenhouse Gas Evaluation (referred to as "2013 AQ/GHG Assessment"), prepared by Urban Crossroads, Inc. (dated July 16, 2013) had assumed 12,000 cubic yards of disposal, or 1,200 truck trips. The Project is now expected to result in approximately 13,350 cubic yards of disposal, or 1,335 truck trips, which is an increase of 135 truck trips over what was previously evaluated.

This Construction AQ & GHG Assessment Update evaluates the Project based on 1,335 truck trips. In addition, local disposal of the jetty rip rap, jetty core fill, and dredged material is no longer proposed, and all construction waste would be hauled to Copper Mountain Landfill in Arizona, via I-8 East for disposal.

PROJECT IMPACTS AND MITIGATION MEASURES

Consistent with the 2013 AQ/GHG Assessment, soil export trips are assumed to travel to the edge of the air basin. This is a conservative modeling parameter in order to overstate rather than understate the potential impacts. The one-way trip length to the edge of the San Diego Air Basin (SDAB) is assumed to be 60 miles consistent with the 2013 AQ/GHG Assessment.

In order to estimate the emissions based on the proposed increase in truck trips, the 2013 AQ/GHG Assessment modeling results were multiplied by a ratio of the modeled truck trips included in the 2013 AQ/GHG Assessment versus the number of proposed truck trips based on the increase identified above. As such, emissions were multiplied by a factor of 1.1125 (89 daily truck trips proposed ÷ 80 daily truck trips evaluated in the 2013 AQ/GHG Assessment).

Table 1 summarizes the revised maximum daily air quality emissions based on the changes identified above. As shown, no significant impacts are expected to occur, consistent with the 2013 AQ/GHG Assessment.

Table 2 illustrates the revised total greenhouse gas (GHG) emissions based on the changes identified above. As shown, no significant impacts are expected to occur, consistent with the 2013 AQ/GHG Assessment.

TABLE 1: EMISSIONS SUMMARY OF OVERALL CONSTRUCTION WITH SOIL EXPORT WITHIN SDAB (LBS/DAY)

Year	VOC	NOx	CO	SOx	PM10	PM2.5
Maximum Daily Emissions	**25.12**	**227.57**	**119.94**	**0.40**	**18.32**	**10.61**
Threshold	75	250	550	250	100	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

TABLE 2: GHG EMISSIONS SUMMARY OF OVERALL CONSTRUCTION WITH SOIL EXPORT WITHIN SDAB (MTPY)

Year	CO2	CH4	N2O	CO2e
Total Construction Related Emissions	852.24	0.04	--	853.21
Amortized Construction Related Emissions	**42.61**	**0.002**	**--**	**42.66**
Threshold	2,500 MT CO2e per year			
Significant?	**NO**			

If you have any questions, please contact me directly at (949) 660-1994, extension 217.

Respectfully submitted,

URBAN CROSSROADS, INC.

Haseeb Qureshi

Senior Associate

41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

July 16, 2013

Ms. Anne Surdzial, AICP
ECORP CONSULTING, INC.
215 North 5th Street
Redlands, CA 92374

Subject: Shelter Island Boat Launch Facility Improvements Focused Construction Air Quality and Greenhouse Gas Evaluation

Dear Ms. Surdzial:

Urban Crossroads, Inc. is pleased to submit this letter report to document the focused construction air quality assessment for the potential construction related traffic impacts associated with the proposed Shelter Island Boat Launch Facility Improvements ("Project"). The proposed Project is located in the northeasterly area of Shelter Island in the City of San Diego. The proposed Project site will consist of 113-boat trailer parking spaces, public restrooms, a 10-lane boat launch ramp, and two floating docks. The purpose of this letter is to assess any potential air quality and greenhouse gas impacts as a result of the proposed Projects' construction.

EXISTING CONDITIONS

This section provides an overview of the existing air quality conditions in the project area and region.

Climate and Meteorology

The climate in southern California, including the San Diego Air Basin (SDAB), is controlled largely by the strength and position of the subtropical high-pressure cell over the Pacific Ocean. Areas within 30 miles of the coast experience moderate temperatures and comfortable humidity. Precipitation is limited to a few storms during the winter season. The climate of San Diego County is characterized by hot, dry summers and mild, wet winters.

Air quality in the planning area is not only affected by various emission sources (mobile, industry, etc.), but also by atmospheric conditions such as wind speed, wind direction, temperature, rainfall, etc. The Basin is a large and diverse region. Its topography, climate, and patterns of urbanization are not found elsewhere. The Basin consists of San Diego County. It is bounded on the north by the South Coast Air Basin, on the east by the Southwest Desert Air Basin, on the west by the Pacific Ocean, and on the south by the Mexican State of Baja California. The Basin is divided by the Laguna Mountains range, which runs approximately parallel to the coast approximately 45 miles (mi) inland and separates the coastal area from the desert portion of the County. The Laguna Mountains reach heights of over 6,000 ft, with Cuyamaca Peak rising to 6,515 ft (the highest point in the Basin). The coastal region is made up of coastal terraces that rise up from the ocean into wide mesas, which change into the Laguna Foothills farther east.

A typical meteorological pattern for the Basin involves light and variable or light easterly surface winds overnight, followed by gentle onshore winds from the west or northwest during the day, with mixing depths of 1,500–2,000 ft in the afternoon. The Basin has five distinct climate zones. Like the mountains, the climate zones are nearly parallel to the coast. They are as follows:

- Maritime (coastline to 3 to 5 mi inland): The climate is dominated by the influence of the Pacific Ocean. The humidity is high and temperatures are mild. Oceanside, Del Mar, and Chula Vista are in the maritime climatic zone.
- Coastal (approximately 5 to 15 mi inland): The ocean's influence is diminished but is still significant. Afternoons are a bit warmer, nights are cooler, and the climate is dryer. This climatic zone is heavily populated. Vista and Rancho Santa Fe are in the coastal zone.
- Transitional (approximately 20 to 25 mi inland): Communities in this zone may experience coastal climate conditions for brief periods but normally have a warm, dry climate. Daytime humidity is low. Summer temperatures may exceed 100 degrees Fahrenheit (°F). Winter days are milder, around 60°F, with frosty mornings. Poway, Escondido, and El Cajon are in the transitional zone.
- Interior (approximately 25 to 60 mi inland): The terrain rising from 2,000 to 6,500 ft produces dramatic contrasts in climate. The western slope communities such as Alpine (2,000 ft and Descanso (2,500 ft) are more at the mercy of the inversion layer, which traps pollutants. High mountain communities such as Pine Valley and Julian, located farther inland, above 4,000 ft and thus above the inversion layer, are relatively free of air pollution.
- Desert (approximately 60 mi inland to the eastern border): The City's air pollution has little or no impact on the desert. Temperatures in the desert can reach 120°F in the summer and a much milder 80°F in the winter. Borrego Springs and Boulevard are in the desert zone.

Air Quality Standards

Existing air quality is measured based upon ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect, as well health effects of each pollutant regulated under these standards are shown in Table 1.

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented in Table 3. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O_3, CO, SO_2, NO_2, PM_{10}, and $PM_{2.5}$ are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O_3, PM_{10}, $PM_{2.5}$, and those based on annual averages or arithmetic mean) are not exceeded more than once per year. The O_3 standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

REGIONAL AIR QUALITY

The SDAPCD monitors levels of various criteria pollutants at monitoring stations throughout the air basin. In 2010, the federal and state standards were exceeded on one or more days for ozone, PM_{10}, and $PM_{2.5}$ at most monitoring locations. No areas of the San Diego Air Basin (SDAB) exceeded federal or state standards for NO_2, SO_2, CO, sulfates or lead. See Table 2 for attainment designations for the SDAB.

TABLE 1 (PAGE 1 OF 2)

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.075 ppm (147 µg/m^3)		
Respirable Particulate Matter (PM10)	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[8]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[9]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[9]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[9]	—	
Lead[10,11]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[11]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[12]	8 Hour	See footnote 12	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[10]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page …

For more information please call ARB-PIO at (916) 322-2990

California Air Resources Board (6/7/12)

TABLE 1 FOOTNOTES (PAGE 2 OF 2)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

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

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

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

9. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

   Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour 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.

10. The ARB 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.

11. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

12. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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LOCAL AIR QUALITY

The nearest long-term air quality monitoring site in relation to the project for Ozone (O_3), Carbon Monoxide (CO), Nitrogen Dioxide (NO_2), Inhalable Particulates (PM_{10}), and Ultra-Fine Particulates ($PM_{2.5}$) is carried out by the SDAPCD at the Downtown San Diego Monitoring Station. The 3 years of data in Table 3 shows the number of days standards were exceeded for the study area, which was chosen to be representative of the local air quality at the project site. Additionally, data for SO_2 has been omitted as attainment is regularly met in the SDAB and few monitoring stations measure SO_2 concentrations.

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Examples of sources and effects of the criteria pollutants are identified below:

- Carbon Monoxide (CO): Is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

- Sulfur Dioxide (SO_2): Is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO2 oxidizes in the atmosphere, it forms sulfates (SO4). Collectively, these pollutants are referred to as sulfur oxides (SOX).

- Nitrogen Oxides (Oxides of Nitrogen, or NO_x): Nitrogen oxides (NO_x) consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with oxygen (O_2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO_2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO2 is the most abundant in the atmosphere. As ambient concentrations of NO2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO2 than those indicated by regional monitors.

TABLE 2

ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SAN DIEGO AIR BASIN (SDAB)

Criteria Pollutant	Federal Designation	State Designation
Ozone (1-hour)	Attainment*	Nonattainment
Ozone (8-hour)	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
PM10	Unclassifiable**	Nonattainment
PM2.5	Attainment	Nonattainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	(no federal standard)	Attainment
Hydrogen Sulfide	(no federal standard)	Unclassified
Visibility	(no federal standard)	Unclassified

*The federal 1-hour standard of 12 pphm was in effect from 1979 through June 15, 2005. The revoked standard is referenced here because it was employed for such a long period and because this benchmark is addressed in State Implementation Plans.
**At the time of designation, if the available data does not support a designation of attainment or nonattainment, the area is designated as unclassifiable.

TABLE 3 PROJECT AREA AIR QUALITY MONITORING SUMMARY 2010-2012

DOWNTOWN SAN DIEGO MONITORING STATION DATA [a]

POLLUTANT	STANDARD	YEAR		
		2010	2011	2012
Ozone (O_3)				
Maximum 1-Hour Concentration (ppm)		0.08	0.08	0.07
Maximum 8-Hour Concentration (ppm)		0.07	0.06	0.07
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	0	0	0
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	0	0	0
Number of Days Exceeding Federal 1-Hour Standard	> 0.12[e] ppm	0	0	0
Number of Days Exceeding Federal 8-Hour Standard	> 0.075 ppm	0	0	0
Number of Days Exceeding Health Advisory	≥ 0.15 ppm	0	0	0
Carbon Monoxide (CO)				
Maximum 1-Hour Concentration (ppm)		2.8	2.8	2.6
Maximum 8-Hour Concentration (ppm)		2.2	2.4	1.9
Number of Days Exceeding Federal / State 8-Hour Standard	> 9.0 ppm	0	0	0
Number of Days Exceeding State 1-Hour Standard	> 20 ppm	0	0	0
Number of Days Exceeding Federal 1-Hour Standard	> 35 ppm	0	0	0
Nitrogen Dioxide (NO_2)				
Maximum 1-Hour Concentration (ppm)		.077	.067	.065
Annual Arithmetic Mean Concentration (ppm)		.014	.014	.013
Number of Days Exceeding State 1-Hour Standard	> 0.18 ppm	0	0	0
Inhalable Particulates (PM_{10})				
Maximum 24-Hour Concentration ($\mu g/m^3$)		40	48	45
Annual Arithmetic Mean ($\mu g/m^3$)		23.0	23.3	21.8
Ultra-Fine Particulates ($PM_{2.5}$)				
Maximum 24-Hour Concentration ($\mu g/m^3$)		30	56	27
Annual Arithmetic Mean ($\mu g/m^3$)		10.4	10.8	11.0

[a] Downtown San Diego Monitoring Station utilized.

Source: San Diego Air Pollution Control District (http://www.sdapcd.org/info/reports/5-year-summary.pdf)

- Ozone (O_3): Is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOX), both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.

- PM_{10} (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM_{10} also causes visibility reduction and is a criteria air pollutant.

- $PM_{2.5}$ (Particulate Matter less than 2.5 microns): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_X release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. $PM_{2.5}$ is a criteria air pollutant.

- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant.

- Reactive Organic Gasses (ROG): Similar to VOC, Reactive Organic Gasses (ROG) are also precursors in forming ozone and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant.

- Lead (Pb): Lead is a heavy metal that is highly persistent in the environment. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. Currently, emissions of lead are largely limited to stationary sources such as lead smelters. It should be noted that the proposed Project is not anticipated to generate a quantifiable amount of lead emissions. Lead is a criteria air pollutant.

Health Effects of Air Pollutants

Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

Particulate Matter

A consistent correlation between elevated ambient fine particulate matter (PM10 and PM2.5) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in PM2.5 concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long term exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM10 and PM2.5.

Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO2.

Sulfur Dioxide

A few minutes of exposure to low levels of SO2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO2.

Animal studies suggest that despite SO2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO2 levels. In these studies, efforts to separate the effects of SO2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

REGULATORY BACKGROUND

FEDERAL REGULATIONS

The U.S. EPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_x, SO_2, PM_{10}, and lead. The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance. The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions).

Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and lead. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$. Table 3 (previously presented) provides the NAAQS within the basin.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and nitrogen oxides (NO_x). NO_x is a collective term that includes all forms of nitrogen oxides (NO, NO_2, NO_3) which are emitted as byproducts of the combustion process.

CALIFORNIA REGULATIONS

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the SDAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS.

Local air quality management districts, such as the SDAPCD, regulate air emissions from commercial and light industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROGs, NO_x, CO and PM_{10}. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

AIR QUALITY MANAGEMENT PLANNING

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 Regional Air Quality Strategy (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 2009. The RAQS outlines SDAPCD's plans and control measures designed to attain the state air quality standards for 1-hour O_3. The RAQS does not address the state air quality standards for PM10 or PM2.5. The SDAPCD has also developed the air basin's input to the SIP, which is required under the Federal Clean Air Act for areas that are out of attainment of air quality standards. The SIP includes the

SDAPCD's plans and control measures for attaining the O_3 NAAQS. The SIP is also updated on a triennial basis. For the 8-hour O_3, standard, the SDAPCD submitted their 8-hour Ozone Attainment Plan 2007 in May of 2007; calling for more reductions in VOC and NOX emissions. The SDAPCD has also developed the air basin's input to the SIP, which is required under the Federal Clean Air Act for areas that are out of attainment of air quality standards. The SIP includes the APCD's plans and control measures for attaining the O_3 NAAQS.

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 in order to project future emissions and then determine from the results strategies that may be necessary for the reduction of emissions through regulatory controls. The ARB 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 as part of the development of the County's General Plan. As such, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project would propose a development that is less dense than that associated with the general plan, the project would likewise be consistent with the RAQS. If a project, however, proposes a development that is denser than that assumed in the general plan, and SANDAG's growth projections, the project may be in conflict with the RAQS and SIP, and could therefore result in a 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 subsequently hinder attainment of the NAAQS for O_3.

The proposed project may be subject to the following SDAPCD rules (including, but not limited to):

Rule 50—Visible Emissions: establishes limits to the opacity of emissions within the SDAPCD. The proposed facility is subject to Rule 50 (d) (1) and (6) and should not exceed the visible emission limitation.

Rule 51—Nuisance: prohibits emissions which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause injury or damage to business or property.

Rule 52—Particulate Matter: establishes limits to the discharge of any particulate matter from non-stationary sources.

Rule 54—Dust and Fumes: establishes limits to the amount of dust or fume discharge into the atmosphere in any one hour.

Rule 55— Fugitive Dust Control: sets restrictions on visible fugitive dust from construction and demolition projects.

Rule 67—Architectural Coatings: establishes limits to the VOC content applied within the SDAPCD.

SIGNIFICANCE CRITERIA – AIR QUALITY

The criteria within Appendix G of the California Environmental Quality Act (CEQA), will be used in order to determine the significance of potential air quality impacts. The guidance states that a project would have a significant air quality impact if it would:

1. Conflict with or obstruct implementation of the applicable air quality plan;

2. Result in emissions that would violate any air quality standard or contribute substantially to an existing or proposed air quality violation;

3. Result in a cumulatively considerable net increase of PM_{10} / $PM_{2.5}$ or exceed quantitative thresholds for O_3 precursors, oxides of nitrogen (NO_x) and/or volatile organic compounds (VOCs);

4. Expose sensitive receptors (i.e., schools, hospitals, resident care facilities, or day-care centers) to substantial pollutant concentrations; or

5. Create objectionable odors affecting a substantial number of people.

Project-related air quality impacts estimated in this environmental analysis would be considered significant if any of the applicable significance thresholds presented in Table 4 are exceeded

TABLE 4

SAN DIEGO COUNTY

MAXIMUM DAILY EMISSIONS THRESHOLDS

Pollutant	Construction
NO_x	250 lbs/day
PM_{10}	100 lbs/day
$PM_{2.5}$	55 lbs/day
SO_x	250 lbs/day
CO	550 lbs/day
VOCs	75 lbs/day

In the event that project-related emissions exceed these SLTs, specific modeling will be required for NO_2, SO_2, CO, and lead to demonstrate that the project's ground-level concentrations, including appropriate background levels, do not exceed the NAAQS/CAAQS. For ozone precursors, PM_{10}, and $PM_{2.5}$ exceedences of the SLTs have the potential to result in a significant impact. The primary reason for this is because the SDAB is currently in non-attainment for PM_{10}, $PM_{2.5}$, and ozone. Therefore, unless a project includes design considerations or mitigation measures that would reduce the daily emission to below the applicable screening levels, the impact for these pollutants (ozone precursors, PM_{10}, and $PM_{2.5}$) will be significant.

In addition to impacts from criteria pollutants, project-related impacts may include emissions of pollutants identified by the state and federal government as toxic air contaminants (TACs)/hazardous air pollutants (HAPs). During construction, the primary source of TACs would result from the diesel powered construction equipment.

Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The SDAPCD recommends an incremental cancer risk threshold of 10 in a million. "Incremental Cancer Risk" is the likelihood that a person continuously exposed to concentrations of TACs resulting from a project over a 70-year lifetime would contract cancer based on the use of standard risk-assessment methodology. The Project would not require long-term use of heavy-duty diesel construction equipment or on-going diesel trucking activity associated with construction. Total construction activity would last approximately 7 months, after which Project-related TACs would cease. As such, since Project construction is short-term in nature, there would be no on-going TAC emissions that could result in any lifetime (70-year) cancer risks associated with the Project. Further there are no on-going TAC emissions proposed as part of this Project. Therefore, exposure of project-related TAC emissions to sensitive receptors would be less than significant.

SIGNIFICANCE CRITERIA – GHG

The City of San Diego has adopted the following threshold applicable to the Project:

A proposed project would have a cumulatively considerable contribution to climate change impacts if it would result in an increase of GHG emissions at a level exceeding 2,500 metric tons of CO2e per year.

CONSTRUCTION EMISSIONS

Construction activities associated with the Project will result in emissions of CO, VOCs, NO_x, SO_x, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Demolition
- Site Preparation
- Grading
- Sheet/Batter Piles
- Trenching/Electrical
- Paving

The duration of construction activity and associated equipment was estimated based on construction of similar projects and CalEEMod™ model defaults. Please refer to specific detailed modeling inputs/outputs contained in Appendix “A” of this Analysis. A detailed summary of construction equipment assumptions by phase is provided on Table 4.

Dust is typically a major concern during rough grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called “fugitive emissions”. Emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). The CalEEMod™ model was utilized to calculate fugitive dust emissions resulting from this phase of activity. For analysis purposes construction activity is expected to commence in March 2016 and last through early September 2016, a summary of the construction schedule is provided on Table 5. If it is determined that there is non-local disposal soil during the grading export process, the soil will be taken North on the I-5 to Kern County for proper disposal. Under this assumed scenario, emissions have been calculated for the transport to the northern end of the air basin (60 miles) in order to assess the emissions generated within SDAB. Alternatively if during grading export it is determined that the soil is local disposal it will be hauled to an appropriate landfill (30 miles). The project is estimated to require approximately 12,000 cubic yards of soil export over approximately 30 working days, a haul capacity of approximately 10 cubic yards is assumed resulting in a total of 1,200 haul loads over the duration of soil export. On a daily basis this would result in approximately 80 two-way haul trips. Total peak construction activity air quality emissions for the two hauling scenarios are summarized at Tables 6 and 7. Total peak construction activity greenhouse gas emissions for the two hauling scenarios are summarized at Tables 8 and 9.

Construction emissions for construction worker vehicles traveling to and from the Project site, as well as vendor trips (construction materials delivered to the Project site) were estimated based on information from the applicant and the CalEEMod™ model.

TABLE 4 CONSTRUCTION EQUIPMENT ASSUMPTIONS

Equipment	Rubber Tired Loaders	Tractor/Loader/Backhoe	Excavator	Sweepers / Schrubbers	Paving Equipment	Crawler Tractor	Cranes	Air Compressor	Generator Set	Welder	Concrete/Industrial Saw	Pile Driver	Concrete Pump/Truck	Graders
Demolition	1	1	1	1		2	1	1			1			
Site Preparation							1		2	1		1		
Grading	1					2	2							1
Sheet/batter piles							3					3	1	
(Trenching/electrical)		1					1							
Paving					1									

TABLE 5 CONSTRUCTION SCHEDULE ASSUMPTIONS

Phase Name	Phase Start Date	Phase End Date
Demolition	03/02/2016	03/16/2016
Site Preparation	03/17/2016	03/30/2016
Grading	03/17/2016	08/04/2016
Other (sheet/batter piles)	04/20/2016	08/03/2016
Other (Trenching/electrical)	07/06/2016	09/07/2016
Paving	07/20/2016	08/03/2016

Scenarios with construction traffic taking non-local disposal soil from Shelter Island north to the I-5 Freeway were analyzed in addition to the scenario where construction truck traffic would be taking local disposal soil south to the I-5 Freeway in order to assess the emissions generated within San Diego County. The estimated maximum daily construction emissions are summarized in Table 6 and Table 7. Under the scope of the project, emissions resulting from Project construction will not exceed criteria pollutant thresholds established by San Diego County.

TABLE 6
EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (MAXIMUM DAILY EMISSIONS)
WITH NON-LOCAL DISPOSAL SOIL TRAVEL WITHIN SDAB

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	22.58	204.56	107.81	0.36	16.47	9.54
Threshold	75	250	550	250	100	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

TABLE 7
EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (MAXIMUM DAILY EMISSIONS)
WITH LOCAL DISPOSAL SOIL TRAVEL TO APPROPRIATE LANDFILL

Year	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Maximum Daily Emissions	18.97	159.57	89.35	0.26	11.46	7.33
Threshold	75	250	550	250	100	55
Significant?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

TABLE 8
GHG EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (metric tons CO2e / year)
WITH NON-LOCAL DISPOSAL SOIL TRAVEL WITHIN SDAB

Year	CO2	CH4	N2O	CO2e
Total Construction Related Emissions	766.06	0.04	--	766.93

Amortized Construction Related Emissions	38.303	0.002	--	38.347
Threshold	2,500 MT CO2e per year			
Significant?	**NO**			

TABLE 9

GHG EMISSIONS SUMMARY OF OVERALL CONSTRUCTION (metric tons CO2e / year)

WITH LOCAL DISPOSAL SOIL TRAVEL TO APPROPRIATE LANDFILL

Year	CO2	CH4	N2O	CO2e
Total Construction Related Emissions	635.86	0.04	--	637.03
Amortized Construction Related Emissions	31.793	0.002	--	31.852
Threshold	2,500 MT CO2e per year			
Significant?	**NO**			

CONCLUSIONS

The proposed project is not expected to result in a significant air quality or greenhouse gas emissions impact since the proposed project emissions do not exceed any applicable numeric thresholds. A less than significant impact is expected and no mitigation is required.

If you have any questions, please contact me directly at (949) 660-1994 x 217.

Respectfully submitted,

URBAN CROSSROADS, INC.

Haseeb Qureshi, MES
Senior Associate

Stephen Abille
Assistant Analyst

Attachment

EMISSIONS CALCULATIONS

Summer Construction
Emissions without Hauling

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Shelter Island Boat Launching Ramp

San Diego County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	16.6	1000sqft
User Defined Recreational	18.43	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Utility Company**
Climate Zone	13	**Precipitation Freq (Days)**	40	

1.3 User Entered Comments

Project Characteristics -

Land Use - Metric unit: 1000sqft

Construction Phase - Construction schedule provided by project applicant

Off-road Equipment -

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Trips and VMT - Construction workers and trips obtained from project applicant.

Grading - Added Import and Export material based on the environmetnal application. All material imported/exported was for water development

Vechicle Emission Factors - PC and Truck % Breakdown based on SCAQMD Recommendation: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others = LDA.

Vechicle Emission Factors - PC and Truck % Breakdown based on SCAQMD Recommendation: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others = LDA.

Vechicle Emission Factors - PC and Truck % Breakdown based on SCAQMD Recommendation: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others = LDA.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	14.80	109.24	66.87	0.17	1.38	5.01	6.10	0.02	5.01	5.03	0.00	17,342.88	0.00	1.33	0.00	17,370.77
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	14.80	109.24	66.87	0.17	1.03	5.01	5.52	0.02	5.01	5.03	0.00	17,342.88	0.00	1.33	0.00	17,370.77
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.21	49.21	38.30	0.07		2.74	2.74		2.74	2.74		6,931.01		0.65		6,944.55
Total	**7.21**	**49.21**	**38.30**	**0.07**		**2.74**	**2.74**		**2.74**	**2.74**		**6,931.01**		**0.65**		**6,944.55**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.12	1.22	0.00	0.30	0.01	0.31	0.01	0.01	0.02		224.71		0.01		224.96
Total	**0.11**	**0.12**	**1.22**	**0.00**	**0.30**	**0.01**	**0.31**	**0.01**	**0.01**	**0.02**		**224.71**		**0.01**		**224.96**

3.2 Demolition - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.21	49.21	38.30	0.07		2.74	2.74		2.74	2.74	0.00	6,931.01		0.65		6,944.55
Total	**7.21**	**49.21**	**38.30**	**0.07**		**2.74**	**2.74**		**2.74**	**2.74**	**0.00**	**6,931.01**		**0.65**		**6,944.55**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.12	1.22	0.00	0.01	0.01	0.02	0.01	0.01	0.02		224.71		0.01		224.96
Total	**0.11**	**0.12**	**1.22**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**224.71**		**0.01**		**224.96**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.48	0.00	0.48	0.00	0.00	0.00						0.00
Off-Road	2.01	16.39	7.27	0.03		0.58	0.58		0.58	0.58		3,367.07		0.18		3,370.84
Total	**2.01**	**16.39**	**7.27**	**0.03**	**0.48**	**0.58**	**1.06**	**0.00**	**0.58**	**0.58**		**3,367.07**		**0.18**		**3,370.84**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.43	0.00	0.10	0.00	0.11	0.00	0.00	0.01		78.16		0.00		78.25
Total	**0.04**	**0.04**	**0.43**	**0.00**	**0.10**	**0.00**	**0.11**	**0.00**	**0.00**	**0.01**		**78.16**		**0.00**		**78.25**

3.3 Site Preparation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.48	0.00	0.48	0.00	0.00	0.00						0.00
Off-Road	2.01	16.39	7.27	0.03		0.58	0.58		0.58	0.58	0.00	3,367.07		0.18		3,370.84
Total	**2.01**	**16.39**	**7.27**	**0.03**	**0.48**	**0.58**	**1.06**	**0.00**	**0.58**	**0.58**	**0.00**	**3,367.07**		**0.18**		**3,370.84**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.43	0.00	0.00	0.00	0.01	0.00	0.00	0.01		78.16		0.00		78.25
Total	**0.04**	**0.04**	**0.43**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**		**78.16**		**0.00**		**78.25**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	5.36	43.40	18.85	0.07		1.67	1.67		1.67	1.67		6,595.39		0.48		6,605.45
Total	**5.36**	**43.40**	**18.85**	**0.07**	**0.00**	**1.67**	**1.67**	**0.00**	**1.67**	**1.67**		**6,595.39**		**0.48**		**6,605.45**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.07	0.08	0.80	0.00	0.20	0.01	0.20	0.01	0.01	0.01		146.55		0.01		146.72
Total	**0.07**	**0.08**	**0.80**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**		**146.55**		**0.01**		**146.72**

3.4 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	5.36	43.40	18.85	0.07		1.67	1.67		1.67	1.67	0.00	6,595.39		0.48		6,605.45
Total	**5.36**	**43.40**	**18.85**	**0.07**	**0.00**	**1.67**	**1.67**	**0.00**	**1.67**	**1.67**	**0.00**	**6,595.39**		**0.48**		**6,605.45**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.07	0.08	0.80	0.00	0.01	0.01	0.01	0.01	0.01	0.01		146.55		0.01		146.72
Total	**0.07**	**0.08**	**0.80**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**		**146.55**		**0.01**		**146.72**

3.5 Site Prep_24/7 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.53	0.00	0.53	0.00	0.00	0.00						0.00
Off-Road	3.33	13.62	12.82	0.02		0.92	0.92		0.92	0.92		1,652.29		0.30		1,658.58
Total	**3.33**	**13.62**	**12.82**	**0.02**	**0.53**	**0.92**	**1.45**	**0.00**	**0.92**	**0.92**		**1,652.29**		**0.30**		**1,658.58**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.03	0.27	0.00	0.07	0.00	0.07	0.00	0.00	0.00		48.85		0.00		48.91
Total	**0.02**	**0.03**	**0.27**	**0.00**	**0.07**	**0.00**	**0.07**	**0.00**	**0.00**	**0.00**		**48.85**		**0.00**		**48.91**

3.5 Site Prep_24/7 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.53	0.00	0.53	0.00	0.00	0.00						0.00
Off-Road	3.33	13.62	12.82	0.02		0.92	0.92		0.92	0.92	0.00	1,652.29		0.30		1,658.58
Total	**3.33**	**13.62**	**12.82**	**0.02**	**0.53**	**0.92**	**1.45**	**0.00**	**0.92**	**0.92**	**0.00**	**1,652.29**		**0.30**		**1,658.58**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.03	0.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00		48.85		0.00		48.91
Total	**0.02**	**0.03**	**0.27**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**48.85**		**0.00**		**48.91**

3.6 Other (sheet/batter piles) - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.11	17.10	8.08	0.03		0.64	0.64		0.64	0.64		2,896.92		0.19		2,900.85
Total	**2.11**	**17.10**	**8.08**	**0.03**		**0.64**	**0.64**		**0.64**	**0.64**		**2,896.92**		**0.19**		**2,900.85**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.07	0.82	0.46	0.00	0.06	0.03	0.08	0.00	0.03	0.03		164.29		0.00		164.36
Worker	0.07	0.08	0.80	0.00	0.20	0.01	0.20	0.01	0.01	0.01		146.55		0.01		146.72
Total	**0.14**	**0.90**	**1.26**	**0.00**	**0.26**	**0.04**	**0.28**	**0.01**	**0.04**	**0.04**		**310.84**		**0.01**		**311.08**

3.6 Other (sheet/batter piles) - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.11	17.10	8.08	0.03		0.64	0.64		0.64	0.64	0.00	2,896.92		0.19		2,900.85
Total	**2.11**	**17.10**	**8.08**	**0.03**		**0.64**	**0.64**		**0.64**	**0.64**	**0.00**	**2,896.92**		**0.19**		**2,900.85**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.07	0.82	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03		164.29		0.00		164.36
Worker	0.07	0.08	0.80	0.00	0.01	0.01	0.01	0.01	0.01	0.01		146.55		0.01		146.72
Total	**0.14**	**0.90**	**1.26**	**0.00**	**0.01**	**0.04**	**0.04**	**0.01**	**0.04**	**0.04**		**310.84**		**0.01**		**311.08**

3.7 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.94	6.98	4.73	0.01		0.39	0.39		0.39	0.39		796.10		0.08		797.87
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**0.94**	**6.98**	**4.73**	**0.01**		**0.39**	**0.39**		**0.39**	**0.39**		**796.10**		**0.08**		**797.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.01	0.02	0.16	0.00	0.04	0.00	0.04	0.00	0.00	0.00		29.31		0.00		29.34
Total	**0.01**	**0.02**	**0.16**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**		**29.31**		**0.00**		**29.34**

3.7 Paving - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.94	6.98	4.73	0.01		0.39	0.39		0.39	0.39	0.00	796.10		0.08		797.87
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**0.94**	**6.98**	**4.73**	**0.01**		**0.39**	**0.39**		**0.39**	**0.39**	**0.00**	**796.10**		**0.08**		**797.87**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.01	0.02	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00		29.31		0.00		29.34
Total	**0.01**	**0.02**	**0.16**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**29.31**		**0.00**		**29.34**

3.8 Other (Trenching/electrical) - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.77	5.82	3.81	0.01		0.31	0.31		0.31	0.31		860.89		0.07		862.33
Total	**0.77**	**5.82**	**3.81**	**0.01**		**0.31**	**0.31**		**0.31**	**0.31**		**860.89**		**0.07**		**862.33**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.07	0.82	0.46	0.00	0.06	0.03	0.08	0.00	0.03	0.03		164.29		0.00		164.36
Worker	0.07	0.08	0.80	0.00	0.20	0.01	0.20	0.01	0.01	0.01		146.55		0.01		146.72
Total	**0.14**	**0.90**	**1.26**	**0.00**	**0.26**	**0.04**	**0.28**	**0.01**	**0.04**	**0.04**		**310.84**		**0.01**		**311.08**

3.8 Other (Trenching/electrical) - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.77	5.82	3.81	0.01		0.31	0.31		0.31	0.31	0.00	860.89		0.07		862.33
Total	**0.77**	**5.82**	**3.81**	**0.01**		**0.31**	**0.31**		**0.31**	**0.31**	**0.00**	**860.89**		**0.07**		**862.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.07	0.82	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03		164.29		0.00		164.36
Worker	0.07	0.08	0.80	0.00	0.01	0.01	0.01	0.01	0.01	0.01		146.55		0.01		146.72
Total	**0.14**	**0.90**	**1.26**	**0.00**	**0.01**	**0.04**	**0.04**	**0.01**	**0.04**	**0.04**		**310.84**		**0.01**		**311.08**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

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Winter Construction
Emissions without Hauling

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Shelter Island Boat Launching Ramp

San Diego County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	16.6	1000sqft
User Defined Recreational	18.43	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Utility Company**
Climate Zone	13	**Precipitation Freq (Days)**	40	

1.3 User Entered Comments

Project Characteristics -

Land Use - Metric unit: 1000sqft

Construction Phase - Construction schedule provided by project applicant

Off-road Equipment -

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Trips and VMT - Construction workers and trips obtained from project applicant.

Grading - Added Import and Export material based on the environmetnal application. All material imported/exported was for water development

Vechicle Emission Factors - PC and Truck % Breakdown based on SCAQMD Recommendation: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others = LDA.

Vechicle Emission Factors - PC and Truck % Breakdown based on SCAQMD Recommendation: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others = LDA.

Vechicle Emission Factors - PC and Truck % Breakdown based on SCAQMD Recommendation: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others = LDA.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	14.82	109.26	66.73	0.17	1.38	5.01	6.10	0.02	5.01	5.03	0.00	17,308.19	0.00	1.33	0.00	17,336.05
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	14.82	109.26	66.73	0.17	1.03	5.01	5.52	0.02	5.01	5.03	0.00	17,308.19	0.00	1.33	0.00	17,336.05
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.21	49.21	38.30	0.07		2.74	2.74		2.74	2.74		6,931.01		0.65		6,944.55
Total	**7.21**	**49.21**	**38.30**	**0.07**		**2.74**	**2.74**		**2.74**	**2.74**		**6,931.01**		**0.65**		**6,944.55**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.13	1.16	0.00	0.30	0.01	0.31	0.01	0.01	0.02		207.36		0.01		207.60
Total	**0.12**	**0.13**	**1.16**	**0.00**	**0.30**	**0.01**	**0.31**	**0.01**	**0.01**	**0.02**		**207.36**		**0.01**		**207.60**

3.2 Demolition - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.21	49.21	38.30	0.07		2.74	2.74		2.74	2.74	0.00	6,931.01		0.65		6,944.55
Total	**7.21**	**49.21**	**38.30**	**0.07**		**2.74**	**2.74**		**2.74**	**2.74**	**0.00**	**6,931.01**		**0.65**		**6,944.55**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.13	1.16	0.00	0.01	0.01	0.02	0.01	0.01	0.02		207.36		0.01		207.60
Total	**0.12**	**0.13**	**1.16**	**0.00**	**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**		**207.36**		**0.01**		**207.60**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.48	0.00	0.48	0.00	0.00	0.00						0.00
Off-Road	2.01	16.39	7.27	0.03		0.58	0.58		0.58	0.58		3,367.07		0.18		3,370.84
Total	**2.01**	**16.39**	**7.27**	**0.03**	**0.48**	**0.58**	**1.06**	**0.00**	**0.58**	**0.58**		**3,367.07**		**0.18**		**3,370.84**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.05	0.40	0.00	0.10	0.00	0.11	0.00	0.00	0.01		72.12		0.00		72.21
Total	**0.04**	**0.05**	**0.40**	**0.00**	**0.10**	**0.00**	**0.11**	**0.00**	**0.00**	**0.01**		**72.12**		**0.00**		**72.21**

3.3 Site Preparation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.48	0.00	0.48	0.00	0.00	0.00						0.00
Off-Road	2.01	16.39	7.27	0.03		0.58	0.58		0.58	0.58	0.00	3,367.07		0.18		3,370.84
Total	**2.01**	**16.39**	**7.27**	**0.03**	**0.48**	**0.58**	**1.06**	**0.00**	**0.58**	**0.58**	**0.00**	**3,367.07**		**0.18**		**3,370.84**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.05	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.01		72.12		0.00		72.21
Total	**0.04**	**0.05**	**0.40**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.01**		**72.12**		**0.00**		**72.21**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	5.36	43.40	18.85	0.07		1.67	1.67		1.67	1.67		6,595.39		0.48		6,605.45
Total	**5.36**	**43.40**	**18.85**	**0.07**	**0.00**	**1.67**	**1.67**	**0.00**	**1.67**	**1.67**		**6,595.39**		**0.48**		**6,605.45**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.09	0.75	0.00	0.20	0.01	0.20	0.01	0.01	0.01		135.23		0.01		135.39
Total	**0.08**	**0.09**	**0.75**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**		**135.23**		**0.01**		**135.39**

3.4 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00						0.00
Off-Road	5.36	43.40	18.85	0.07		1.67	1.67		1.67	1.67	0.00	6,595.39		0.48		6,605.45
Total	**5.36**	**43.40**	**18.85**	**0.07**	**0.00**	**1.67**	**1.67**	**0.00**	**1.67**	**1.67**	**0.00**	**6,595.39**		**0.48**		**6,605.45**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.09	0.75	0.00	0.01	0.01	0.01	0.01	0.01	0.01		135.23		0.01		135.39
Total	**0.08**	**0.09**	**0.75**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**		**135.23**		**0.01**		**135.39**

3.5 Site Prep_24/7 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.53	0.00	0.53	0.00	0.00	0.00						0.00
Off-Road	3.33	13.62	12.82	0.02		0.92	0.92		0.92	0.92		1,652.29		0.30		1,658.58
Total	**3.33**	**13.62**	**12.82**	**0.02**	**0.53**	**0.92**	**1.45**	**0.00**	**0.92**	**0.92**		**1,652.29**		**0.30**		**1,658.58**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.03	0.03	0.25	0.00	0.07	0.00	0.07	0.00	0.00	0.00		45.08		0.00		45.13
Total	**0.03**	**0.03**	**0.25**	**0.00**	**0.07**	**0.00**	**0.07**	**0.00**	**0.00**	**0.00**		**45.08**		**0.00**		**45.13**

3.5 Site Prep_24/7 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.53	0.00	0.53	0.00	0.00	0.00						0.00
Off-Road	3.33	13.62	12.82	0.02		0.92	0.92		0.92	0.92	0.00	1,652.29		0.30		1,658.58
Total	**3.33**	**13.62**	**12.82**	**0.02**	**0.53**	**0.92**	**1.45**	**0.00**	**0.92**	**0.92**	**0.00**	**1,652.29**		**0.30**		**1,658.58**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.03	0.03	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00		45.08		0.00		45.13
Total	**0.03**	**0.03**	**0.25**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**45.08**		**0.00**		**45.13**

3.6 Other (sheet/batter piles) - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.11	17.10	8.08	0.03		0.64	0.64		0.64	0.64		2,896.92		0.19		2,900.85
Total	**2.11**	**17.10**	**8.08**	**0.03**		**0.64**	**0.64**		**0.64**	**0.64**		**2,896.92**		**0.19**		**2,900.85**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.07	0.83	0.53	0.00	0.06	0.03	0.08	0.00	0.03	0.03		162.91		0.00		162.99
Worker	0.08	0.09	0.75	0.00	0.20	0.01	0.20	0.01	0.01	0.01		135.23		0.01		135.39
Total	**0.15**	**0.92**	**1.28**	**0.00**	**0.26**	**0.04**	**0.28**	**0.01**	**0.04**	**0.04**		**298.14**		**0.01**		**298.38**

3.6 Other (sheet/batter piles) - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.11	17.10	8.08	0.03		0.64	0.64		0.64	0.64	0.00	2,896.92		0.19		2,900.85
Total	**2.11**	**17.10**	**8.08**	**0.03**		**0.64**	**0.64**		**0.64**	**0.64**	**0.00**	**2,896.92**		**0.19**		**2,900.85**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.07	0.83	0.53	0.00	0.00	0.03	0.03	0.00	0.03	0.03		162.91		0.00		162.99
Worker	0.08	0.09	0.75	0.00	0.01	0.01	0.01	0.01	0.01	0.01		135.23		0.01		135.39
Total	**0.15**	**0.92**	**1.28**	**0.00**	**0.01**	**0.04**	**0.04**	**0.01**	**0.04**	**0.04**		**298.14**		**0.01**		**298.38**

3.7 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.94	6.98	4.73	0.01		0.39	0.39		0.39	0.39		796.10		0.08		797.87
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**0.94**	**6.98**	**4.73**	**0.01**		**0.39**	**0.39**		**0.39**	**0.39**		**796.10**		**0.08**		**797.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.15	0.00	0.04	0.00	0.04	0.00	0.00	0.00		27.05		0.00		27.08
Total	**0.02**	**0.02**	**0.15**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**		**27.05**		**0.00**		**27.08**

3.7 Paving - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.94	6.98	4.73	0.01		0.39	0.39		0.39	0.39	0.00	796.10		0.08		797.87
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**0.94**	**6.98**	**4.73**	**0.01**		**0.39**	**0.39**		**0.39**	**0.39**	**0.00**	**796.10**		**0.08**		**797.87**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.02	0.02	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00		27.05		0.00		27.08
Total	**0.02**	**0.02**	**0.15**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**27.05**		**0.00**		**27.08**

3.8 Other (Trenching/electrical) - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.77	5.82	3.81	0.01		0.31	0.31		0.31	0.31		860.89		0.07		862.33
Total	**0.77**	**5.82**	**3.81**	**0.01**		**0.31**	**0.31**		**0.31**	**0.31**		**860.89**		**0.07**		**862.33**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.07	0.83	0.53	0.00	0.06	0.03	0.08	0.00	0.03	0.03		162.91		0.00		162.99
Worker	0.08	0.09	0.75	0.00	0.20	0.01	0.20	0.01	0.01	0.01		135.23		0.01		135.39
Total	**0.15**	**0.92**	**1.28**	**0.00**	**0.26**	**0.04**	**0.28**	**0.01**	**0.04**	**0.04**		**298.14**		**0.01**		**298.38**

3.8 Other (Trenching/electrical) - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.77	5.82	3.81	0.01		0.31	0.31		0.31	0.31	0.00	860.89		0.07		862.33
Total	**0.77**	**5.82**	**3.81**	**0.01**		**0.31**	**0.31**		**0.31**	**0.31**	**0.00**	**860.89**		**0.07**		**862.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.07	0.83	0.53	0.00	0.00	0.03	0.03	0.00	0.03	0.03		162.91		0.00		162.99
Worker	0.08	0.09	0.75	0.00	0.01	0.01	0.01	0.01	0.01	0.01		135.23		0.01		135.39
Total	**0.15**	**0.92**	**1.28**	**0.00**	**0.01**	**0.04**	**0.04**	**0.01**	**0.04**	**0.04**		**298.14**		**0.01**		**298.38**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

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Annual Construction
Emissions without Hauling

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Shelter Island Boat Launching Ramp

San Diego County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	16.6	1000sqft
User Defined Recreational	18.43	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Utility Company**
Climate Zone	13	**Precipitation Freq (Days)**	40	

1.3 User Entered Comments

Project Characteristics -

Land Use - Metric unit: 1000sqft

Construction Phase - Construction schedule provided by project applicant

Off-road Equipment -

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Off-road Equipment - Construction equipment estimate obtained from project applicant.

Trips and VMT - Construction workers and trips obtained from project applicant.

Grading - Added Import and Export material based on the environmetnal application. All material imported/exported was for water development

Vechicle Emission Factors - PC and Truck % Breakdown based on SCAQMD Recommendation: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others = LDA.

Vechicle Emission Factors - PC and Truck % Breakdown based on SCAQMD Recommendation: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others = LDA.

Vechicle Emission Factors - PC and Truck % Breakdown based on SCAQMD Recommendation: 4+ axles = HHDT, 3 axles = MHDT, 2 axles = LHDT1, all others = LDA.

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.51	3.58	1.99	0.01	0.04	0.16	0.20	0.00	0.16	0.16	0.00	502.36	502.36	0.04	0.00	503.23
Total	**0.51**	**3.58**	**1.99**	**0.01**	**0.04**	**0.16**	**0.20**	**0.00**	**0.16**	**0.16**	**0.00**	**502.36**	**502.36**	**0.04**	**0.00**	**503.23**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.51	3.58	1.99	0.01	0.02	0.16	0.18	0.00	0.16	0.16	0.00	502.36	502.36	0.04	0.00	503.23
Total	**0.51**	**3.58**	**1.99**	**0.01**	**0.02**	**0.16**	**0.18**	**0.00**	**0.16**	**0.16**	**0.00**	**502.36**	**502.36**	**0.04**	**0.00**	**503.23**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.04	0.27	0.21	0.00		0.02	0.02		0.02	0.02	0.00	34.57	34.57	0.00	0.00	34.64
Total	**0.04**	**0.27**	**0.21**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**34.57**	**34.57**	**0.00**	**0.00**	**34.64**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.05	0.00	0.00	1.05
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.05**	**1.05**	**0.00**	**0.00**	**1.05**

3.2 Demolition - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.04	0.27	0.21	0.00		0.02	0.02		0.02	0.02	0.00	34.57	34.57	0.00	0.00	34.64
Total	**0.04**	**0.27**	**0.21**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**34.57**	**34.57**	**0.00**	**0.00**	**34.64**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.05	1.05	0.00	0.00	1.05
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.05**	**1.05**	**0.00**	**0.00**	**1.05**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.09	0.04	0.00		0.00	0.00		0.00	0.00	0.00	16.80	16.80	0.00	0.00	16.81
Total	**0.01**	**0.09**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**16.80**	**16.80**	**0.00**	**0.00**	**16.81**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37	0.00	0.00	0.37
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.37**	**0.37**	**0.00**	**0.00**	**0.37**

3.3 Site Preparation - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.09	0.04	0.00		0.00	0.00		0.00	0.00	0.00	16.80	16.80	0.00	0.00	16.81
Total	**0.01**	**0.09**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**16.80**	**16.80**	**0.00**	**0.00**	**16.81**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.37	0.00	0.00	0.37
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.37**	**0.37**	**0.00**	**0.00**	**0.37**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.27	2.19	0.95	0.00		0.08	0.08		0.08	0.08	0.00	302.07	302.07	0.02	0.00	302.53
Total	**0.27**	**2.19**	**0.95**	**0.00**	**0.00**	**0.08**	**0.08**	**0.00**	**0.08**	**0.08**	**0.00**	**302.07**	**302.07**	**0.02**	**0.00**	**302.53**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	6.30	6.30	0.00	0.00	6.31
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**6.30**	**6.30**	**0.00**	**0.00**	**6.31**

3.4 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.27	2.19	0.95	0.00		0.08	0.08		0.08	0.08	0.00	302.07	302.07	0.02	0.00	302.53
Total	**0.27**	**2.19**	**0.95**	**0.00**	**0.00**	**0.08**	**0.08**	**0.00**	**0.08**	**0.08**	**0.00**	**302.07**	**302.07**	**0.02**	**0.00**	**302.53**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.30	6.30	0.00	0.00	6.31
Total	**0.00**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**6.30**	**6.30**	**0.00**	**0.00**	**6.31**

3.5 Site Prep_24/7 - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.11	0.44	0.41	0.00		0.03	0.03		0.03	0.03	0.00	47.95	47.95	0.01	0.00	48.14
Total	**0.11**	**0.44**	**0.41**	**0.00**	**0.02**	**0.03**	**0.05**	**0.00**	**0.03**	**0.03**	**0.00**	**47.95**	**47.95**	**0.01**	**0.00**	**48.14**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.33	0.00	0.00	1.33
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.33**	**1.33**	**0.00**	**0.00**	**1.33**

3.5 Site Prep_24/7 - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.11	0.44	0.41	0.00		0.03	0.03		0.03	0.03	0.00	47.95	47.95	0.01	0.00	48.14
Total	**0.11**	**0.44**	**0.41**	**0.00**	**0.02**	**0.03**	**0.05**	**0.00**	**0.03**	**0.03**	**0.00**	**47.95**	**47.95**	**0.01**	**0.00**	**48.14**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.33	1.33	0.00	0.00	1.33
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.33**	**1.33**	**0.00**	**0.00**	**1.33**

3.6 Other (sheet/batter piles) - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.46	0.22	0.00		0.02	0.02		0.02	0.02	0.00	70.94	70.94	0.00	0.00	71.03
Total	**0.06**	**0.46**	**0.22**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**70.94**	**70.94**	**0.00**	**0.00**	**71.03**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.01	4.01	0.00	0.00	4.01
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.37	3.37	0.00	0.00	3.37
Total	**0.00**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7.38**	**7.38**	**0.00**	**0.00**	**7.38**

3.6 Other (sheet/batter piles) - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.06	0.46	0.22	0.00		0.02	0.02		0.02	0.02	0.00	70.94	70.94	0.00	0.00	71.03
Total	**0.06**	**0.46**	**0.22**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**70.94**	**70.94**	**0.00**	**0.00**	**71.03**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.01	4.01	0.00	0.00	4.01
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.37	3.37	0.00	0.00	3.37
Total	**0.00**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**7.38**	**7.38**	**0.00**	**0.00**	**7.38**

3.7 Paving - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	3.97	3.97	0.00	0.00	3.98
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.01**	**0.04**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.97**	**3.97**	**0.00**	**0.00**	**3.98**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.00	0.00	0.14
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.14**	**0.14**	**0.00**	**0.00**	**0.14**

3.7 Paving - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.04	0.03	0.00		0.00	0.00		0.00	0.00	0.00	3.97	3.97	0.00	0.00	3.98
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.01**	**0.04**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.97**	**3.97**	**0.00**	**0.00**	**3.98**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.00	0.00	0.14
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.14**	**0.14**	**0.00**	**0.00**	**0.14**

3.8 Other (Trenching/electrical) - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.05	0.03	0.00		0.00	0.00		0.00	0.00	0.00	7.03	7.03	0.00	0.00	7.04
Total	**0.01**	**0.05**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**7.03**	**7.03**	**0.00**	**0.00**	**7.04**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.34	1.34	0.00	0.00	1.34
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12	1.12	0.00	0.00	1.12
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.46**	**2.46**	**0.00**	**0.00**	**2.46**

3.8 Other (Trenching/electrical) - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.01	0.05	0.03	0.00		0.00	0.00		0.00	0.00	0.00	7.03	7.03	0.00	0.00	7.04
Total	**0.01**	**0.05**	**0.03**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**7.03**	**7.03**	**0.00**	**0.00**	**7.04**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.34	1.34	0.00	0.00	1.34
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.12	1.12	0.00	0.00	1.12
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**2.46**	**2.46**	**0.00**	**0.00**	**2.46**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.04					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.14					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.04					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.14					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
User Defined Recreational	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
User Defined Recreational	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

9.0 Vegetation

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Summer Hauling
Emissions to Otay

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Shelter Island Boat Launching Ramp

San Diego County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	16.6	1000sqft
User Defined Recreational	18.43	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Utility Company**
Climate Zone	13	**Precipitation Freq (Days)**	40	

1.3 User Entered Comments

Project Characteristics -

Land Use - Metric unit: 1000sqft

Construction Phase - Construction schedule adjusted to calculate the daily emissions of taking uncomtaminated soil to Landfill

Off-road Equipment -

Off-road Equipment - Construction is equipment accounted for on a seperate run

Trips and VMT - Haul Length is based on a trip distance of 30 miles to transport uncontaminated soil to Landfill. Number of Haul trips = (1200/30)*2

Grading - Added Import and Export material based on the environmental application. All material imported/exported was for water development

Vehicle Trips -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	4.17	50.33	22.48	0.09	3.45	1.91	5.36	0.38	1.91	2.30	0.00	9,835.04	0.00	0.20	0.00	9,839.29
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	4.17	50.33	22.48	0.09	0.65	1.91	2.57	0.38	1.91	2.30	0.00	9,835.04	0.00	0.20	0.00	9,839.29
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.32	0.00	0.32	0.05	0.00	0.05						0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.32**	**0.00**	**0.32**	**0.05**	**0.00**	**0.05**		**0.00**		**0.00**		**0.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.17	50.33	22.48	0.09	3.13	1.91	5.04	0.34	1.91	2.25		9,835.04		0.20		9,839.29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**4.17**	**50.33**	**22.48**	**0.09**	**3.13**	**1.91**	**5.04**	**0.34**	**1.91**	**2.25**		**9,835.04**		**0.20**		**9,839.29**

3.2 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.32	0.00	0.32	0.05	0.00	0.05						0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.32**	**0.00**	**0.32**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**		**0.00**		**0.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.17	50.33	22.48	0.09	0.34	1.91	2.25	0.34	1.91	2.25		9,835.04		0.20		9,839.29
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**4.17**	**50.33**	**22.48**	**0.09**	**0.34**	**1.91**	**2.25**	**0.34**	**1.91**	**2.25**		**9,835.04**		**0.20**		**9,839.29**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Winter Hauling
Emissions to Otay

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Shelter Island Boat Launching Ramp

San Diego County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	16.6	1000sqft
User Defined Recreational	18.43	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Utility Company**
Climate Zone	13	**Precipitation Freq (Days)**	40	

1.3 User Entered Comments

Project Characteristics -

Land Use - Metric unit: 1000sqft

Construction Phase - Construction schedule adjusted to calculate the daily emissions of taking uncomtaminated soil to Landfill

Off-road Equipment -

Off-road Equipment - Construction is equipment accounted for on a seperate run

Trips and VMT - Haul Length is based on a trip distance of 30 miles to transport uncontaminated soil to Landfill. Number of Haul trips = (1200/30)*2

Grading - Added Import and Export material based on the environmental application. All material imported/exported was for water development

Vehicle Trips -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	4.25	51.61	24.18	0.09	3.45	1.93	5.37	0.38	1.93	2.31	0.00	9,798.30	0.00	0.21	0.00	9,802.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	4.25	51.61	24.18	0.09	0.65	1.93	2.58	0.38	1.93	2.31	0.00	9,798.30	0.00	0.21	0.00	9,802.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.32	0.00	0.32	0.05	0.00	0.05						0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.32**	**0.00**	**0.32**	**0.05**	**0.00**	**0.05**		**0.00**		**0.00**		**0.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.25	51.61	24.18	0.09	3.13	1.93	5.06	0.34	1.93	2.27		9,798.30		0.21		9,802.63
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**4.25**	**51.61**	**24.18**	**0.09**	**3.13**	**1.93**	**5.06**	**0.34**	**1.93**	**2.27**		**9,798.30**		**0.21**		**9,802.63**

3.2 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.32	0.00	0.32	0.05	0.00	0.05						0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.32**	**0.00**	**0.32**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**		**0.00**		**0.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.25	51.61	24.18	0.09	0.34	1.93	2.27	0.34	1.93	2.27		9,798.30		0.21		9,802.63
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**4.25**	**51.61**	**24.18**	**0.09**	**0.34**	**1.93**	**2.27**	**0.34**	**1.93**	**2.27**		**9,798.30**		**0.21**		**9,802.63**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Annual Hauling
Emissions to Otay

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Shelter Island Boat Launching Ramp

San Diego County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	16.6	1000sqft
User Defined Recreational	18.43	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Utility Company**
Climate Zone	13	**Precipitation Freq (Days)**	40	

1.3 User Entered Comments

Project Characteristics -

Land Use - Metric unit: 1000sqft

Construction Phase - Construction schedule adjusted to calculate the daily emissions of taking uncomtaminated soil to Landfill

Off-road Equipment -

Off-road Equipment - Construction is equipment accounted for on a seperate run

Trips and VMT - Haul Length is based on a trip distance of 30 miles to transport uncontaminated soil to Landfill. Number of Haul trips = (1200/30)*2

Grading - Added Import and Export material based on the environmental application. All material imported/exported was for water development

Vehicle Trips -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.45	4.45	0.00	0.00	4.46
Total	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.45**	**4.45**	**0.00**	**0.00**	**4.46**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.45	4.45	0.00	0.00	4.46
Total	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.45**	**4.45**	**0.00**	**0.00**	**4.46**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.45	4.45	0.00	0.00	4.46
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.45**	**4.45**	**0.00**	**0.00**	**4.46**

3.2 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.45	4.45	0.00	0.00	4.46
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.02**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**4.45**	**4.45**	**0.00**	**0.00**	**4.46**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.04					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.14					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.04					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.14					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
User Defined Recreational	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
User Defined Recreational	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

9.0 Vegetation

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Summer Hauling Emissions to the Edge of the SDAB

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Shelter Island Boat Launching Ramp

San Diego County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	16.6	1000sqft
User Defined Recreational	18.43	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Utility Company**
Climate Zone	13	**Precipitation Freq (Days)**	40	

1.3 User Entered Comments

Project Characteristics -

Land Use - Metric unit: 1000sqft

Construction Phase - Construction schedule adjusted to calculate the daily emissions of taking uncomtaminated soil to Landfill.

Off-road Equipment -

Off-road Equipment - Construction is equipment accounted for on a seperate run

Trips and VMT - Haul Length is based on a trip distance of 60 miles to transport contaminated to the edge of the air district. Number of Haul trips = (1200/30)*2

Grading - Added Import and Export material based on the environmental application. All material imported/exported was for water development

Vehicle Trips -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	7.78	95.32	40.94	0.19	6.57	3.79	10.37	0.72	3.79	4.51	0.00	19,384.00	0.00	0.38	0.00	19,391.90
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	7.78	95.32	40.94	0.19	0.99	3.79	4.78	0.72	3.79	4.51	0.00	19,384.00	0.00	0.38	0.00	19,391.90
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.32	0.00	0.32	0.05	0.00	0.05						0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.32**	**0.00**	**0.32**	**0.05**	**0.00**	**0.05**		**0.00**		**0.00**		**0.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.78	95.32	40.94	0.19	6.26	3.79	10.05	0.67	3.79	4.47		19,384.00		0.38		19,391.90
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**7.78**	**95.32**	**40.94**	**0.19**	**6.26**	**3.79**	**10.05**	**0.67**	**3.79**	**4.47**		**19,384.00**		**0.38**		**19,391.90**

3.2 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.32	0.00	0.32	0.05	0.00	0.05						0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.32**	**0.00**	**0.32**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**		**0.00**		**0.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.78	95.32	40.94	0.19	0.67	3.79	4.47	0.67	3.79	4.47		19,384.00		0.38		19,391.90
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**7.78**	**95.32**	**40.94**	**0.19**	**0.67**	**3.79**	**4.47**	**0.67**	**3.79**	**4.47**		**19,384.00**		**0.38**		**19,391.90**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Winter Hauling Emissions to the
Edge of the SDAB

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Shelter Island Boat Launching Ramp

San Diego County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	16.6	1000sqft
User Defined Recreational	18.43	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Utility Company**
Climate Zone	13	**Precipitation Freq (Days)**	40	

1.3 User Entered Comments

Project Characteristics -

Land Use - Metric unit: 1000sqft

Construction Phase - Construction schedule adjusted to calculate the daily emissions of taking uncomtaminated soil to Landfill.

Off-road Equipment -

Off-road Equipment - Construction is equipment accounted for on a seperate run

Trips and VMT - Haul Length is based on a trip distance of 60 miles to transport contaminated to the edge of the air district. Number of Haul trips = (1200/30)*2

Grading - Added Import and Export material based on the environmental application. All material imported/exported was for water development

Vehicle Trips -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	7.86	98.26	42.52	0.19	6.57	3.81	10.38	0.72	3.81	4.53	0.00	19,347.26	0.00	0.38	0.00	19,355.23
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	7.86	98.26	42.52	0.19	0.99	3.81	4.80	0.72	3.81	4.53	0.00	19,347.26	0.00	0.38	0.00	19,355.23
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.32	0.00	0.32	0.05	0.00	0.05						0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.32**	**0.00**	**0.32**	**0.05**	**0.00**	**0.05**		**0.00**		**0.00**		**0.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.86	98.26	42.52	0.19	6.26	3.81	10.07	0.67	3.81	4.48		19,347.26		0.38		19,355.23
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**7.86**	**98.26**	**42.52**	**0.19**	**6.26**	**3.81**	**10.07**	**0.67**	**3.81**	**4.48**		**19,347.26**		**0.38**		**19,355.23**

3.2 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.32	0.00	0.32	0.05	0.00	0.05						0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00		0.00		0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.32**	**0.00**	**0.32**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**		**0.00**		**0.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.86	98.26	42.52	0.19	0.67	3.81	4.48	0.67	3.81	4.48		19,347.26		0.38		19,355.23
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**7.86**	**98.26**	**42.52**	**0.19**	**0.67**	**3.81**	**4.48**	**0.67**	**3.81**	**4.48**		**19,347.26**		**0.38**		**19,355.23**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.97	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.22					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.75					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**0.97**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Annual Hauling Emissions to the
Edge of the SDAB

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Shelter Island Boat Launching Ramp

San Diego County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	16.6	1000sqft
User Defined Recreational	18.43	User Defined Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.6	**Utility Company**
Climate Zone	13	**Precipitation Freq (Days)**	40	

1.3 User Entered Comments

Project Characteristics -

Land Use - Metric unit: 1000sqft

Construction Phase - Construction schedule adjusted to calculate the daily emissions of taking uncomtaminated soil to landfill

Off-road Equipment -

Off-road Equipment - Construction is equipment accounted for on a seperate run

Trips and VMT - Haul Length is based on a trip distance of 60 miles to transport contaminated to the edge of the air district. Number of Haul trips = (1200/30)*2

Grading - Added Import and Export material based on the environmental application. All material imported/exported was for water development

Vehicle Trips -

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.79	8.79	0.00	0.00	8.79
Total	**0.00**	**0.05**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**8.79**	**8.79**	**0.00**	**0.00**	**8.79**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.79	8.79	0.00	0.00	8.79
Total	**0.00**	**0.05**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**8.79**	**8.79**	**0.00**	**0.00**	**8.79**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.79	8.79	0.00	0.00	8.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.05**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**8.79**	**8.79**	**0.00**	**0.00**	**8.79**

3.2 Grading - 2016

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.79	8.79	0.00	0.00	8.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.05**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**8.79**	**8.79**	**0.00**	**0.00**	**8.79**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User Defined Recreational	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		**0.00**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.18	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.04					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.14					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.04					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.14					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.18**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
User Defined Recreational	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
User Defined Recreational	0 / 0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
User Defined Recreational	0					0.00	0.00	0.00	0.00
Total						**0.00**	**0.00**	**0.00**	**0.00**

9.0 Vegetation

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APPENDIX B

BIOLOGICAL RESOURCES TECHNICAL REPORTS

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APPENDIX B-1

SEDIMENT QUALITY INVESTIGATION REPORT

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Final Report
Shelter Island Launch Basin
Sediment Quality Investigation
Port of San Diego,
San Diego, California

Prepared For:

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TIERRA DATA
Solutions Since 1987

April 2013

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICIES

LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
µg/kg	Microgram per kilogram
µm	microns
APHA	American Public Health Association
ASTM	American Society for Testing and Materials
CEL	Calscience Environmental Laboratories
COC	chain-of-custody
DGPS	differential global positioning system
DMMT	Dredge Material Management Team
ECORP	ECORP Consulting Inc.
EPA	U.S. Environmental Protection Agency
ERL	Effects Range Low
ERM	Effects Range Medium
ft	foot/feet
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
LCSD	Laboratory Control Sample Duplicate
MB	method blank
MDL	method detection limit
ME	Marginal Exceedance
mg/kg	milligrams per kilogram
MLLW	mean lower low water
MS	matrix spike
MSA	method of standard addition
MSD	matrix spike duplicate
ng/kg	nanograms per kilogram
NOAA	National Oceanic and Atmospheric Administration
PAH	polycyclic aromatic hydrocarbon
PSD/PDSD	Post Digestion Spike/Post Digestion Spike Duplicate
POSD	Port of San Diego

RPD	Relative Percent Difference
SAP	Sampling and Analysis Plan
SILB	Shelter Island Launch Basin
TDI	Tierra Data Inc.
TOC	total organic carbon
TS	TranSystems

1.0 Introduction

The Port of San Diego is planning facilities improvements at the Shelter Island Launch Basin (SILB) facility in San Diego Bay, San Diego, CA (Figure 1). This sediment report is in support of the pre-dredge survey and the associated California Environmental Quality Act (CEQA) process. Analytical testing results of the sampled sediments are included below to assess sediment quality of the material to be removed from the proposed project area. The chemical and physical testing results will aid in the evaluation of disposal alternatives.

ECORP Consulting, Inc. (ECORP), under contract to TranSystems (TS), contracted Tierra Data Inc. (TDI) to assist in sampling and analysis plan preparation, sample collection, and reporting the results of the sediment investigation. Sediment core samples were composited from the proposed project footprint were analyzed for a full suite of chemicals of concern including metals, chlorinated pesticides, polychlorinated biphenyls (congeners), polycyclic aromatic hydrocarbons, Organotins, Total petroleum hydrocarbons (C6-C44) and general chemistry (Total Organic Carbon and Total Solids) utilizing EPA approved methods. Physical testing included grain size analysis on a singular composite sample. Archives are in custody of Calscience Environmental laboratory and will be maintained for a period of one year. This report presents the results of the collection and analysis of SILB sediments.

2.0 Materials and methods

The current sediment characterization study within the SILB was conducted by TDI and ECORP on March 19, 2013. Weather conditions at the time of sampling were slightly overcast, with light wind (0-2-kts). Sediment collections and processing followed the guidance provided in *Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual* (U.S. Environmental Protection Agency [EPA] 2001). Due to the logistical nature of collecting samples in and around an operational boat launch, samples were collected opportunistically when boat traffic (launch or retrieval) was at a minimum. Tides during sampling ranged from +1.6-ft during the first sample collections to +2.5-ft during the mid-day sampling stations.

Figure 1. Project Location Overview Map

2.1 Collection Locations

To characterize the sediments within SILB project footprint, core samples were collected from six locations inside the break water (SS-1, SS-2, SS-3, SS-4, SS-5, and SS-6) and subjected to chemical and physical testing (Figure 2). A differentially corrected global positioning system with accuracy of ±10 feet (ft) was used to navigate to the actual sampling locations listed in Table 1. At the SILB site, the sampling vessel was securely tied to launch ramp docks and/or anchored to maintain proper positioning for each core. Once secured, the position was recorded into a project-specific electronic field log, and stored in a Microsoft Access® database on non-volatile flash memory using a rugged field tablet PC. Water depth was measured with a weighted fiberglass tape. The water depth was corrected to Mean Lower Low Water (MLLW) using National Oceanic and Atmospheric Administration (NOAA) tide tables for Quarantine Station San Diego Bay.

Table 1. Shelter Island Launch Basin Sediment Sample Locations

Station ID	Latitude (WGS84) (dd°mm.mmm')	Longitude (WGS84) (-ddd° mm.mmm')	Tide (ft)	Water Depth (ft)	Adjusted Water Depth (ft MLLW)	Total Project Depth (ft MLLW)	Target Depth Below Mudline (ft)	Penetration (ft)	Analysis Length (ft)
SS-1	32° 42.914'	-117° 13.408'	1.6	5.7	4.1	-8	-3.9	5	3.9
SS-2	32° 42.913'	-117° 13.402'	1.3	7	5.7	-8	-2.3	4	2.3
SS-3	32° 42.919'	-117° 13.392'	2.5	7.3	4.8	-8	-3.2	5.5	3.2
SS-4	32° 42.925'	-117° 13.386'	2.5	7.6	5.1	-8	-2.9	4.5	2.9
SS-5	32° 42.940'	-117° 13.378'	2	7	5	-8	-3	4	3
SS-6	32° 42.941'	-117° 13.372'	1.8	6.3	4.5	-8	-3.5	5	3.5

Notes:
ft = foot/feet
MLLW = mean lower low water
WGS84 = World Geodetic System 1984

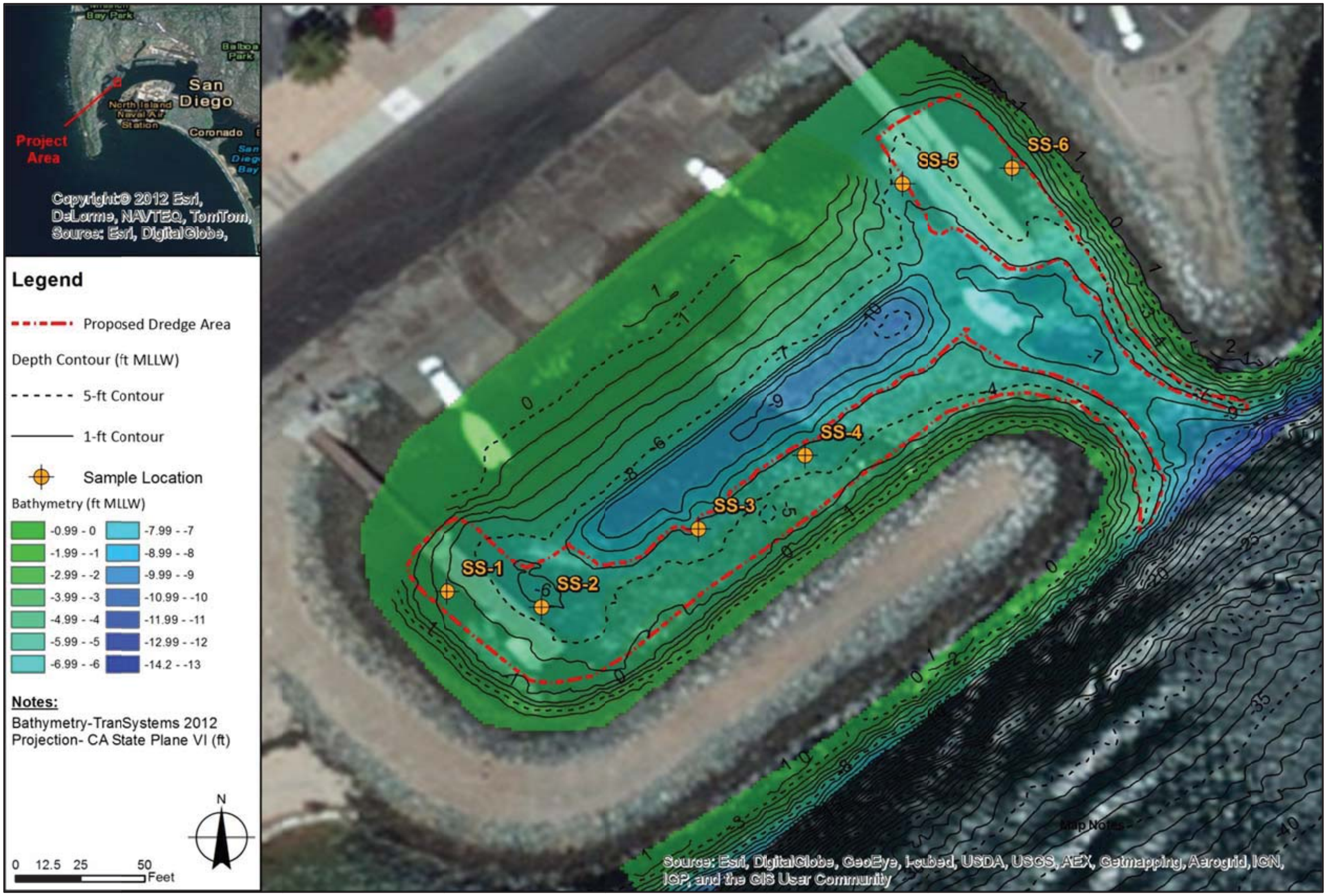

Figure 2. Shelter Island Launch Basin Sediment Sampling Locations

2.2 Test Sediment Collection

The vibracore used for sediment sample collection was deployed from the *R/V* Susie II, a 27-ft Wilson style workboat, modified for environmental sampling. The *Susie II* is equipped with a starboard mounted davit and electric winch for precision control of the vibracore during deployments. The vibracore uses a 4-in diameter aluminum tube bolted to the vibracore head. The aluminum-encased vibrating unit operates on 24 volt power to electrically drive a 1-horsepower unbalanced motor. Vacuum inside the barrel is maintained by a stainless steel check valve secured above the core barrel adapter. Target penetration depth for the project was -8 ft MLLW.

The vibracore was lowered to the mudline prior to vibrating to minimize disturbance to the sediments prior to sample collection. Once the vibracore was positioned inches above the mudline, the power was turned on, and the vibracore was lowered into the sediment. Core penetration depth was calculated with a tape measure attached to the vibracore head. Upon reaching the target penetration depth, the vibracore was powered off, and slowly brought to the surface. The vibracore and sample were returned to the sampling vessel for processing. Once onboard, core samples were carefully extruded into clean, polyethylene-lined core extraction trays, photographed, and inspected for unique strata, color, odors, etc. The compositing scheme, Station identification numbers, locations, and recovery are provided in Table 1. Field core logs and core photos are provided in Appendices A and B respectively.

2.3 Sample Processing and Handling

The cores were logged electronically and photographed with a digital camera to describe and document all unique strata and sediment characteristics. Samples were homogenized using a decontaminated stainless steel mixing bowl and stainless steel spoons. Cores were homogenized the entire length of the core. An archive was initially collected from the homogenate. An equal portion of the homogenate was added to a second stainless steel mixing bowl to form a composite sample. One composite sample was prepared for the SILB area and submitted for chemical and physical analysis. A duplicate sample was collected from the SILB composite material as a quality assurance (QA) measure and tested for chemical contaminants only.

Laboratory provided 8-oz glass jars with Teflon lined caps were used to collect sediment samples. Samples were promptly placed in coolers and covered with wet ice. Samples were delivered by TDI personnel to Calscience Environmental Laboratories (CEL) couriers for transport to the laboratory. For all samples (composite and cores), archive material was collected and handled in the same manner as the test material, and remain archived at CEL facilities at 4 degrees Celsius (°C).

2.4 Documentation and Chain-of-Custody

Samples were considered to be in custody if they met one of the three conditions: (1) in the custodian's possession or view, (2) retained in a secured place by the custodian, or (3) placed in a secured container by the custodian. The principal documents used to identify samples and to document possession were chain-of-custody (COC) records, field log books, and/or electronic field logs. Proper COC procedures were used for all samples throughout the collection, transport, and analytical process.

COC procedures were initiated during sample collection. A COC record was provided with sample group, and COC for people who had custody of the samples during transfer, thus ensuring that the samples were relinquished and attended throughout sample transfer to the laboratory. Minimum documentation of sample handling and custody included the following:

- Sample identification
- Sample collection date and time
- Any special notations on sample characteristics
- Initials of the person collecting the sample
- Date the sample was sent to the laboratory

The completed COC form was placed in a sealable plastic envelope that traveled inside the ice chest containing the listed samples. The COC form was signed by the person transferring custody of the samples. The condition of the samples was recorded by the receiver throughout every transfer. COC records are included in the final analytical report prepared by the laboratory.

3.0 Physical and Chemical Analyses

Physical and chemical measurements of sediment in this testing program were selected to provide data on chemicals of potential concern in the SILB sediments. Disposal options will be assessed as part of the ongoing CEQA process. Disposal options will be based in part on the results of the chemical and physical analysis, and additionally include the analysis of a variety of programmatic factors (e.g., construction schedules, costs, project impacts) that effect project disposal alternatives. All analytical methods used to obtain contaminant concentrations followed EPA or Standard Methods (American Public Health Association [APHA] 1998). Physical analysis included grain size classification (e.g., gravel, sand, silt, and clay) of the sediments. Target reporting limits and method detection limits (MDLs) as provided in the Sampling Analysis Plan (SAP) are listed in Table 2. Actual reporting limits, MDLs, and raw data for analyses are provided in Appendix C.

Table 2. Analytical Methods and Reporting Limits for Chemical and Physical Analysis

Analyte	Analysis Method	Sediment Target Detection Limits[a,b]
Total Solids	SM 2540 B	0.1%
Total Organic Carbon	9060	0.1%
Arsenic (As)	6020/6010B[d]	0.1 mg/kg
Cadmium (Cd)	6020/6010B[d]	0.1 mg/kg
Chromium (Cr)	6020/6010B[d]	0.1 mg/kg
Copper (Cu)	6020/6010B[d]	0.1 mg/kg
Lead (Pb)	6020/6010B[d]	0.1 mg/kg
Mercury (Hg)	7471A[d]	0.02 mg/kg
Nickel (Ni)	6020/6010B[d]	0.1 mg/kg
Selenium (Se)	6020/6010B[d]	0.1 mg/kg
Silver (Ag)	6020/6010B[d]	0.1 mg/kg
Zinc (Zn)	6020/6010B[d]	2.0 mg/kg
TPH	8015B (M)	5.0 mg/kg
TRPH	418.1M[d]	5.0 mg/kg
PAHs[e]	8270C SIM[d]	20 µg/kg
Chlorinated Pesticides[f]	8081A[d]	0.5 to 30 µg/kg
PCB Congeners[g]	8270C SIM	1.0 µg/kg
Phenols	8270C SIM[d]	20 to 100 µg/kg
Phthalates	8270C SIM[d]	10 µg/kg
Butyltins	Rice/Krone[h]	1.0 µg/kg

Notes:

a Sediment minimum detection limits are on a wet-weight basis.

b Detection limits provided by Calscience Environmental Laboratories, Inc.

c Standard Methods for the Examination of Water and Wastewater, 19th edition, American Public Health Association et al. 1995.

d EPA 1986-1996. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, 3rd Edition.

e Includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b,k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene.

f Includes aldrin, □-BHC, □-BHC, □-BHC (lindane), □-BHC, chlordane, 2,4- and 4,4-DDD, 2,4- and 4,4-DDE, 2,4- and 4,4-DDT, dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, and toxaphene.

g PCBs (sum of 41 congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194,201, and 206)

h Rice et al. (1987) or Krone et al. (1989)

µg/kg micrograms per kilogram (parts per billion)

mg/kg milligrams per kilogram (parts per million),

µg/L micrograms per liter

mg/L milligrams per liter

N/A not analyzed
PAH polycyclic aromatic hydrocarbon
PCB polychlorinated biphenyl
SM standard methods
SOP standard operating procedure
TPH total petroleum hydrocarbons (C6-C44)
TRPH total recoverable petroleum hydrocarbons

4.0 Results

Results of chemical analyses of project sediments were compared to effects range-low (ERL) and effects range-median (ERM) values developed by Long et al. (1995) as part of the National Status and Trends program, and are currently promulgated by NOAA as Screening Quick Reference Tables (Squirts). While these values are useful for identifying elevated sediment-associated contaminants, they should not be inferred as a compliance criterion. For this investigation, the effects range values represent an established method for assessing the potential significance of elevated contaminants of concern, and therefore the potential to have adverse toxicological effects. The guidelines were developed from a large dataset where results of effects (e.g., toxicity tests and bioaccumulation) and chemical concentrations were both available for a given sample set. Chemical concentrations for data demonstrating an adverse effect were sorted according to ascending chemical concentrations; the 10th percentile of this rank order distribution was identified as the ERL and the 50th percentile as the ERM. The physical results for the SILB composite are included in Table 3. The chemical analysis for sediment collected within the SILB project footprint is presented in Table 4. Chemical and physical laboratory testing data reports are included as Appendix C.

4.1 Physical

Physical analysis of the SILB composite sediment samples indicates the primary grain size classification as determined by American Society for Testing and Materials (ASTM) D4464 methodology is over 99 percent silts and clays, ranging in size from .2 µm to 65 µm.

Table 3. Shelter Island Launch Basin Physical Testing Results

METHOD	COMPOUND NAME	TYPE	UNITS	SS Composite A
ASTM D4464 (M)	Clay (less than 0.00391mm)	Physical	%	99.9
ASTM D4464 (M)	Silt (0.00391 to 0.0625mm)	Physical	%	<0.01
ASTM D4464 (M)	Total Silt and Clay (0 to 0.0625mm)	Physical	%	99.9
ASTM D4464 (M)	Coarse Sand (0.5 to 1mm)	Physical	%	<0.01
ASTM D4464 (M)	Fine Sand (0.125 to 0.25mm)	Physical	%	<0.01
ASTM D4464 (M)	Gravel (greater than 2mm)	Physical	%	0.1
ASTM D4464 (M)	Medium Sand (0.25 to 0.5mm)	Physical	%	<0.01
ASTM D4464 (M)	Very Coarse Sand (1 to 2mm)	Physical	%	<0.01
ASTM D4464 (M)	Very Fine Sand (0.0625 to 0.125mm)	Physical	%	<0.01

4.2 Chemical

4.2.1 Metals

Chemical analysis of a singular composite sample for the SILB project area indicates two metals which exceed ERL screening values, Copper (Cu) and Zinc (Zn). The concentration of Copper was 65.6 milligrams per kilogram (mg/kg) with an associated ERL of 34 mg/kg. Zinc concentrations ranged from 206 mg/kg in the composite to 214 mg/kg in the duplicate sample. All other metals were below NOAA ERL and ERM screening criteria.

4.2.2 Petroleum Hydrocarbons

Hydrocarbons include those constituents that are the result of refined fuels. Composite sediment analyzed for Gasoline and Diesel products using EPA method 8015B indicate that extended range petroleum hydrocarbons (C6-C44) were below detection, or were detected and qualified by the laboratory for associated QA measures falling outside of acceptable ranges.

4.2.3 Chlorinated Pesticides

Chlorinated pesticides were analyzed in the SILB composite samples using EPA method 8081A. Results for both the composite sample and field duplicate indicate the levels are at or near analytical detection limits of the instrumentation (1.5 micrograms per kilogram [µg/kg]) with the exception of 4-4' DDE (2.8 µg/kg), which was above the corresponding ERL of 2.2 µg/kg. Total Detectable DDTs were therefore slightly elevated and similarly exceeded the ERL screening concentration.

4.2.4 Total PAHs

High and low molecular weight PAHs were tested on a singular composite sediment sample from the SILB project offtprint using EPA method 8270C SIM. Testing results for the composite and duplicate were similiar. All low and high molecular weight PAHs were above detection limits, however, no constituent was above the corresponding ERL. Total Detectable PAHs similarly were below ERL and ERM screening levels of 4022 µg/kg and 44792 µg/kg respectively.

4.2.5 Phenols and Phthalates

Phenols and Phthalates were at or below analytical detection limits for a majority of the analytes tested for, with Bis(2-Ethylhexyl) Phthalate having the highest concentration of 410 µg/kg. Dimethyl phthalate was also elevated with a concentration of 350 µg/kg.

4.2.6 Organotins

Organotins were tested using EPA approved methods developed by Krone et al. (1989). Organotins for the SILB composite sample were below analytical detection limits for all Organotins with the exception of Dibutlytin which was 38 µg/kg in the composite sample and 29 µg/kg in the duplicate analysis.

4.2.7 PCB Congeners

PCB congeners were analyzed using EPA approved method 8270C SIM. All congeners were below analytical detection limits with the highest non-qualified PCB congener detections for PCB 101 (1.6 µg/kg), PCB 110 (1.5 µg/kg), PCB 118 (2.1 µg/kg), PCB 138/158 (2.3 µg/kg), and PCB 153 (2.2 µg/kg). Duplicate samples indicated a similar relatively low concentration of PCB congeners.

4.2.8 Aroclors

Aroclor PCBs were analyzed using EPA approved method 8082. All Aroclors were below the ERL screening level and below analytical detection with the exception of Aroclor 1250 and 1264 with respective concentrations of 22 µg/kg and 33 µg/kg in the composite sediment sample, and 25 µg/kg and 7 µg/kg respectively in the field duplicate.

Table 4. Shelter Island Basin Sediment Chemistry Testing Results

METHOD	COMPOUND NAME	TYPE	UNITS	ERL	ERM	SS Composite A	SS Composite A Duplicate
ASTM D4464 (M)	Clay (less than 0.00391mm)	Physical	%	.	.	99.9	NT
ASTM D4464 (M)	Silt (0.00391 to 0.0625mm)	Physical	%	.	.	<0.01	NT
ASTM D4464 (M)	Total Silt and Clay (0 to 0.0625mm)	Physical	%	.	.	99.9	NT
ASTM D4464 (M)	Coarse Sand (0.5 to 1mm)	Physical	%	.	.	<0.01	NT
ASTM D4464 (M)	Fine Sand (0.125 to 0.25mm)	Physical	%	.	.	<0.01	NT
ASTM D4464 (M)	Gravel (greater than 2mm)	Physical	%	.	.	0.1	NT
ASTM D4464 (M)	Medium Sand (0.25 to 0.5mm)	Physical	%	.	.	<0.01	NT
ASTM D4464 (M)	Very Coarse Sand (1 to 2mm)	Physical	%	.	.	<0.01	NT
ASTM D4464 (M)	Very Fine Sand (0.0625 to 0.125mm)	Physical	%	.	.	<0.01	NT
EPA 9060A	Carbon, Total Organic	General Chemistry	%	.	.	0.75	0.72
EPA 6020	Arsenic	Metals	mg/kg	8.2	70	4.48	5.41
EPA 6020	Cadmium	Metals	mg/kg	1.2	9.6	0.695	0.894
EPA 6020	Chromium	Metals	mg/kg	81	370	18.9	22.8
EPA 6020	Copper	Metals	mg/kg	34	270	65.6	75.2
EPA 6020	Lead	Metals	mg/kg	46.7	218	33.8	35.9
EPA 6020	Nickel	Metals	mg/kg	20.9	51.6	6.45	8.01
EPA 6020	Selenium	Metals	mg/kg	.	.	<0.148	0.188
EPA 6020	Silver	Metals	mg/kg	1	3.7	0.36	0.405
EPA 6020	Zinc	Metals	mg/kg	150	410	206	214
EPA 7471A	Mercury	Metals	mg/kg	0.15	0.71	0.123	0.118
EPA 418.1M	TRPH	Total Recoverable Petroleum Hydrocarbons	mg/kg	.	.	84	48
EPA 8015B (M)	C6	Gasoline	mg/kg	.	.	0.93J	0.69J
EPA 8015B (M)	C7	Gasoline	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C8	Gasoline	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C9-C10	Gasoline	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C11-C12	Gasoline	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C13-C14	Diesel	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C15-C16	Diesel	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C17-C18	Diesel	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C19-C20	Diesel	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C21-C22	Diesel	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C23-C24	Diesel	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C25-C28	Diesel	mg/kg	.	.	3.8J	<7.4
EPA 8015B (M)	C29-C32	Motor oil	mg/kg	.	.	6.1J	<7.4
EPA 8015B (M)	C33-C36	Motor oil	mg/kg	.	.	6.2J	<7.4
EPA 8015B (M)	C37-C40	Motor oil	mg/kg	.	.	5.1J	2.4J
EPA 8015B (M)	C41-C44	Motor oil	mg/kg	.	.	<7.4	<7.4
EPA 8015B (M)	C6-C44 Total	C6-C44 Total	mg/kg	.	.	22	<7.4
EPA 8081A	2,4'-DDD	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	2,4'-DDE	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	2,4'-DDT	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	4,4'-DDD	Chlorinated Pesticides	ug/kg	2	20	<1.5	<1.5
EPA 8081A	4,4'-DDE	Chlorinated Pesticides	ug/kg	2.2	27	2.8	4.8
EPA 8081A	4,4'-DDT	Chlorinated Pesticides	ug/kg	1	7	<1.5	<1.5
	Total Detectable DDTs	Chlorinated Pesticides	ug/kg	1.58	46.1	2.8	4.8
EPA 8081A	Aldrin	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Alpha-BHC	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Beta-BHC	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Delta-BHC	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Gamma-BHC	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Chlordane	Chlorinated Pesticides	ug/kg	.	.	<15	<15
EPA 8081A	Dieldrin	Chlorinated Pesticides	ug/kg	0.02	8	<1.5	<1.5
EPA 8081A	Trans-nonachlor	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Endosulfan I	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Endosulfan II	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Endosulfan Sulfate	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Endrin	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Endrin Aldehyde	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Endrin Ketone	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Heptachlor	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Heptachlor Epoxide	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Methoxychlor	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Toxaphene	Chlorinated Pesticides	ug/kg	.	.	<30	<29
EPA 8081A	Alpha Chlordane	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Gamma Chlordane	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
EPA 8081A	Cis-nonachlor	Chlorinated Pesticides	ug/kg	.	.	2.1	2.1
EPA 8081A	Oxychlordane	Chlorinated Pesticides	ug/kg	.	.	<1.5	<1.5
	Total Detectable Chlorinated Pesticides	Chlorinated Pesticides	ug/kg	.	.	2.1	2.1

Table 4. Shelter Island Basin Sediment Testing Results (Continued)

METHOD	COMPOUND NAME	TYPE	UNITS	ERL	ERM	SS Composite A	SS Composite A Duplicate
EPA 8270C SIM	Naphthalene	LMW PAH	ug/kg	160	2100	<15	7.6J
EPA 8270C SIM	1-Methylnaphthalene	LMW PAH	ug/kg	.	.	<15	<15
EPA 8270C SIM	2-Methylnaphthalene	LMW PAH	ug/kg	70	670	<15	8.5J
EPA 8270C SIM	Acenaphthylene	LMW PAH	ug/kg	44	640	<15	9.3J
EPA 8270C SIM	Acenaphthene	LMW PAH	ug/kg	16	500	<15	<15
EPA 8270C SIM	Fluorene	LMW PAH	ug/kg	19	540	<15	<15
EPA 8270C SIM	Phenanthrene	LMW PAH	ug/kg	240	1500	20	11J
EPA 8270C SIM	Anthracene	LMW PAH	ug/kg	85.3	1100	8.6J	11J
EPA 8270C SIM	Fluoranthene	LMW PAH	ug/kg	600	5100	33	29
EPA 8270C SIM	Pyrene	HMW PAH	ug/kg	665	2600	49	46
EPA 8270C SIM	Benzo (a) Anthracene	HMW PAH	ug/kg	261	1600	26	29
EPA 8270C SIM	Chrysene	HMW PAH	ug/kg	384	2800	32	33
EPA 8270C SIM	Benzo (a) Pyrene	HMW PAH	ug/kg	430	1600	50	57
EPA 8270C SIM	Benzo (b) Fluoranthene	HMW PAH	ug/kg	.	.	49	59
EPA 8270C SIM	Benzo (k) Fluoranthene	HMW PAH	ug/kg	.	.	46	45
EPA 8270C SIM	Benzo (g,h,i) Perylene	HMW PAH	ug/kg	.	.	69	71
EPA 8270C SIM	Dibenz (a,h) Anthracene	HMW PAH	ug/kg	63.4	260	7.1J	6.5J
EPA 8270C SIM	Indeno (1,2,3-c,d) Pyrene	HMW PAH	ug/kg	.	.	44	45
	Total Detectable PAHs	PAH	ug/kg	4022	44792	418	414
EPA 8270C SIM	Benzoic Acid	Other SVOCs	ug/kg	.	.	<150	<150
EPA 8270C SIM	Isophorone	Other SVOCs	ug/kg	.	.	<150	<150
EPA 8270C SIM	N-Nitrosodimethylamine	Other SVOCs	ug/kg	.	.	<15	<15
EPA 8270C SIM	1-Methylphenanthrene	Other SVOCs	ug/kg	.	.	<15	<15
EPA 8270C SIM	2,4,5-Trichlorophenol	Phenols	ug/kg	.	.	<15	<15
EPA 8270C SIM	2,4,6-Trichlorophenol	Phenols	ug/kg	.	.	<15	<15
EPA 8270C SIM	2,4-Dichlorophenol	Phenols	ug/kg	.	.	<15	<15
EPA 8270C SIM	2,4-Dimethylphenol	Phenols	ug/kg	.	.	<15	<15
EPA 8270C SIM	2,4-Dinitrophenol	Phenols	ug/kg	.	.	<740	<740
EPA 8270C SIM	2-Chlorophenol	Phenols	ug/kg	.	.	<15	<15
EPA 8270C SIM	2-Methylphenol	Phenols	ug/kg	.	.	<15	<15
EPA 8270C SIM	2-Nitrophenol	Phenols	ug/kg	.	.	<15	<15
EPA 8270C SIM	3/4-Methylphenol	Phenols	ug/kg	.	.	<15	<15
EPA 8270C SIM	4,6-Dinitro-2-Methylphenol	Phenols	ug/kg	.	.	<740	<740
EPA 8270C SIM	4-Chloro-3-Methylphenol	Phenols	ug/kg	.	.	<15	<15
EPA 8270C SIM	4-Nitrophenol	Phenols	ug/kg	.	.	<740	<740
EPA 8270C SIM	Pentachlorophenol	Phenols	ug/kg	.	.	<740	<740
EPA 8270C SIM	Phenol	Phenols	ug/kg	.	.	27	34
EPA 8270C SIM	Bis(2-Ethylhexyl) Phthalate	Phthalates	ug/kg	.	.	410	310
EPA 8270C SIM	Butyl Benzyl Phthalate	Phthalates	ug/kg	.	.	38	40
EPA 8270C SIM	Diethyl Phthalate	Phthalates	ug/kg	.	.	<15	<15
EPA 8270C SIM	Dimethyl Phthalate	Phthalates	ug/kg	.	.	380	600
EPA 8270C SIM	Di-n-Butyl Phthalate	Phthalates	ug/kg	.	.	10J	16
EPA 8270C SIM	Di-n-Octyl Phthalate	Phthalates	ug/kg	.	.	<15	<15
EPA 8270C SIM	1,6,7-Trimethylnaphthalene	Other Organic Compounds	ug/kg	.	.	<15	<15
EPA 8270C SIM	2,3,4,6-Tetrachlorophenol	Other Organic Compounds	ug/kg	.	.	<15	<15
EPA 8270C SIM	2,6-Dichlorophenol	Other Organic Compounds	ug/kg	.	.	<15	<15
EPA 8270C SIM	Perthane	Other Organic Compounds	ug/kg	.	.	<15	<15
EPA 8270C SIM	1-Methylphenanthrene	Other Organic Compounds	ug/kg	.	.	<15	<15
EPA 8270C SIM	Benzo (e) Pyrene	Other Organic Compounds	ug/kg	.	.	37	41
EPA 8270C SIM	2,6-Dimethylnaphthalene	Other Organic Compounds	ug/kg	.	.	16	21
EPA 8270C SIM	Perylene	Other Organic Compounds	ug/kg	.	.	18	16
EPA 8270C SIM	Biphenyl	Other Organic Compounds	ug/kg	.	.	<15	<15
EPA 8270C SIM	DCPA	Other Organic Compounds	ug/kg	.	.	<15	<15
EPA 8270C SIM	Dibenzothiophene	Other Organic Compounds	ug/kg	.	.	<15	<15
EPA 8082	Aroclor 1016	Aroclor PCBs	ug/kg	.	.	<15	<15
EPA 8082	Aroclor 1221	Aroclor PCBs	ug/kg	.	.	<15	<15
EPA 8082	Aroclor 1232	Aroclor PCBs	ug/kg	.	.	<15	<15
EPA 8082	Aroclor 1242	Aroclor PCBs	ug/kg	.	.	<15	<15
EPA 8082	Aroclor 1248	Aroclor PCBs	ug/kg	.	.	<15	<15
EPA 8082	Aroclor 1254	Aroclor PCBs	ug/kg	.	.	22	25
EPA 8082	Aroclor 1260	Aroclor PCBs	ug/kg	.	.	33	17
	Total Detectable Aroclors	Aroclor PCBs	ug/kg	22.7	180	55	42

Table 4. Shelter Island Basin Sediment Testing Results (Continued)

METHOD	COMPOUND NAME	TYPE	UNITS	SS Composite A
EPA 8270C SIM PCB Congeners	PCB003	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB008	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB018	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB028	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB031	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB033	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB037	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB044	PCB Congeners	ug/kg	0.56J
EPA 8270C SIM PCB Congeners	PCB049	PCB Congeners	ug/kg	0.30J
EPA 8270C SIM PCB Congeners	PCB052	PCB Congeners	ug/kg	0.75
EPA 8270C SIM PCB Congeners	PCB056	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB060	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB066	PCB Congeners	ug/kg	0.49J
EPA 8270C SIM PCB Congeners	PCB070	PCB Congeners	ug/kg	0.49J
EPA 8270C SIM PCB Congeners	PCB074	PCB Congeners	ug/kg	0.25J
EPA 8270C SIM PCB Congeners	PCB077	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB081	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB087	PCB Congeners	ug/kg	0.58J
EPA 8270C SIM PCB Congeners	PCB095	PCB Congeners	ug/kg	1
EPA 8270C SIM PCB Congeners	PCB097	PCB Congeners	ug/kg	0.63J
EPA 8270C SIM PCB Congeners	PCB099	PCB Congeners	ug/kg	0.75
EPA 8270C SIM PCB Congeners	PCB101	PCB Congeners	ug/kg	1.6
EPA 8270C SIM PCB Congeners	PCB105	PCB Congeners	ug/kg	1.2
EPA 8270C SIM PCB Congeners	PCB110	PCB Congeners	ug/kg	1.5
EPA 8270C SIM PCB Congeners	PCB114	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB118	PCB Congeners	ug/kg	2.1
EPA 8270C SIM PCB Congeners	PCB119	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB123	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB126	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB128	PCB Congeners	ug/kg	0.62J
EPA 8270C SIM PCB Congeners	PCB132	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB138/158	PCB Congeners	ug/kg	2.3
EPA 8270C SIM PCB Congeners	PCB141	PCB Congeners	ug/kg	0.32J
EPA 8270C SIM PCB Congeners	PCB149	PCB Congeners	ug/kg	1.1
EPA 8270C SIM PCB Congeners	PCB151	PCB Congeners	ug/kg	0.29J
EPA 8270C SIM PCB Congeners	PCB153	PCB Congeners	ug/kg	2.2
EPA 8270C SIM PCB Congeners	PCB156	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB157	PCB Congeners	ug/kg	0.35J
EPA 8270C SIM PCB Congeners	PCB167	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB168	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB169	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB170	PCB Congeners	ug/kg	0.46J
EPA 8270C SIM PCB Congeners	PCB174	PCB Congeners	ug/kg	0.34J
EPA 8270C SIM PCB Congeners	PCB177	PCB Congeners	ug/kg	0.18J
EPA 8270C SIM PCB Congeners	PCB180	PCB Congeners	ug/kg	0.86
EPA 8270C SIM PCB Congeners	PCB183	PCB Congeners	ug/kg	0.20J
EPA 8270C SIM PCB Congeners	PCB184	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB187	PCB Congeners	ug/kg	0.63J
EPA 8270C SIM PCB Congeners	PCB189	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB194	PCB Congeners	ug/kg	0.32J
EPA 8270C SIM PCB Congeners	PCB195	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB200	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB201	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB203	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB206	PCB Congeners	ug/kg	<0.74
EPA 8270C SIM PCB Congeners	PCB209	PCB Congeners	ug/kg	<0.74
	Total Detectable PCBs	PCB Congeners	ug/kg	15.36
Organotins by Krone et al.	Dibutyltin	TBT	ug/kg	38
Organotins by Krone et al.	Monobutyltin	TBT	ug/kg	<4.4
Organotins by Krone et al.	Tetrabutyltin	TBT	ug/kg	<4.4
Organotins by Krone et al.	Tributyltin	TBT	ug/kg	<4.4

Notes:
Totals were calculated based on detectable and non-qualified values only.

5.0 Quality Assurance

Laboratory provided quality assurance includes the following case narrative and quality assurance as provided by CEL. All laboratory data was processed electronically, minimizing the potential for human error, and a 100% check between electronic and hard copies.

Case Narrative

Ten sediment samples were received for this project on March 18, 2013. The samples were transferred to the laboratory in an ice-chest with wet ice, following strict chain-of-custody (COC) procedures. The temperature of the samples upon receipt at the laboratory was 1.6°C. All samples were logged into the Laboratory Information Management System (LIMS), given laboratory identification numbers and then stored in refrigeration units pending chemistry testing.

COC discrepancies (if any) were noted in the Sample Anomaly Form.

Tests Performed

Trace Metals by EPA 6020
Mercury by EPA 7471
TPH (C6-C44) by EPA 8015B
PAHs by EPA 8270C SIM
Chlorinated Pesticides by EPA 8081A
PCB Congeners by EPA 8270C SIM
PCBs by EPA 8082
SVOCs by EPA 8270C
Organotins by Krone et al.
Grain Size by ASTM D4464
Total Organic Carbon by EPA 9060A
Total Solids by SM 2540B
TRPH by EPA 418.1 (M)

Data Summary

Holding times

All holding times were met.

Calibration

Frequency and control criteria for initial and continuing calibration verifications were met.

Blanks

Concentrations of target analytes in the method blank were found to be below reporting limits for all testing.

Reporting Limits

The Method Detection Limits were met. All sample results were evaluated to the MDL, and where applicable, "J" flags were reported.

Laboratory Control Samples
A Laboratory Control Sample (LCS) analysis was performed for each applicable test. All parameters were within established control limits.

Matrix Spikes
Matrix spiking was performed at the required frequencies. Matrix spikes were performed on project and non-project samples. All parameters were within the acceptable control limits with the following exceptions.

- For Metals by 6020 many of the metals recoveries were outside the established control limits. Given that the batch associated LCS/LCSD recoveries were within the acceptable limits, the data are released with no further action.

- The TRPH by EPA 418.1 (M) the MS/MSD recoveries were above the acceptable limits. Given that the batch associated LCS/LCSD recoveries were within the acceptable limits, the data are released with no further action.

- For Organotins by Krone et al. the recoveries were outside the acceptable control limits. Since the LCS/LCSD recoveries and RPDs were in control, the results are released with no further action.

- For Chlorinated Pesticides by EPA 8081A several of the compounds were outside established control limits. Given that the batch associated LCS/LCSD recoveries were within the acceptable limits, the data are released with no further action.

- For PCB Congeners by EPA 8270C SIM one congener recovery was high outside established control limits. Given that the batch associated LCS/LCSD recoveries were within the acceptable limits, the data are released with no further action.

Surrogates
Surrogate recoveries for all applicable tests and samples were within acceptable control limits.

6.0 Discussion

Results of chemical and physical testing in the SILB project area indicate concentrations of organic and inorganic contaminants are below corresponding ERL screening levels for most compounds tested. Inorganic contaminants exceeding the respective ERL include Copper and Zinc. Organic contaminants exceeding the corresponding ERL screening value include Total Aroclors, 4-4'-DDE, and Total detectable DDTs. Physical results indicate the basin sediments are comprised of silts and clays, with greater than 95 percent of the material being smaller than 62.5 µm. Sand was encountered in very small degrees and documented in the cores as being present below the current project depth of -8-ft MLLW.

The sediments within the SILB sediment have low concentrations of most metals. Copper (65.6 mg/kg) and Zinc (206 mg/kg) were above the corresponding ERL of 34 mg/kg and 150 mg/kg in the composite sample, and a field collected duplicate sample exhibited similar Copper and Zinc concentrations (75.2 mg/kg and 214 mg/kg respectively). Both Copper and Zinc were well below the established ERM screening values, and no other metal exceeded ERL screening concentrations. An elevated concentration of Copper and/or Zinc in heavily used boating areas is not uncommon, nor unexpected. Copper is often used in boat bottom paints and can be scraped off during docking or trailering activities, deposited in the basin sediments. Zinc is a common constituent in many sacrificial anodes used to inhibit boat motor corrosion, and with the amount of vessels entering and exiting the SILB, there is a strong potential for Zinc deposition in basin sediments.

Organics contaminants were generally low with the exception of Aroclor 1254, Aroclor 1260. 4-4'-DDE was the only DDT derivative to be above laboratory detection. Aroclor 1254 and Aroclor 1260 are ubiquitous in Southern California embayments, and are often associated with the manufacturing of electrical components and parts. As the only two Aroclors detected in either the composite or the duplicate sample, Aroclor 1254 (22 µg/kg) and Aroclor 1260 (33 µg/kg) are the reason the Total Detectable DDT ERL (22.7 µg/kg) was exceeded. All other Aroclors were below the detection limit of 15 µg/kg. In addition to Aroclors, most chlorinated pesticides were below laboratory detection limits. The only chlorinated pesticide constituent detected and above ERL screening values was 4-4'-DDE. DDT and derivatives are a persistent problem in San Diego Bay, and are often introduced through stormwater inputs from upland sources, or are associated with historical and/or legacy contamination. It is important to note, the ERL for Total Detectable DDTs is 1.58 µg/kg, and only slightly above method detection limits of 1.5 µg/kg. Any detection of DDT derivatives can often lead to an exceedance of the ERL screening threshold for Total Detectable DDTs, and does not necessarily indicate poor sediment quality.

Physical and chemical analysis suggests the SILB sediments are comprised of silts and clay, and do exhibit slightly elevated levels of contaminants typically associated with the activities of the site. No ERM screening criteria were exceeded for any analytes tested, and in cases where the ERL was exceeded for a particular chemical of concern, exceedances were marginal, and well below the corresponding ERMs. Based on the chemical and physical results, the SILB sediments may be precluded from nearshore disposal options based on the physical properties and large fine (clays and silt) fractions (>99 percent).

Other disposal options including beneficial use (e.g., fill), upland disposal (e.g., local landfill), and/or ocean disposal may be feasible alternatives, however, the physical composition of the SILB sediments, construction schedules, and funding constraints may preclude one or more available disposal alternatives. The results of the characterization of SILB sediments suggest the material is suitable upland disposal alternatives based on the initial chemical and physical testing results. Additional disposal alternative (e.g., Ocean disposal or confined aquatic disposal) would require consultation with the USACE/EPA Dredge Material Management Team (DMMT), and additional testing would likely be needed to satisfy USACE and EPA testing requirements.

7.0 References

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Long, E.R., D.L. MacDonald, S.L. Smith, and F.D. Calder. 1995. Incidence of Adverse Biological Effects within Ranges of Chemical Concentration in Marine and Estuarine Sediments. *Environmental Management* 19 (1): 81-97.

Rice, C.D., F.A. Espourteille, and R.J. Huggett. 1987. Analysis of Tributyltin in Estuarine Sediments and Oyster Tissue, *Crassostrea virginica*. *Applied Organometallic Chemistry* 1: 541-544.

United States Environmental Protection Agency (EPA). 1986–1996. *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.* Revision 3 (November 1986), as amended by Updates I (July 1992), II (September 1994), IIA (August 1993), IIB (January 95), and III (December 96). SW-846.

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Appendix A
Field Core Logs

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026
760-749-2247

Sediment Core Log

Station ID: SS-1 | Project Name: Shelter Isl. Boat Launch Sediment Characterization | Date: 3/18/2013

Attempt: 1 | Latitude (WGS84): 32° 42.914' | Longitude (WGS84): -117° 13.408' | Time: 12:15:00

Depth (ft)	Lithology	Sediment Description	Color	Odor	Comments
0.0 – 2.5		Silt	dark grey	None	with small bits of shell
2.5 – 3.0		Sandy Silt	dark grey	None	
3.0 – 4.5		Fine Grain Sand	dark grey	Slight Organic	with shell hash

Depth scale: ft 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0; m 0.0, 0.5, 1.0, 1.5

Water Depth (ft): 5.5
Tide (ft): + 1.6
MLLW (ft): 3.9

Total Penetration (ft): 5
Analysis Length (ft): 3.9
Total Volume Collected (L): 1

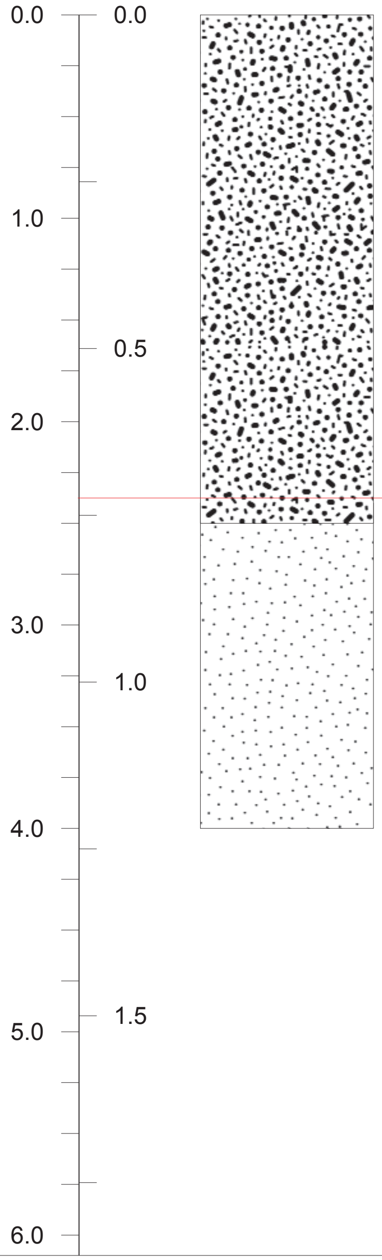
Project Depth (-8 ft MLLW)

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026
760-749-2247

Sediment Core Log

Station ID: SS-2	Project Name: Shelter Isl. Boat Launch Sediment Characterization		Date: 3/18/2013
Attempt: 1	Latitude (WGS84): 32° 42.913'	Longitude (WGS84): -117° 13.402'	Time: 11:17:57

Depth (ft / m)	Lithology	Sediment Description	Color	Odor	Comments
0.0–2.5 ft		Sandy Silt	dark grey	None	less than 10% sand
2.5–4.0 ft		Fine Grain Sand	dark grey	Heavy Organic	with shell hash



Water Depth (ft): 7

Tide (ft): + 1.3

MLLW (ft): 5.7

Total Penetration (ft): 4

Analysis Length (ft): 2.3

Total Volume Collected (L): 1

Project Depth (-8 ft MLLW)

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026
760-749-2247

Sediment Core Log

Station ID: SS-3	Project Name: Shelter Isl. Boat Launch Sediment Characterization		Date: 3/18/2013
Attempt: 1	Latitude (WGS84): 32° 42.919'	Longitude (WGS84): -117° 13.392'	Time: 15:06:00

Depth (ft)	Lithology	Sediment Description	Color	Odor	Comments
0.0 – 2.0		Silt	dark grey	None	with shell hash and fine grain sand
2.0 – 3.0					with shell hash and fine grain sand (<10%), and cobble
3.0 – 5.2		Fine Grain Sand		Slight Petroleum	w fgs and cobble, slight petroleum below target depth

Depth scale: ft 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0; m 0.0, 0.5, 1.0, 1.5

Water Depth (ft): 7.3
Tide (ft): + 2.5
MLLW (ft): 4.8

Total Penetration (ft): 5.5
Analysis Length (ft): 3.2
Total Volume Collected (L): 1

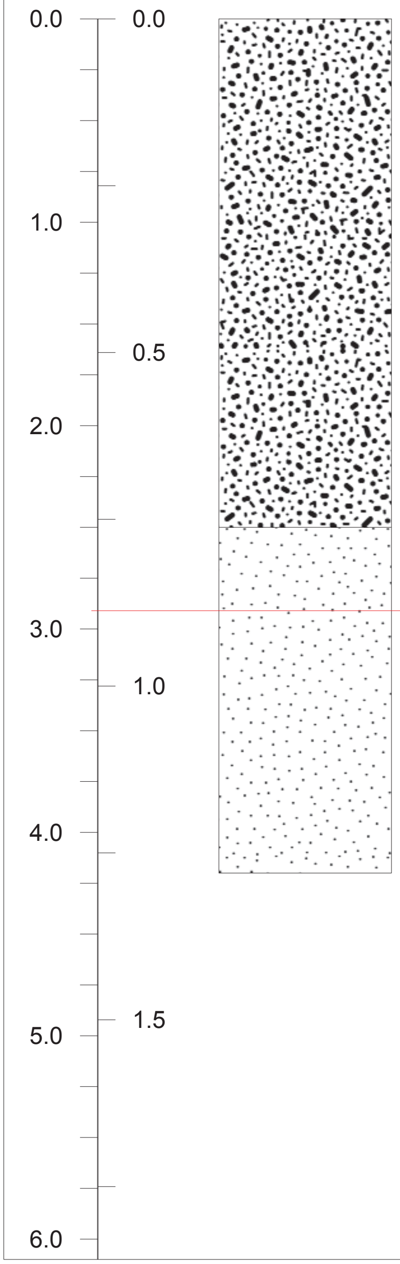
Project Depth (-8 ft MLLW)

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026
760-749-2247

Sediment Core Log

Station ID: SS-4	Project Name: Shelter Isl. Boat Launch Sediment Characterization		Date: 3/18/2013
Attempt: 1	Latitude (WGS84): 32° 42.925'	Longitude (WGS84): -117° 13.386'	Time: 14:27:00

Depth (ft)	Depth (m)	Lithology	Sediment Description	Color	Odor	Comments
0.0–2.5	0.0		Sandy Silt	dark grey	None	
2.5–4.2			Fine Grain Sand			shell hash, petroleum smell below project depth



Water Depth (ft): 7.6
Tide (ft): +2.5
MLLW (ft): 5.1

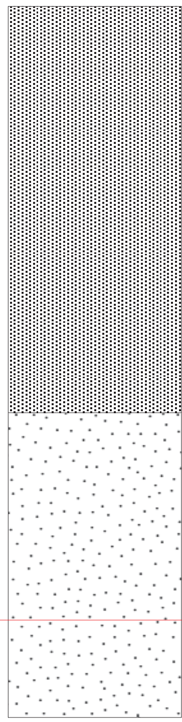
Total Penetration (ft): 4.5
Analysis Length (ft): 2.9
Total Volume Collected (L): 1

Project Depth (-8 ft MLLW)

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026
760-749-2247

Sediment Core Log

Station ID: SS-5	Project Name: Shelter Isl. Boat Launch Sediment Characterization		Date: 3/18/2013
Attempt: 1	Latitude (WGS84): 32° 42.940'	Longitude (WGS84): -117° 13.378'	Time: 13:06:06



Depth (ft)	Depth (m)	Sediment Description	Color	Odor	Comments
0.0 – 2.0	0.0 – 0.6	Silt	dark grey	None	some fine grain sand (<10%)
2.0 – 3.5	0.6 – 1.07	Fine Grain Sand	dark grey	Slight Organic	shell hash

Depth scale: ft 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0; m 0.0, 0.5, 1.0, 1.5

Water Depth (ft): 7
Tide (ft): + 2
MLLW (ft): 5

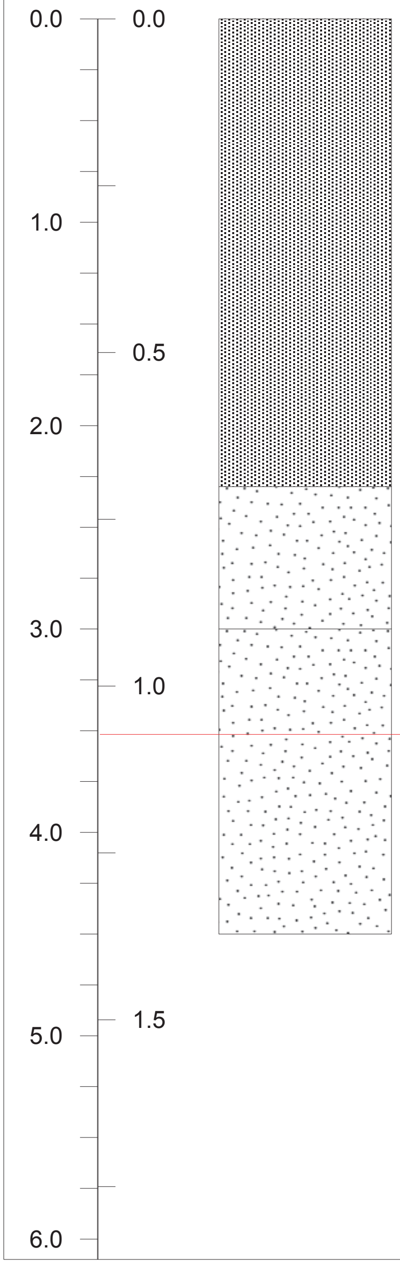
Total Penetration (ft): 4
Analysis Length (ft): 3.5
Total Volume Collected (L): 1

Project Depth (-8 ft MLLW)

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026
760-749-2247

Sediment Core Log

Station ID: SS-6	Project Name: Shelter Isl. Boat Launch Sediment Characterization	Date: 3/18/2013
Attempt: 1	Latitude (WGS84): 32° 42.941' / Longitude (WGS84): -117° 13.372'	Time: 12:45:00



Depth (ft)	Sediment Description	Color	Odor	Comments
0.0 – 2.3	Silt	dark grey	None	small bits of fgs and hash
2.3 – 3.0	Fine Grain Sand	dark grey	Slight Organic	with shell hash and silt
3.0 – 4.5	Fine Grain Sand	dark grey	Slight Organic	with shell hash

Water Depth (ft): 6.3
Tide (ft): + 1.8
MLLW (ft): 4.5

Total Penetration (ft): 5
Analysis Length (ft): 4.5
Total Volume Collected (L): 1

Project Depth (-8 ft MLLW)

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Appendix B
Core Photos

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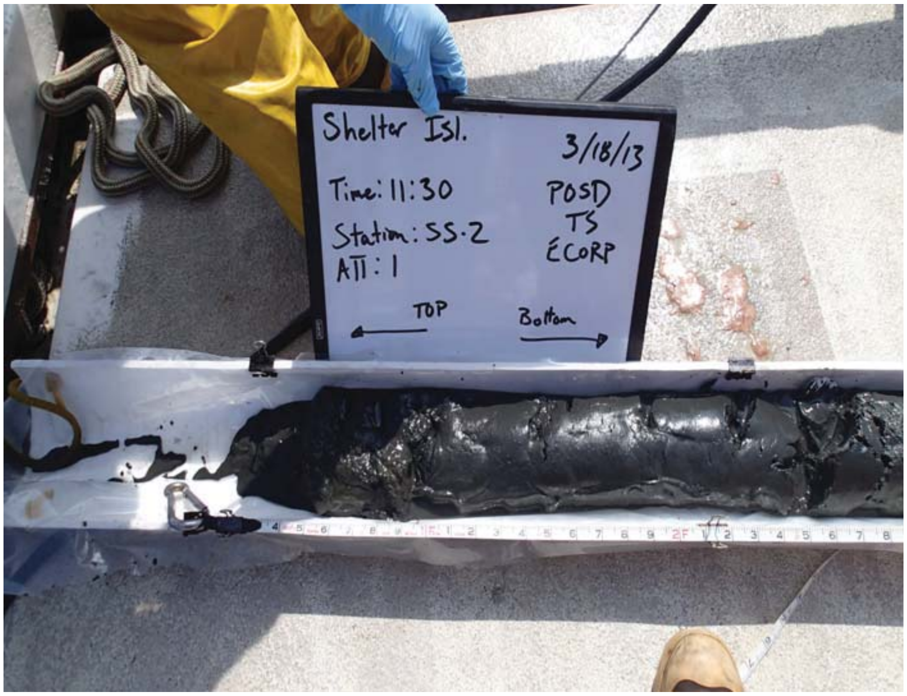
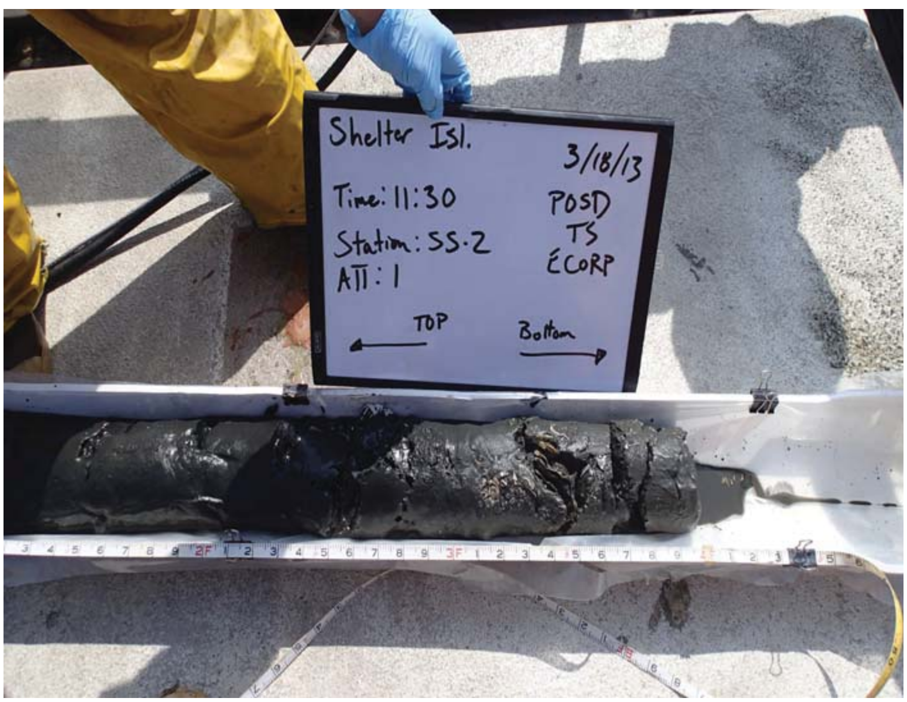


Station ID: SS-2 Attempt #: 1

Start Length (ft): 1 End Length (ft): 3



Station ID: SS-2 Attempt #: 1

Start Length (ft): 3 End Length (ft): 4

Station ID: SS-1 Attempt #: 1

Start Length (ft): 0 End Length (ft): 2

Station ID: SS-1 Attempt #: 1

Start Length (ft): 2 End Length (ft): 4.5

Station ID: SS-6 Attempt #: 1

Start Length (ft): 0 End Length (ft): 2.5

Station ID: SS-6 Attempt #: 1

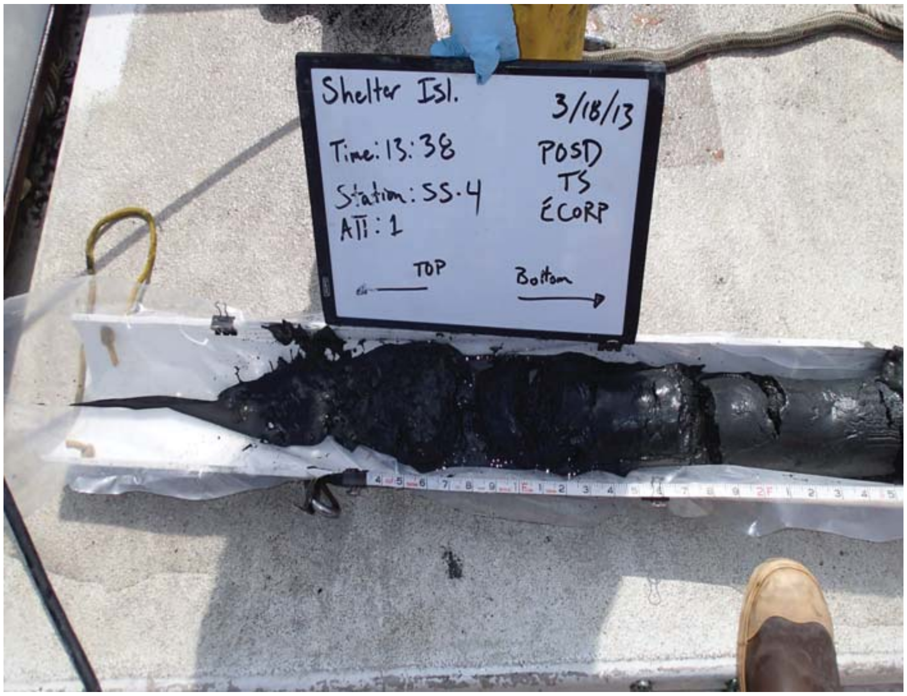
Start Length (ft): 2.5 End Length (ft): 4.5

Station ID: SS-5 Attempt #: 1

Start Length (ft): 0 End Length (ft): 2

Station ID: SS-5 Attempt #: 1

Start Length (ft): 2 End Length (ft): 4



Station ID: SS-4 Attempt #: 1

Start Length (ft): 0 End Length (ft): 2

Station ID: SS-4 Attempt #: 1

Start Length (ft): 2 End Length (ft): 4.2

Station ID: SS-3 Attempt #: 1

Start Length (ft): 0 End Length (ft): 3

Station ID: SS-3 Attempt #: 1

Start Length (ft): 3 End Length (ft): 5.2

Appendix C
Laboratory Chemistry Data

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Calscience Environmental Laboratories, Inc.

Supplemental Report 1

The original report has been revised/corrected.

CALSCIENCE

WORK ORDER NUMBER: 13-03-1340

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: Tierra Data Inc.

Client Project Name: Shelter Isl. Boat Ramp

Attention: Brent Mardian
10110 W. Lilac Road
Escondido, CA 92026-5309

Approved for release on 03/28/13 by:
Danielle Gonsman
Project Manager

ResultLink

Email your PM

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Calscience Environmental Laboratories, Inc.

Content□

Client Project □ame□ Shelter Isl. Boat Ramp
Wor□ □rder □umber□ 13-03-13□0

Calscience Environmental Laboratories, Inc.

CA□E NARRA□□E

Cal□cience Wor□ Or□er No□: 13-03-1340
Project □D: □□elter □I□Boat Ramp

Provided belo□ is a narrative of our anal□tical effort, including an□ uni□ue features or anomalies encountered as part of the anal□sis of the sediment samples.

Sample Condition on Receipt

Ten sediment samples were received for this project on March 18, 2013. The samples were transferred to the laboratory in an ice-chest with wet ice, following strict chain-of-custody (COC) procedures. The temperature of the samples upon receipt at the laboratory was 1.6°C. All samples were logged into the Laboratory Information Management System (LIMS), given laboratory identification numbers and then stored in refrigeration units pending chemistry testing.

COC discrepancies (if any) were noted in the Sample Anomaly Form.

Tests Performed

Trace Metals by EPA 6020
Mercury by EPA 7471
TPH (C6-C44) by EPA 8015B
PAHs by EPA 8270C SIM
Chlorinated Pesticides by EPA 8081A
PCB Congeners by EPA 8270C SIM
PCBs by EPA 8082
SVOCs by EPA 8270C
Organotins by Krone et al.
Grain Size by ASTM D4464
Total Organic Carbon by EPA 9060A
Total Solids by SM 2540B
TRPH by EPA 418.1 (M)

Data Summary

<u>Holding times</u>

All holding times were met.

<u>Calibration</u>

Frequency and control criteria for initial and continuing calibration verifications were met.

Return to Contents

Calscience Environmental Laboratories, Inc.

Blanks

Concentrations of target analytes in the method blank were found to be below reporting limits for all testing.

Reporting Limits

The Method Detection Limits were met. All sample results were evaluated to the MDL, and where applicable, □□flags were reported.

Laboratory Control Samples

A Laboratory Control Sample (LCS) analysis was performed for each applicable test. All parameters were within established control limits.

Matrix Spikes

Matrix spiking was performed at the required frequencies. Matrix spikes were performed on project and non-project samples. All parameters were within the acceptable control limits with the following exceptions.

For Metals by 6020 many of the metals recoveries were outside the established control limits. Given that the batch associated LCS/LCSD recoveries were within the acceptable limits, the data are released with no further action.

The TRPH by EPA 418.1 (M) the MS/MSD recoveries were above the acceptable limits. Given that the batch associated LCS/LCSD recoveries were within the acceptable limits, the data are released with no further action.

For Organotins by Krone et al. the recoveries were outside the acceptable control limits. Since the LCS/LCSD recoveries and RPDs were in control, the results are released with no further action.

For Chlorinated Pesticides by EPA 8081A several of the compounds were outside established control limits. Given that the batch associated LCS/LCSD recoveries were within the acceptable limits, the data are released with no further action.

For PCB Congeners by EPA 8270C SIM one congener recovery was high outside established control limits. Given that the batch associated LCS/LCSD recoveries were within the acceptable limits, the data are released with no further action.

Surrogates

Surrogate recoveries for all applicable tests and samples were within acceptable control limits.

Return to Contents

Acronyms

LCS□LCSD- Laboratory Control Sample□Laboratory Control Sample Duplicate
PDS□PDSD- Post Digestion Spi□e□Post Digestion Spi□e Duplicate
MS□MSD- Matri□Spi□e□Matri□Spi□e Duplicate
ME-Marginal E□ceedance
RPD- Relative Percent Difference

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received:	03/19/13
Work Order No:	13-03-1340
Preparation:	EPA 3050B
Method:	EPA 6020
Units:	mg/kg

Project: Shelter Isl. Boat Ramp

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-B**	**03/18/13 16:00**	**Sediment**	**ICP/MS 03**	**03/20/13**	**03/20/13 13:48**	**130320L02E**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Arsenic	4.48	0.148	0.129	1		Nickel	6.45	0.148	0.0748	1	
Cadmium	0.695	0.148	0.0845	1		Selenium	ND	0.148	0.108	1	
Chromium	18.9	0.148	0.0917	1		Silver	0.360	0.148	0.0462	1	
Copper	65.6	0.148	0.0619	1		Zinc	206	1.48	1.17	1	
Lead	33.8	0.148	0.0973	1							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-B**	**03/18/13 16:00**	**Sediment**	**ICP/MS 03**	**03/20/13**	**03/20/13 13:57**	**130320L02E**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Arsenic	5.41	0.147	0.129	1		Nickel	8.01	0.147	0.0746	1	
Cadmium	0.894	0.147	0.0843	1		Selenium	0.188	0.147	0.108	1	
Chromium	22.8	0.147	0.0914	1		Silver	0.405	0.147	0.0461	1	
Copper	75.2	0.147	0.0617	1		Zinc	214	1.47	1.17	1	
Lead	35.9	0.147	0.0971	1							

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-254-93**	**N/A**	**Solid**	**ICP/MS 03**	**03/20/13**	**03/20/13 13:24**	**130320L02E**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Arsenic	ND	0.100	0.0873	1		Nickel	ND	0.100	0.0506	1	
Cadmium	ND	0.100	0.0572	1		Selenium	ND	0.100	0.0731	1	
Chromium	ND	0.100	0.0621	1		Silver	ND	0.100	0.0313	1	
Copper	ND	0.100	0.0419	1		Zinc	ND	1.00	0.795	1	
Lead	ND	0.100	0.0659	1							

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	N/A
		Method:	EPA 9060A

Project: Shelter Isl. Boat Ramp

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-A**	**03/18/13 16:00**	**Sediment**	**TOC 5**	**03/21/13**	**03/22/13 10:17**	**D0321TOCL1**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
Carbon, Total Organic	0.75	0.074	0.018	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-A**	**03/18/13 16:00**	**Sediment**	**TOC 5**	**03/21/13**	**03/22/13 10:17**	**D0321TOCL1**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
Carbon, Total Organic	0.72	0.074	0.018	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-06-013-842**	**N/A**	**Solid**	**TOC 5**	**03/21/13**	**03/22/13 10:17**	**D0321TOCL1**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Carbon, Total Organic	ND	0.050	0.012	1		%

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Tierra Data Inc.	Date Received: 03/19/13
10110 W. Lilac Road	Work Order No: 13-03-1340
Escondido, CA 92026-5309	Preparation: N/A
	Method: SM 2540 B (M)

Project: Shelter Isl. Boat Ramp

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-A**	**03/18/13 16:00**	**Sediment**	**N/A**	**03/20/13**	**03/20/13 15:30**	**D0320TSB1**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Solids, Total	67.7	0.100	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-A**	**03/18/13 16:00**	**Sediment**	**N/A**	**03/20/13**	**03/20/13 15:30**	**D0320TSB1**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Solids, Total	67.9	0.100	0.100	1		%

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-05-019-2,185**	**N/A**	**Solid**	**N/A**	**03/20/13**	**03/20/13 15:30**	**D0320TSB1**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Solids, Total	ND	0.100	0.100	1		%

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	Extraction
		Method:	EPA 418.1M

Project: Shelter Isl. Boat Ramp

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-A**	**03/18/13 16:00**	**Sediment**	**IR 2**	**03/19/13**	**03/19/13 17:00**	**130319L01**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
TRPH	84	15	12	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-A**	**03/18/13 16:00**	**Sediment**	**IR 2**	**03/19/13**	**03/19/13 17:00**	**130319L01**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
TRPH	48	15	12	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-015-1,913**	**N/A**	**Solid**	**IR 2**	**03/19/13**	**03/19/13 17:00**	**130319L01**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
TRPH	ND	10	8.3	1		mg/kg

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)
		Units:	mg/kg
Project: Shelter Isl. Boat Ramp			Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-A**	**03/18/13 16:00**	**Sediment**	**GC 46**	**03/19/13**	**03/20/13 15:54**	**130319B07**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
C6	0.93	7.4	0.31	1	J	C21-C22	ND	7.4	2.6	1	
C7	ND	7.4	3.4	1		C23-C24	ND	7.4	2.5	1	
C8	ND	7.4	3.6	1		C25-C28	3.8	7.4	3.6	1	J
C9-C10	ND	7.4	4.6	1		C29-C32	6.1	7.4	3.5	1	J
C11-C12	ND	7.4	2.6	1		C33-C36	6.2	7.4	3.8	1	J
C13-C14	ND	7.4	2.6	1		C37-C40	5.1	7.4	2.4	1	J
C15-C16	ND	7.4	2.7	1		C41-C44	ND	7.4	2.2	1	
C17-C18	ND	7.4	2.7	1		C6-C44 Total	22	7.4	7.1	1	
C19-C20	ND	7.4	2.7	1							

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	87	61-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-A**	**03/18/13 16:00**	**Sediment**	**GC 46**	**03/19/13**	**03/20/13 16:11**	**130319B07**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
C6	0.69	7.4	0.31	1	J	C21-C22	ND	7.4	2.6	1	
C7	ND	7.4	3.4	1		C23-C24	ND	7.4	2.5	1	
C8	ND	7.4	3.6	1		C25-C28	ND	7.4	3.6	1	
C9-C10	ND	7.4	4.5	1		C29-C32	ND	7.4	3.5	1	
C11-C12	ND	7.4	2.6	1		C33-C36	ND	7.4	3.8	1	
C13-C14	ND	7.4	2.6	1		C37-C40	2.4	7.4	2.3	1	J
C15-C16	ND	7.4	2.6	1		C41-C44	ND	7.4	2.2	1	
C17-C18	ND	7.4	2.6	1		C6-C44 Total	ND	7.4	7.1	1	
C19-C20	ND	7.4	2.7	1							

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	86	61-145	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received:	03/19/13
Work Order No:	13-03-1340
Preparation:	EPA 3550B
Method:	EPA 8015B (M)
Units:	mg/kg

Project: Shelter Isl. Boat Ramp

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-15-490-252**	**N/A**	**Solid**	**GC 46**	**03/19/13**	**03/20/13 09:33**	**130319B07**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
C6	ND	5.0	0.21	1		C21-C22	ND	5.0	1.8	1	
C7	ND	5.0	2.3	1		C23-C24	ND	5.0	1.7	1	
C8	ND	5.0	2.4	1		C25-C28	ND	5.0	2.4	1	
C9-C10	ND	5.0	3.1	1		C29-C32	ND	5.0	2.4	1	
C11-C12	ND	5.0	1.7	1		C33-C36	ND	5.0	2.6	1	
C13-C14	ND	5.0	1.8	1		C37-C40	ND	5.0	1.6	1	
C15-C16	ND	5.0	1.8	1		C41-C44	ND	5.0	1.5	1	
C17-C18	ND	5.0	1.8	1		C6-C44 Total	ND	5.0	4.8	1	
C19-C20	ND	5.0	1.8	1							

Surrogates:	REC (%)	Control Limits	Qual
n-Octacosane	86	61-145	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 7471A Total
		Method:	EPA 7471A

Project: Shelter Isl. Boat Ramp

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-A**	**03/18/13 16:00**	**Sediment**	**Mercury**	**03/20/13**	**03/20/13 13:11**	**130320L01E**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
Mercury	0.123	0.0296	0.00869	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-A**	**03/18/13 16:00**	**Sediment**	**Mercury**	**03/20/13**	**03/20/13 13:18**	**130320L01E**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Units
Mercury	0.118	0.0295	0.00866	1		mg/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-452-356**	**N/A**	**Solid**	**Mercury**	**03/20/13**	**03/20/13 12:58**	**130320L01E**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Units
Mercury	ND	0.0200	0.00588	1		mg/kg

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	N/A
		Method:	ASTM D4464 (M)
		Units:	%

Project: Shelter Isl. Boat Ramp

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument		Date/Time Started	QC Batch ID
SS-Comp-A-Grain Size	**13-03-1340-3-A**	**03/18/13 16:00**	**Sediment**	**LPSA 1**	**N/A**	**03/20/13 14:58**	

Parameter	Result	Qual	Parameter	Result	Qual
Clay (less than 0.00391mm)	99.90		Medium Sand (0.25 to 0.5mm)	ND	
Silt (0.00391 to 0.0625mm)	ND		Coarse Sand (0.5 to 1mm)	ND	
Total Silt and Clay (0 to 0.0625mm)	99.90		Very Coarse Sand (1 to 2mm)	ND	
Very Fine Sand (0.0625 to 0.125mm)	ND		Gravel (greater than 2mm)	0.10	
Fine Sand (0.125 to 0.25mm)	ND				

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3545
		Method:	EPA 8081A
		Units:	ug/kg
Project: Shelter Isl. Boat Ramp			Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-B**	**03/18/13 16:00**	**Sediment**	**GC 51**	**03/20/13**	**03/21/13 15:52**	**130320L07**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Aldrin	ND	1.5	0.46	1		Endosulfan I	ND	1.5	0.39	1	
Alpha-BHC	ND	1.5	0.48	1		Endosulfan II	ND	1.5	0.41	1	
Beta-BHC	ND	1.5	0.39	1		Endosulfan Sulfate	ND	1.5	0.50	1	
Delta-BHC	ND	1.5	0.38	1		Endrin	ND	1.5	0.53	1	
Gamma-BHC	ND	1.5	0.51	1		Endrin Aldehyde	ND	1.5	0.36	1	
Chlordane	ND	15	4.8	1		Endrin Ketone	ND	1.5	0.51	1	
Dieldrin	ND	1.5	0.49	1		Heptachlor	ND	1.5	0.47	1	
Trans-nonachlor	ND	1.5	0.43	1		Heptachlor Epoxide	ND	1.5	0.53	1	
2,4'-DDD	ND	1.5	0.50	1		Methoxychlor	ND	1.5	0.48	1	
2,4'-DDE	ND	1.5	0.45	1		Toxaphene	ND	30	9.4	1	
2,4'-DDT	ND	1.5	0.44	1		Alpha Chlordane	ND	1.5	0.47	1	
4,4'-DDD	ND	1.5	0.47	1		Gamma Chlordane	ND	1.5	0.47	1	
4,4'-DDE	2.8	1.5	0.44	1		Cis-nonachlor	2.1	1.5	0.43	1	
4,4'-DDT	ND	1.5	0.49	1		Oxychlordane	ND	1.5	0.42	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	109	50-130		Decachlorobiphenyl	92	50-130	

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Project: Shelter Isl. Boat Ramp

Date Received:	03/19/13
Work Order No:	13-03-1340
Preparation:	EPA 3545
Method:	EPA 8081A
Units:	ug/kg

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-B**	**03/18/13 16:00**	**Sediment**	**GC 51**	**03/20/13**	**03/21/13 16:07**	**130320L07**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Aldrin	ND	1.5	0.46	1		Endosulfan I	ND	1.5	0.39	1	
Alpha-BHC	ND	1.5	0.48	1		Endosulfan II	ND	1.5	0.41	1	
Beta-BHC	ND	1.5	0.39	1		Endosulfan Sulfate	ND	1.5	0.50	1	
Delta-BHC	ND	1.5	0.38	1		Endrin	ND	1.5	0.53	1	
Gamma-BHC	ND	1.5	0.51	1		Endrin Aldehyde	ND	1.5	0.36	1	
Chlordane	ND	15	4.8	1		Endrin Ketone	ND	1.5	0.51	1	
Dieldrin	ND	1.5	0.49	1		Heptachlor	ND	1.5	0.47	1	
Trans-nonachlor	ND	1.5	0.42	1		Heptachlor Epoxide	ND	1.5	0.52	1	
2,4'-DDD	ND	1.5	0.50	1		Methoxychlor	ND	1.5	0.48	1	
2,4'-DDE	ND	1.5	0.45	1		Toxaphene	ND	29	9.3	1	
2,4'-DDT	ND	1.5	0.44	1		Alpha Chlordane	ND	1.5	0.47	1	
4,4'-DDD	ND	1.5	0.47	1		Gamma Chlordane	ND	1.5	0.47	1	
4,4'-DDE	4.8	1.5	0.44	1		Cis-nonachlor	2.1	1.5	0.43	1	
4,4'-DDT	ND	1.5	0.49	1		Oxychlordane	ND	1.5	0.41	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	108	50-130		Decachlorobiphenyl	84	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-858-196**	**N/A**	**Solid**	**GC 51**	**03/20/13**	**03/21/13 15:09**	**130320L07**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Aldrin	ND	1.0	0.31	1		Endosulfan I	ND	1.0	0.26	1	
Alpha-BHC	ND	1.0	0.32	1		Endosulfan II	ND	1.0	0.28	1	
Beta-BHC	ND	1.0	0.26	1		Endosulfan Sulfate	ND	1.0	0.34	1	
Delta-BHC	ND	1.0	0.26	1		Endrin	ND	1.0	0.36	1	
Gamma-BHC	ND	1.0	0.35	1		Endrin Aldehyde	ND	1.0	0.24	1	
Chlordane	ND	10	3.3	1		Endrin Ketone	ND	1.0	0.35	1	
Dieldrin	ND	1.0	0.33	1		Heptachlor	ND	1.0	0.32	1	
Trans-nonachlor	ND	1.0	0.29	1		Heptachlor Epoxide	ND	1.0	0.36	1	
2,4'-DDD	ND	1.0	0.34	1		Methoxychlor	ND	1.0	0.32	1	
2,4'-DDE	ND	1.0	0.31	1		Toxaphene	ND	20	6.3	1	
2,4'-DDT	ND	1.0	0.30	1		Alpha Chlordane	ND	1.0	0.32	1	
4,4'-DDD	ND	1.0	0.32	1		Gamma Chlordane	ND	1.0	0.32	1	
4,4'-DDE	ND	1.0	0.30	1		Cis-nonachlor	ND	1.0	0.29	1	
4,4'-DDT	ND	1.0	0.33	1		Oxychlordane	ND	1.0	0.28	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	113	50-130		Decachlorobiphenyl	103	50-130	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3545
		Method:	EPA 8082
		Units:	ug/kg
Project: Shelter Isl. Boat Ramp			Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-B**	**03/18/13 16:00**	**Sediment**	**GC 58**	**03/26/13**	**03/27/13 13:24**	**130326L03**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Aroclor-1016	ND	15	4.2	1		Aroclor-1248	ND	15	4.3	1	
Aroclor-1221	ND	15	3.8	1		Aroclor-1254	22	15	3.6	1	
Aroclor-1232	ND	15	3.2	1		Aroclor-1260	33	15	3.4	1	
Aroclor-1242	ND	15	3.7	1		Aroclor-1262	ND	15	3.6	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	80	50-130		Decachlorobiphenyl	104	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-B**	**03/18/13 16:00**	**Sediment**	**GC 58**	**03/26/13**	**03/27/13 14:18**	**130326L03**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Aroclor-1016	ND	15	4.2	1		Aroclor-1248	ND	15	4.2	1	
Aroclor-1221	ND	15	3.8	1		Aroclor-1254	25	15	3.5	1	
Aroclor-1232	ND	15	3.2	1		Aroclor-1260	17	15	3.4	1	
Aroclor-1242	ND	15	3.7	1		Aroclor-1262	ND	15	3.6	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	95	50-130		Decachlorobiphenyl	115	50-130	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-565-328**	**N/A**	**Solid**	**GC 58**	**03/26/13**	**03/27/13 12:30**	**130326L03**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Aroclor-1016	ND	10	2.9	1		Aroclor-1248	ND	10	2.9	1	
Aroclor-1221	ND	10	2.6	1		Aroclor-1254	ND	10	2.4	1	
Aroclor-1232	ND	10	2.1	1		Aroclor-1260	ND	10	2.3	1	
Aroclor-1242	ND	10	2.5	1		Aroclor-1262	ND	10	2.5	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,5,6-Tetrachloro-m-Xylene	106	50-130		Decachlorobiphenyl	104	50-130	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.	Date Received: 03/19/13
10110 W. Lilac Road	Work Order No: 13-03-1340
Escondido, CA 92026-5309	Preparation: EPA 3545
	Method: EPA 8270C SIM
	Units: ug/kg
Project: Shelter Isl. Boat Ramp	Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-B**	**03/18/13 16:00**	**Sediment**	**GC/MS MM**	**03/20/13**	**03/21/13 15:35**	**130320L09**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual
1-Methylnaphthalene	ND	15	5.5	1	
2,4,5-Trichlorophenol	ND	15	4.8	1	
2,4,6-Trichlorophenol	ND	15	5.3	1	
2,4-Dichlorophenol	ND	15	4.0	1	
2,4-Dimethylphenol	ND	15	4.5	1	
2,4-Dinitrophenol	ND	740	80	1	
2-Chlorophenol	ND	15	5.0	1	
2-Methylnaphthalene	ND	15	5.3	1	
2-Methylphenol	ND	15	7.8	1	
2-Nitrophenol	ND	15	3.5	1	
3/4-Methylphenol	ND	15	3.8	1	
4,6-Dinitro-2-Methylphenol	ND	740	100	1	
4-Chloro-3-Methylphenol	ND	15	5.2	1	
4-Nitrophenol	ND	740	95	1	
Acenaphthene	ND	15	6.9	1	
Acenaphthylene	ND	15	6.7	1	
Anthracene	8.6	15	8.0	1	J
Benzo (a) Anthracene	26	15	6.9	1	
Benzo (a) Pyrene	50	15	7.5	1	
Benzo (b) Fluoranthene	49	15	7.6	1	
Benzo (g,h,i) Perylene	69	15	6.2	1	
Benzo (k) Fluoranthene	46	15	9.7	1	
Bis(2-Ethylhexyl) Phthalate	410	15	6.0	1	
Butyl Benzyl Phthalate	38	15	6.5	1	
Chrysene	32	15	7.5	1	
Di-n-Butyl Phthalate	10	15	7.6	1	J
Di-n-Octyl Phthalate	ND	15	7.0	1	
Dibenz (a,h) Anthracene	7.1	15	5.5	1	J
Diethyl Phthalate	ND	15	7.4	1	
Dimethyl Phthalate	380	15	7.9	1	
Fluoranthene	33	15	8.6	1	
Fluorene	ND	15	7.5	1	
Indeno (1,2,3-c,d) Pyrene	44	15	6.7	1	
N-Nitrosodimethylamine	ND	15	5.2	1	
Naphthalene	ND	15	5.6	1	
Pentachlorophenol	ND	740	1.9	1	
Phenanthrene	20	15	8.5	1	
Phenol	27	15	5.4	1	
Pyrene	49	15	7.9	1	
1,6,7-Trimethylnaphthalene	ND	15	4.5	1	
2,3,4,6-Tetrachlorophenol	ND	15	5.8	1	
2,6-Dichlorophenol	ND	15	8.8	1	
Benzoic Acid	ND	150	18	1	
DCPA	ND	15	3.5	1	
Dibenzothiophene	ND	15	8.6	1	
Perthane	ND	15	1.9	1	
1-Methylphenanthrene	ND	15	5.3	1	
Benzo (e) Pyrene	37	15	3.6	1	
Perylene	18	15	5.3	1	
Biphenyl	ND	15	6.0	1	
2,6-Dimethylnaphthalene	16	15	5.0	1	
Isophorone	ND	150	18	1	

Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	64	32-143	
2-Fluorophenol	64	15-138	
p-Terphenyl-d14	69	34-148	
2-Fluorobiphenyl	65	14-146	
Nitrobenzene-d5	71	18-162	
Phenol-d6	57	17-141	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.	Date Received: 03/19/13
10110 W. Lilac Road	Work Order No: 13-03-1340
Escondido, CA 92026-5309	Preparation: EPA 3545
	Method: EPA 8270C SIM
	Units: ug/kg
Project: Shelter Isl. Boat Ramp	Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-B**	**03/18/13 16:00**	**Sediment**	**GC/MS MM**	**03/20/13**	**03/21/13 16:01**	**130320L09**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
1-Methylnaphthalene	ND	15	5.5	1		Di-n-Octyl Phthalate	ND	15	7.0	1	
2,4,5-Trichlorophenol	ND	15	4.8	1		Dibenz (a,h) Anthracene	6.5	15	5.5	1	J
2,4,6-Trichlorophenol	ND	15	5.3	1		Diethyl Phthalate	ND	15	7.3	1	
2,4-Dichlorophenol	ND	15	3.9	1		Dimethyl Phthalate	600	15	7.9	1	
2,4-Dimethylphenol	ND	15	4.5	1		Fluoranthene	29	15	8.6	1	
2,4-Dinitrophenol	ND	740	79	1		Fluorene	ND	15	7.5	1	
2-Chlorophenol	ND	15	5.0	1		Indeno (1,2,3-c,d) Pyrene	45	15	6.7	1	
2-Methylnaphthalene	8.5	15	5.3	1	J	N-Nitrosodimethylamine	ND	15	5.2	1	
2-Methylphenol	ND	15	7.7	1		Naphthalene	7.6	15	5.6	1	J
2-Nitrophenol	ND	15	3.5	1		Pentachlorophenol	ND	740	1.9	1	
3/4-Methylphenol	ND	15	3.8	1		Phenanthrene	11	15	8.5	1	J
4,6-Dinitro-2-Methylphenol	ND	740	100	1		Phenol	34	15	5.4	1	
4-Chloro-3-Methylphenol	ND	15	5.2	1		Pyrene	46	15	7.9	1	
4-Nitrophenol	ND	740	94	1		1,6,7-Trimethylnaphthalene	ND	15	4.5	1	
Acenaphthene	ND	15	6.9	1		2,3,4,6-Tetrachlorophenol	ND	15	5.7	1	
Acenaphthylene	9.3	15	6.7	1	J	2,6-Dichlorophenol	ND	15	8.7	1	
Anthracene	11	15	8.0	1	J	Benzoic Acid	ND	150	18	1	
Benzo (a) Anthracene	29	15	6.9	1		DCPA	ND	15	3.5	1	
Benzo (a) Pyrene	57	15	7.4	1		Dibenzothiophene	ND	15	8.5	1	
Benzo (b) Fluoranthene	59	15	7.6	1		Perthane	ND	15	1.9	1	
Benzo (g,h,i) Perylene	71	15	6.2	1		1-Methylphenanthrene	ND	15	5.3	1	
Benzo (k) Fluoranthene	45	15	9.7	1		Benzo (e) Pyrene	41	15	3.6	1	
Bis(2-Ethylhexyl) Phthalate	310	15	6.0	1		Perylene	16	15	5.2	1	
Butyl Benzyl Phthalate	40	15	6.5	1		Biphenyl	ND	15	6.0	1	
Chrysene	33	15	7.5	1		2,6-Dimethylnaphthalene	21	15	5.0	1	
Di-n-Butyl Phthalate	16	15	7.6	1		Isophorone	ND	150	18	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	70	32-143		2-Fluorobiphenyl	69	14-146	
2-Fluorophenol	74	15-138		Nitrobenzene-d5	75	18-162	
p-Terphenyl-d14	76	34-148		Phenol-d6	62	17-141	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3545
		Method:	EPA 8270C SIM
		Units:	ug/kg
Project: Shelter Isl. Boat Ramp			Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-256-23**	**N/A**	**Solid**	**GC/MS MM**	**03/20/13**	**03/21/13 12:59**	**130320L09**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
1-Methylnaphthalene	ND	10	3.7	1		Di-n-Octyl Phthalate	ND	10	4.7	1	
2,4,5-Trichlorophenol	ND	10	3.3	1		Dibenz (a,h) Anthracene	ND	10	3.7	1	
2,4,6-Trichlorophenol	ND	10	3.6	1		Diethyl Phthalate	ND	10	5.0	1	
2,4-Dichlorophenol	ND	10	2.7	1		Dimethyl Phthalate	ND	10	5.4	1	
2,4-Dimethylphenol	ND	10	3.1	1		Fluoranthene	ND	10	5.8	1	
2,4-Dinitrophenol	ND	500	54	1		Fluorene	ND	10	5.1	1	
2-Chlorophenol	ND	10	3.4	1		Indeno (1,2,3-c,d) Pyrene	ND	10	4.6	1	
2-Methylnaphthalene	ND	10	3.6	1		N-Nitrosodimethylamine	ND	10	3.5	1	
2-Methylphenol	ND	10	5.3	1		Naphthalene	ND	10	3.8	1	
2-Nitrophenol	ND	10	2.4	1		Pentachlorophenol	ND	500	1.3	1	
3/4-Methylphenol	ND	10	2.6	1		Phenanthrene	ND	10	5.8	1	
4,6-Dinitro-2-Methylphenol	ND	500	69	1		Phenol	ND	10	3.7	1	
4-Chloro-3-Methylphenol	ND	10	3.5	1		Pyrene	ND	10	5.4	1	
4-Nitrophenol	ND	500	64	1		1,6,7-Trimethylnaphthalene	ND	10	3.0	1	
Acenaphthene	ND	10	4.7	1		2,3,4,6-Tetrachlorophenol	ND	10	3.9	1	
Acenaphthylene	ND	10	4.5	1		2,6-Dichlorophenol	ND	10	5.9	1	
Anthracene	ND	10	5.4	1		Benzoic Acid	ND	100	12	1	
Benzo (a) Anthracene	ND	10	4.7	1		DCPA	ND	10	2.4	1	
Benzo (a) Pyrene	ND	10	5.1	1		Dibenzothiophene	ND	10	5.8	1	
Benzo (b) Fluoranthene	ND	10	5.2	1		Perthane	ND	10	1.3	1	
Benzo (g,h,i) Perylene	ND	10	4.2	1		1-Methylphenanthrene	ND	10	3.6	1	
Benzo (k) Fluoranthene	ND	10	6.6	1		Benzo (e) Pyrene	ND	10	2.4	1	
Bis(2-Ethylhexyl) Phthalate	ND	10	4.1	1		Perylene	ND	10	3.6	1	
Butyl Benzyl Phthalate	ND	10	4.4	1		Biphenyl	ND	10	4.1	1	
Chrysene	ND	10	5.1	1		2,6-Dimethylnaphthalene	ND	10	3.4	1	
Di-n-Butyl Phthalate	ND	10	5.1	1		Isophorone	ND	100	12	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2,4,6-Tribromophenol	45	32-143		2-Fluorobiphenyl	64	14-146	
2-Fluorophenol	61	15-138		Nitrobenzene-d5	59	18-162	
p-Terphenyl-d14	65	34-148		Phenol-d6	62	17-141	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

7440 Lincoln Way, Garden Grove, CA 92841-1427 · TEL:(714) 895-5494 · FAX: (714) 894-7501

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3545
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Shelter Isl. Boat Ramp			Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-B**	**03/18/13 16:00**	**Sediment**	**GC/MS HHH**	**03/20/13**	**03/21/13 12:53**	**130320L08**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
PCB003	ND	0.74	0.18	1		PCB126	ND	0.74	0.20	1	
PCB008	ND	0.74	0.13	1		PCB128	0.62	0.74	0.15	1	J
PCB018	ND	0.74	0.23	1		PCB132	ND	0.74	0.24	1	
PCB028	ND	0.74	0.15	1		PCB138/158	2.3	1.5	0.30	1	
PCB031	ND	0.74	0.17	1		PCB141	0.32	0.74	0.16	1	J
PCB033	ND	0.74	0.16	1		PCB149	1.1	0.74	0.13	1	
PCB037	ND	0.74	0.19	1		PCB151	0.29	0.74	0.15	1	J
PCB044	0.56	0.74	0.19	1	J	PCB153	2.2	0.74	0.15	1	
PCB049	0.30	0.74	0.17	1	J	PCB156	ND	0.74	0.14	1	
PCB052	0.75	0.74	0.14	1		PCB157	0.35	0.74	0.14	1	J
PCB056	ND	0.74	0.20	1		PCB167	ND	0.74	0.15	1	
PCB060	ND	0.74	0.16	1		PCB168	ND	0.74	0.13	1	
PCB066	0.49	0.74	0.13	1	J	PCB169	ND	0.74	0.12	1	
PCB070	0.49	0.74	0.12	1	J	PCB170	0.46	0.74	0.14	1	J
PCB074	0.25	0.74	0.14	1	J	PCB174	0.34	0.74	0.16	1	J
PCB077	ND	0.74	0.14	1		PCB177	0.18	0.74	0.18	1	J
PCB081	ND	0.74	0.18	1		PCB180	0.86	0.74	0.090	1	
PCB087	0.58	0.74	0.15	1	J	PCB183	0.20	0.74	0.16	1	J
PCB095	1.0	0.74	0.25	1		PCB184	ND	0.74	0.083	1	
PCB097	0.63	0.74	0.20	1	J	PCB187	0.63	0.74	0.15	1	J
PCB099	0.75	0.74	0.13	1		PCB189	ND	0.74	0.13	1	
PCB101	1.6	0.74	0.12	1		PCB194	0.32	0.74	0.14	1	J
PCB105	1.2	0.74	0.15	1		PCB195	ND	0.74	0.078	1	
PCB110	1.5	0.74	0.15	1		PCB200	ND	0.74	0.14	1	
PCB114	ND	0.74	0.15	1		PCB201	ND	0.74	0.084	1	
PCB118	2.1	0.74	0.20	1		PCB203	ND	0.74	0.16	1	
PCB119	ND	0.74	0.13	1		PCB206	ND	0.74	0.12	1	
PCB123	ND	0.74	0.13	1		PCB209	ND	0.74	0.16	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	93	50-125		p-Terphenyl-d14	76	50-125	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3545
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Shelter Isl. Boat Ramp			Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-B**	**03/18/13 16:00**	**Sediment**	**GC/MS HHH**	**03/20/13**	**03/21/13 13:46**	**130320L08**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
PCB003	ND	0.74	0.18	1		PCB126	ND	0.74	0.20	1	
PCB008	ND	0.74	0.12	1		PCB128	0.55	0.74	0.15	1	J
PCB018	ND	0.74	0.23	1		PCB132	ND	0.74	0.24	1	
PCB028	0.15	0.74	0.15	1	J	PCB138/158	2.2	1.5	0.30	1	
PCB031	ND	0.74	0.17	1		PCB141	0.23	0.74	0.16	1	J
PCB033	ND	0.74	0.16	1		PCB149	1.2	0.74	0.13	1	
PCB037	ND	0.74	0.19	1		PCB151	0.25	0.74	0.15	1	J
PCB044	0.49	0.74	0.19	1	J	PCB153	2.3	0.74	0.15	1	
PCB049	0.33	0.74	0.17	1	J	PCB156	ND	0.74	0.14	1	
PCB052	0.72	0.74	0.14	1	J	PCB157	0.36	0.74	0.14	1	J
PCB056	ND	0.74	0.20	1		PCB167	ND	0.74	0.15	1	
PCB060	ND	0.74	0.16	1		PCB168	ND	0.74	0.13	1	
PCB066	0.60	0.74	0.13	1	J	PCB169	ND	0.74	0.12	1	
PCB070	0.51	0.74	0.12	1	J	PCB170	0.52	0.74	0.14	1	J
PCB074	0.24	0.74	0.14	1	J	PCB174	0.31	0.74	0.16	1	J
PCB077	ND	0.74	0.14	1		PCB177	0.25	0.74	0.18	1	J
PCB081	ND	0.74	0.18	1		PCB180	0.73	0.74	0.090	1	J
PCB087	0.58	0.74	0.15	1	J	PCB183	0.22	0.74	0.16	1	J
PCB095	1.2	0.74	0.24	1		PCB184	ND	0.74	0.082	1	
PCB097	0.88	0.74	0.20	1		PCB187	0.62	0.74	0.15	1	J
PCB099	0.75	0.74	0.13	1		PCB189	ND	0.74	0.13	1	
PCB101	1.6	0.74	0.12	1		PCB194	0.41	0.74	0.14	1	J
PCB105	0.83	0.74	0.15	1		PCB195	ND	0.74	0.078	1	
PCB110	1.5	0.74	0.15	1		PCB200	ND	0.74	0.14	1	
PCB114	ND	0.74	0.15	1		PCB201	ND	0.74	0.084	1	
PCB118	2.0	0.74	0.20	1		PCB203	ND	0.74	0.16	1	
PCB119	ND	0.74	0.13	1		PCB206	ND	0.74	0.12	1	
PCB123	ND	0.74	0.13	1		PCB209	ND	0.74	0.16	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	79	50-125		p-Terphenyl-d14	75	50-125	

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.		Date Received:	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3545
		Method:	EPA 8270C SIM PCB Congeners
		Units:	ug/kg
Project: Shelter Isl. Boat Ramp			Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-14-341-92**	**N/A**	**Solid**	**GC/MS HHH**	**03/20/13**	**03/21/13 11:05**	**130320L08**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
PCB003	ND	0.50	0.12	1		PCB126	ND	0.50	0.14	1	
PCB008	ND	0.50	0.085	1		PCB128	ND	0.50	0.10	1	
PCB018	ND	0.50	0.16	1		PCB132	ND	0.50	0.17	1	
PCB028	ND	0.50	0.099	1		PCB138/158	ND	1.0	0.20	1	
PCB031	ND	0.50	0.12	1		PCB141	ND	0.50	0.11	1	
PCB033	ND	0.50	0.11	1		PCB149	ND	0.50	0.089	1	
PCB037	ND	0.50	0.13	1		PCB151	ND	0.50	0.10	1	
PCB044	ND	0.50	0.13	1		PCB153	ND	0.50	0.10	1	
PCB049	ND	0.50	0.12	1		PCB156	ND	0.50	0.098	1	
PCB052	ND	0.50	0.097	1		PCB157	ND	0.50	0.096	1	
PCB056	ND	0.50	0.14	1		PCB167	ND	0.50	0.10	1	
PCB060	ND	0.50	0.11	1		PCB168	ND	0.50	0.086	1	
PCB066	ND	0.50	0.091	1		PCB169	ND	0.50	0.082	1	
PCB070	ND	0.50	0.082	1		PCB170	ND	0.50	0.093	1	
PCB074	ND	0.50	0.094	1		PCB174	ND	0.50	0.11	1	
PCB077	ND	0.50	0.097	1		PCB177	ND	0.50	0.12	1	
PCB081	ND	0.50	0.12	1		PCB180	ND	0.50	0.061	1	
PCB087	ND	0.50	0.10	1		PCB183	ND	0.50	0.11	1	
PCB095	ND	0.50	0.17	1		PCB184	ND	0.50	0.056	1	
PCB097	ND	0.50	0.14	1		PCB187	ND	0.50	0.10	1	
PCB099	ND	0.50	0.085	1		PCB189	ND	0.50	0.086	1	
PCB101	ND	0.50	0.081	1		PCB194	ND	0.50	0.096	1	
PCB105	ND	0.50	0.10	1		PCB195	ND	0.50	0.053	1	
PCB110	ND	0.50	0.10	1		PCB200	ND	0.50	0.093	1	
PCB114	ND	0.50	0.10	1		PCB201	ND	0.50	0.057	1	
PCB118	ND	0.50	0.13	1		PCB203	ND	0.50	0.11	1	
PCB119	ND	0.50	0.087	1		PCB206	ND	0.50	0.083	1	
PCB123	ND	0.50	0.087	1		PCB209	ND	0.50	0.11	1	

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
2-Fluorobiphenyl	103	50-125		p-Terphenyl-d14	116	50-125	

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

Tierra Data Inc.	Date Received: 03/19/13
10110 W. Lilac Road	Work Order No: 13-03-1340
Escondido, CA 92026-5309	Preparation: EPA 3550B (M)
	Method: Organotins by Krone et al.
	Units: ug/kg
Project: Shelter Isl. Boat Ramp	Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A	**13-03-1340-1-B**	**03/18/13 16:00**	**Sediment**	**GC/MS JJJ**	**03/20/13**	**03/21/13 18:41**	**130320L06**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Dibutyltin	38	4.4	0.97	1		Tetrabutyltin	ND	4.4	1.1	1	
Monobutyltin	ND	4.4	0.96	1		Tributyltin	ND	4.4	0.85	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	64	48-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SS-Comp-A-Dup	**13-03-1340-2-B**	**03/18/13 16:00**	**Sediment**	**GC/MS JJJ**	**03/20/13**	**03/21/13 19:11**	**130320L06**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.
-Results are reported on a dry weight basis.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Dibutyltin	29	4.4	0.96	1		Tetrabutyltin	ND	4.4	1.1	1	
Monobutyltin	ND	4.4	0.96	1		Tributyltin	ND	4.4	0.85	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	62	48-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-07-016-1,014**	**N/A**	**Solid**	**GC/MS JJJ**	**03/20/13**	**03/22/13 09:36**	**130320L06**

Comment(s): -Results were evaluated to the MDL (DL), concentrations >= to the MDL (DL) but < RL (LOQ), if found, are qualified with a "J" flag.

Parameter	Result	RL	MDL	DF	Qual	Parameter	Result	RL	MDL	DF	Qual
Dibutyltin	ND	3.0	0.65	1		Tetrabutyltin	ND	3.0	0.77	1	
Monobutyltin	ND	3.0	0.65	1		Tributyltin	ND	3.0	0.58	1	

Surrogates:	REC (%)	Control Limits	Qual
Tripentyltin	55	48-126	

Return to Contents

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: 03/19/13
Work Order No: 13-03-1340
Preparation: EPA 3050B
Method: EPA 6020

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-03-1346-1	**Filter**	**ICP/MS 03**	**03/20/13**	**03/20/13**	**130320S02**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	ND	600.0	730.6	122	640.7	107	80-120	13	0-20	3
Cadmium	ND	600.0	719.8	120	642.3	107	80-120	11	0-20	
Chromium	ND	600.0	659.4	110	604.7	101	80-120	9	0-20	
Copper	202.7	600.0	926.2	121	859.3	109	80-120	7	0-20	3
Lead	205.7	600.0	931.1	121	822.3	103	80-120	12	0-20	3
Nickel	ND	600.0	699.6	117	626.5	104	80-120	11	0-20	
Selenium	ND	600.0	730.5	122	705.4	118	80-120	4	0-20	3
Silver	ND	300.0	352.8	118	323.3	108	80-120	9	0-20	
Zinc	1036	600.0	1049	2	925.2	0	80-120	13	0-20	3

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - PDS / PDSD

Tierra Data Inc.		Date Received	03/19/13
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3050B
		Method:	EPA 6020

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	PDS/PDSD Batch Number
13-03-1346-1	**Filter**	**ICP/MS 03**	**03/20/13**	**03/20/13**	**130320S02**

Parameter	SAMPLE_CONC	SPIKE_ADDED	PDS_CONC	PDS %REC	%REC CL	Qualifiers
Arsenic	ND	600.0	652.3	109	75-125	
Cadmium	ND	600.0	646.1	108	75-125	
Chromium	ND	600.0	606.1	101	75-125	
Copper	202.7	600.0	843.3	107	75-125	
Lead	205.7	600.0	814.0	101	75-125	
Nickel	ND	600.0	619.6	103	75-125	
Selenium	ND	600.0	674.4	112	75-125	
Silver	ND	300.0	306.3	102	75-125	
Zinc	1036	600.0	989.3	0	75-125	5

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: 03/19/13
Work Order No: 13-03-1340
Preparation: N/A
Method: EPA 9060A

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SS-Comp-A	**Sediment**	**TOC 5**	**03/21/13**	**03/22/13**	**D0321TOCS1**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	0.51	3.0	3.1	85	3.1	85	75-125	0	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: 03/19/13
Work Order No: 13-03-1340
Preparation: N/A
Method: SM 2540 B (M)

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
SS-Comp-A-Dup	**Sediment**	**N/A**	**03/20/13**	**03/20/13**	**D0320TSD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Solids, Total	67.9	67.8	0	0-10	

RPD - Relative Percent Difference , CL - Control Limit

Return to Contents

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received:	03/19/13
Work Order No:	13-03-1340
Preparation:	Extraction
Method:	EPA 418.1M

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-03-1215-1	**Solid**	**IR 2**	**03/19/13**	**03/19/13**	**130319S01**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	69.39	100.0	156.4	87	156.2	87	55-135	0	0-30	

RPD - Relative Percent Difference , CL - Control Limit

Return to Contents

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received:	03/19/13
Work Order No:	13-03-1340
Preparation:	EPA 3550B
Method:	EPA 8015B (M)

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
13-03-1251-2	**Solid**	**GC 46**	**03/19/13**	**03/20/13**	**130319S07**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	ND	400.0	327.8	82	347.7	87	64-130	6	0-15	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: 03/19/13
Work Order No: 13-03-1340
Preparation: EPA 7471A Total
Method: EPA 7471A

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SS-Comp-A	**Sediment**	**Mercury**	**03/20/13**	**03/20/13**	**130320S01**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.08318	0.8350	0.8530	92	0.8541	92	76-136	0	0-16	

RPD - Relative Percent Difference , CL - Control Limit

Return to Contents

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: 03/19/13
Work Order No: 13-03-1340
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SS-Comp-A	**Sediment**	**GC/MS JJJ**	**03/20/13**	**03/21/13**	**130320S06**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	ND	100.0	65.59	66	65.52	66	79-175	0	0-31	3
Tributyltin	ND	100.0	68.43	68	69.87	70	69-135	2	0-29	3

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received:	03/19/13
Work Order No:	13-03-1340
Preparation:	EPA 3545
Method:	EPA 8082

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SS-Comp-A-Dup	**Sediment**	**GC 58**	**03/26/13**	**03/27/13**	**130326S03**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	ND	20.00	24.22	121	23.28	116	50-135	4	0-25	
Aroclor-1260	11.87	20.00	33.31	107	36.68	124	50-135	10	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: 03/19/13
Work Order No: 13-03-1340
Preparation: EPA 3545
Method: EPA 8081A

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SS-Comp-A	**Sediment**	**GC 51**	**03/20/13**	**03/21/13**	**130320S07**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aldrin	ND	5.000	5.403	108	4.378	88	50-135	21	0-25	
Alpha-BHC	ND	5.000	4.779	96	4.108	82	50-135	15	0-25	
Beta-BHC	ND	5.000	7.035	141	6.841	137	50-135	3	0-25	3
Delta-BHC	ND	5.000	5.263	105	5.211	104	50-135	1	0-25	
Gamma-BHC	ND	5.000	4.510	90	3.568	71	50-135	23	0-25	
Dieldrin	ND	5.000	7.569	151	7.106	142	50-135	6	0-25	3
4,4'-DDD	ND	5.000	10.94	219	6.603	132	50-135	49	0-25	3,4
4,4'-DDE	1.880	5.000	9.304	148	6.166	86	50-135	41	0-25	3,4
4,4'-DDT	ND	5.000	11.05	221	3.296	66	50-135	108	0-25	3,4
Endosulfan I	ND	5.000	4.547	91	3.818	76	50-135	17	0-25	
Endosulfan II	ND	5.000	4.971	99	3.867	77	50-135	25	0-25	
Endosulfan Sulfate	ND	5.000	6.321	126	5.506	110	50-135	14	0-25	
Endrin	ND	5.000	5.760	115	4.452	89	50-135	26	0-25	4
Endrin Aldehyde	ND	5.000	5.733	115	2.573	51	50-135	76	0-25	4
Endrin Ketone	ND	5.000	6.026	121	4.628	93	50-135	26	0-25	4
Heptachlor	ND	5.000	4.687	94	4.047	81	50-135	15	0-25	
Heptachlor Epoxide	ND	5.000	5.154	103	4.364	87	50-135	17	0-25	
Methoxychlor	ND	5.000	3.649	73	2.237	45	50-135	48	0-25	3,4
Alpha Chlordane	ND	5.000	7.550	151	5.524	110	50-135	31	0-25	3,4
Gamma Chlordane	ND	5.000	6.878	138	4.907	98	50-135	33	0-25	3,4

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

ACCREDITED IN ACCORDANCE WITH nelac

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: 03/19/13
Work Order No: 13-03-1340
Preparation: EPA 3545
Method: EPA 8270C SIM

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SS-Comp-A	**Sediment**	**GC/MS MM**	**03/20/13**	**03/21/13**	**130320S09**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	ND	1000	659.4	66	715.3	72	40-160	8	0-20	
2,4-Dichlorophenol	ND	1000	671.4	67	701.3	70	40-160	4	0-20	
2-Methylphenol	ND	1000	554.7	55	611.8	61	40-160	10	0-20	
2-Nitrophenol	ND	1000	665.2	67	683.6	68	40-160	3	0-20	
4-Chloro-3-Methylphenol	ND	1000	595.5	60	621.2	62	40-160	4	0-20	
Acenaphthene	ND	1000	623.2	62	656.6	66	40-106	5	0-20	
Benzo (a) Pyrene	33.79	1000	723.1	69	784.7	75	17-163	8	0-20	
Chrysene	21.74	1000	636.9	62	694.5	67	17-168	9	0-20	
Di-n-Butyl Phthalate	ND	1000	459.9	46	473.4	47	40-160	3	0-20	
Dimethyl Phthalate	256.0	1000	875.8	62	884.1	63	40-160	1	0-20	
Fluoranthene	22.01	1000	490.7	47	506.2	48	26-137	3	0-20	
Fluorene	ND	1000	628.7	63	682.6	68	59-121	8	0-20	
N-Nitrosodimethylamine	ND	1000	698.6	70	727.1	73	40-160	4	0-20	
Naphthalene	ND	1000	650.5	65	672.1	67	21-133	3	0-20	
Phenanthrene	13.29	1000	624.6	61	653.7	64	54-120	5	0-20	
Phenol	18.05	1000	573.3	56	622.7	60	40-160	8	0-20	
Pyrene	33.14	1000	672.3	64	721.7	69	6-156	7	0-46	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: 03/19/13
Work Order No: 13-03-1340
Preparation: EPA 3545
Method: EPA 8270C SIM PCB Congeners

Project Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SS-Comp-A	**Sediment**	**GC/MS HHH**	**03/20/13**	**03/21/13**	**130320S08**

Parameter	SAMPLE CONC	SPIKE ADDED	MS CONC	MS %REC	MSD CONC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
PCB008	ND	25.00	28.17	113	21.63	87	50-125	26	0-30	
PCB018	ND	25.00	26.97	108	21.34	85	50-125	23	0-30	
PCB028	ND	25.00	27.49	110	21.15	85	50-125	26	0-30	
PCB044	ND	25.00	28.50	114	22.34	89	50-125	24	0-30	
PCB052	0.5087	25.00	27.15	107	21.15	83	50-125	25	0-30	
PCB066	ND	25.00	28.86	115	22.41	90	50-125	25	0-30	
PCB077	ND	25.00	30.05	120	23.47	94	50-125	25	0-30	
PCB101	1.097	25.00	30.51	118	23.83	91	50-125	25	0-30	
PCB105	0.8360	25.00	29.56	115	23.35	90	50-125	23	0-30	
PCB118	1.410	25.00	35.61	137	27.51	104	50-125	26	0-30	3
PCB126	ND	25.00	27.59	110	21.66	87	50-125	24	0-30	
PCB128	ND	25.00	29.92	120	22.95	92	50-125	26	0-30	
PCB153	1.493	25.00	29.51	112	22.94	86	50-125	25	0-30	
PCB170	ND	25.00	27.01	108	21.65	87	50-125	22	0-30	
PCB180	0.5813	25.00	31.14	122	24.18	94	50-125	25	0-30	
PCB187	ND	25.00	29.13	117	22.98	92	50-125	24	0-30	
PCB195	ND	25.00	28.11	112	22.54	90	50-125	22	0-30	
PCB206	ND	25.00	29.80	119	24.30	97	50-125	20	0-30	
PCB209	ND	25.00	27.44	110	22.24	89	50-125	21	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.		Date Received:	N/A
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3050B
		Method:	EPA 6020

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-254-93	**Solid**	**ICP/MS 03**	**03/20/13**	**03/21/13**	**130320L02E**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Arsenic	25.00	26.16	105	26.01	104	80-120	1	0-20	
Cadmium	25.00	25.42	102	25.52	102	80-120	0	0-20	
Chromium	25.00	24.55	98	24.72	99	80-120	1	0-20	
Copper	25.00	27.37	109	28.18	113	80-120	3	0-20	
Lead	25.00	25.34	101	25.77	103	80-120	2	0-20	
Nickel	25.00	25.65	103	25.45	102	80-120	1	0-20	
Selenium	25.00	24.54	98	24.87	99	80-120	1	0-20	
Silver	12.50	13.42	107	13.41	107	80-120	0	0-20	
Zinc	25.00	28.18	113	27.42	110	80-120	3	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.		Date Received:	N/A
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	N/A
		Method:	EPA 9060A

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-06-013-842	**Solid**	**TOC 5**	**03/21/13**	**03/22/13**	**D0321TOCL1**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Carbon, Total Organic	0.60	0.60	100	0.57	95	80-120	5	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received:	N/A
Work Order No:	13-03-1340
Preparation:	Extraction
Method:	EPA 418.1M

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-015-1,913	**Solid**	**IR 2**	**03/19/13**	**03/19/13**	**130319L01**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TRPH	100.0	88.18	88	87.47	87	70-130	1	0-30	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.		Date Received:	N/A
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-15-490-252	**Solid**	**GC 46**	**03/19/13**	**03/20/13**	**130319B07**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
TPH as Diesel	400.0	396.8	99	398.3	100	75-123	0	0-12	

RPD - Relative Percent Difference , CL - Control Limit

Return to Contents

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received:	N/A
Work Order No:	13-03-1340
Preparation:	EPA 7471A Total
Method:	EPA 7471A

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-452-356	**Solid**	**Mercury**	**03/20/13**	**03/20/13**	**130320L01E**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Mercury	0.8350	0.8472	101	0.8350	100	82-124	1	0-16	

RPD - Relative Percent Difference , CL - Control Limit

Return to Contents

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: N/A
Work Order No: 13-03-1340
Preparation: EPA 3550B (M)
Method: Organotins by Krone et al.

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-07-016-1,014	**Solid**	**GC/MS JJJ**	**03/20/13**	**03/21/13**	**130320L06**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Tetrabutyltin	100.0	88.18	88	83.91	84	79-151	5	0-20	
Tributyltin	100.0	83.54	84	80.00	80	51-129	4	0-20	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.		Date Received:	N/A
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3545
		Method:	EPA 8082

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-565-328	**Solid**	**GC 58**	**03/26/13**	**03/27/13**	**130326L03**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Aroclor-1016	20.00	19.92	100	21.88	109	50-135	9	0-25	
Aroclor-1260	20.00	18.87	94	19.47	97	50-135	3	0-25	

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.	Date Received: N/A
10110 W. Lilac Road	Work Order No: 13-03-1340
Escondido, CA 92026-5309	Preparation: EPA 3545
	Method: EPA 8081A

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-858-196	**Solid**	**GC 51**	**03/20/13**	**03/21/13**	**130320L07**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Aldrin	5.000	3.662	73	4.294	86	50-135	36-149	16	0-25	
Alpha-BHC	5.000	3.731	75	4.216	84	50-135	36-149	12	0-25	
Beta-BHC	5.000	3.906	78	4.787	96	50-135	36-149	20	0-25	
Delta-BHC	5.000	3.852	77	4.465	89	50-135	36-149	15	0-25	
Gamma-BHC	5.000	3.698	74	4.244	85	50-135	36-149	14	0-25	
Dieldrin	5.000	3.596	72	4.306	86	50-135	36-149	18	0-25	
4,4'-DDD	5.000	3.675	74	4.323	86	50-135	36-149	16	0-25	
4,4'-DDE	5.000	3.667	73	4.356	87	50-135	36-149	17	0-25	
4,4'-DDT	5.000	3.495	70	4.120	82	50-135	36-149	16	0-25	
Endosulfan I	5.000	3.539	71	4.248	85	50-135	36-149	18	0-25	
Endosulfan II	5.000	3.546	71	4.238	85	50-135	36-149	18	0-25	
Endosulfan Sulfate	5.000	3.372	67	4.003	80	50-135	36-149	17	0-25	
Endrin	5.000	3.443	69	3.494	70	50-135	36-149	1	0-25	
Endrin Aldehyde	5.000	3.587	72	4.380	88	50-135	36-149	20	0-25	
Endrin Ketone	5.000	3.706	74	4.657	93	50-135	36-149	23	0-25	
Heptachlor	5.000	3.863	77	4.438	89	50-135	36-149	14	0-25	
Heptachlor Epoxide	5.000	3.517	70	4.106	82	50-135	36-149	15	0-25	
Methoxychlor	5.000	3.515	70	4.121	82	50-135	36-149	16	0-25	
Alpha Chlordane	5.000	3.514	70	4.252	85	50-135	36-149	19	0-25	
Gamma Chlordane	5.000	3.450	69	4.131	83	50-135	36-149	18	0-25	

Total number of LCS compounds : 20
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.
10110 W. Lilac Road
Escondido, CA 92026-5309

Date Received: N/A
Work Order No: 13-03-1340
Preparation: EPA 3545
Method: EPA 8270C SIM

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-256-23	**Solid**	**GC/MS MM**	**03/20/13**	**03/21/13**	**130320L09**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
2,4,6-Trichlorophenol	1000	836.7	84	858.9	86	40-160	20-180	3	0-20	
2,4-Dichlorophenol	1000	819.4	82	820.2	82	40-160	20-180	0	0-20	
2-Methylphenol	1000	649.4	65	677.6	68	40-160	20-180	4	0-20	
2-Nitrophenol	1000	674.4	67	687.5	69	40-160	20-180	2	0-20	
4-Chloro-3-Methylphenol	1000	713.0	71	725.0	72	40-160	20-180	2	0-20	
Acenaphthene	1000	706.6	71	715.6	72	48-108	38-118	1	0-11	
Benzo (a) Pyrene	1000	788.9	79	783.5	78	17-163	0-187	1	0-20	
Chrysene	1000	664.6	66	643.0	64	17-168	0-193	3	0-20	
Di-n-Butyl Phthalate	1000	769.8	77	760.0	76	40-160	20-180	1	0-20	
Dimethyl Phthalate	1000	762.2	76	783.6	78	40-160	20-180	3	0-20	
Fluoranthene	1000	665.6	67	671.6	67	26-137	8-156	1	0-20	
Fluorene	1000	724.2	72	735.6	74	59-121	49-131	2	0-20	
N-Nitrosodimethylamine	1000	925.5	93	926.3	93	40-160	20-180	0	0-20	
Naphthalene	1000	723.7	72	732.8	73	21-133	2-152	1	0-20	
Phenanthrene	1000	648.1	65	659.4	66	54-120	43-131	2	0-20	
Phenol	1000	704.1	70	724.3	72	40-160	20-180	3	0-20	
Pyrene	1000	733.1	73	707.9	71	28-106	15-119	3	0-16	

Total number of LCS compounds : 17
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Tierra Data Inc.		Date Received:	N/A
10110 W. Lilac Road		Work Order No:	13-03-1340
Escondido, CA 92026-5309		Preparation:	EPA 3545
		Method:	EPA 8270C SIM PCB Congeners

Project: Shelter Isl. Boat Ramp

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-14-341-92	**Solid**	**GC/MS HHH**	**03/20/13**	**03/21/13**	**130320L08**

Parameter	SPIKE ADDED	LCS CONC	LCS %REC	LCSD CONC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
PCB008	25.00	20.31	81	20.13	81	50-125	38-138	1	0-30	
PCB018	25.00	19.99	80	19.61	78	50-125	38-138	2	0-30	
PCB028	25.00	18.87	75	18.96	76	50-125	38-138	0	0-30	
PCB044	25.00	20.30	81	20.19	81	50-125	38-138	1	0-30	
PCB052	25.00	18.76	75	18.55	74	50-125	38-138	1	0-30	
PCB066	25.00	20.06	80	20.05	80	50-125	38-138	0	0-30	
PCB077	25.00	20.44	82	20.34	81	50-125	38-138	0	0-30	
PCB101	25.00	21.47	86	21.05	84	50-125	38-138	2	0-30	
PCB105	25.00	19.81	79	19.56	78	50-125	38-138	1	0-30	
PCB118	25.00	23.20	93	22.89	92	50-125	38-138	1	0-30	
PCB126	25.00	18.61	74	18.23	73	50-125	38-138	2	0-30	
PCB128	25.00	20.10	80	19.63	79	50-125	38-138	2	0-30	
PCB153	25.00	19.44	78	19.25	77	50-125	38-138	1	0-30	
PCB170	25.00	19.30	77	19.29	77	50-125	38-138	0	0-30	
PCB180	25.00	20.59	82	20.24	81	50-125	38-138	2	0-30	
PCB187	25.00	20.00	80	19.81	79	50-125	38-138	1	0-30	
PCB195	25.00	20.68	83	20.44	82	50-125	38-138	1	0-30	
PCB206	25.00	22.00	88	21.37	85	50-125	38-138	3	0-30	
PCB209	25.00	19.91	80	19.80	79	50-125	38-138	1	0-30	

Total number of LCS compounds : 19
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

Return to Contents

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 13-03-1340

Qualifier	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported without further clarification.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.

For any analysis identified as a "field" test with a holding time (HT) </= 15 minutes where the sample is received outside of HT, Calscience will adhere to its internal HT of 24 hours. In cases where sample analysis does not meet Calscience's internal HT, results will be appropriately qualified.

Return to Contents

Calscience Environmental Laboratories, Inc.

7440 Lincoln Way, Garden Grove, CA 92841-1427 • (714) 895-5494
Other CA office locations: Concord and San Luis Obispo
For courier service / sample drop off information, contact sales@calscience.com or call us.

CHAIN OF CUSTODY RECORD

WO # / LAB USE ONLY: **13-03-1340**

Date 3/19/2013

Page 1 of 1

LABORATORY CLIENT: Tierra Data Inc.

ADDRESS: 10110 W. Lilac Rd.

CITY: Escondido STATE: CA ZIP: 92026

TEL: 805-705-5632 E-MAIL: Mardian@Tierradata.com

CLIENT PROJECT NAME / NUMBER: Shelter Isl. Boat Ramp

P.O. NO.:

PROJECT CONTACT: Brent Mardian

SAMPLER(S): (PRINT) Brent A[illegible]

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48 HR ☒ 72 HR ☐ STANDARD

☐ COELT EDF GLOBAL ID LOG CODE

SPECIAL INSTRUCTIONS:
(A) = archive, please hold
72-hr turnaround on Samples to be analyzed. Analyte list attached

REQUESTED ANALYSES

Please check box or fill in blank as needed.

LAB USE ONLY	SAMPLE ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	Unpreserved	Preserved	Field Filtered	☐ ~~TPH(g) ☐ GRO~~ Hold	☐ TPH(d) ☐ DRO	TPH ☐ C6-C36 ☒ C6-C44	~~TPH~~ Organotins	BTEX / MTBE ☐ 8260 ☐	VOCs (8260)	Oxygenates (8260)	Prep (5035) ☐ En Core ☐ Terra Core	SVOCs (8270)	Pesticides (8081)	PCBs (8082)	PAHs ☐ 8270 ☒ 8270 SIM	T22 Metals ☐ 6010/747X ☒ 6020/747X	Cr(VI) ☐ 7196 ☐ 7199 ☐ 218.6	Total Solids	TOC	Grain Size	TRPH
1	SS-Comp-A	3/18/13	16:00	Sed	1						X	X					X	X	X	X	X		X	X		X
2	SS-Comp-A-Dup	3/18/13	16:00	Sed	1						X	X					X	X	X	X	X		X	X		X
3	SS-Comp-A-Grain Size	3/18/13	16:00	Sed	1																				X	
4	SS-1	|	12:15	|	|				X																	
5	SS-2	|	11:17	|	|				X																	
6	SS-3	|	15:06	|	|				X																	
7	SS-4	|	14:27	|	|				X																	
8	SS-5	|	13:06	|	|				X																	
9	SS-6	|	12:45	|	|				X																	
10	SS-CompA-Archive (A)	~~3/18/13~~ 3/18 BW	16:00	|	|				X																	

Relinquished by: (Signature)	Received by: (Signature/Affiliation)	Date:	Time:
[signature]	[signature] CEL	3/19/2013	16:00
[signature]	Danny [illegible] CEL	3/19/13	18:40

63789

DISTRIBUTION: White with final report, Green and Yellow to Client.
Please note that pages 1 and 2 of our T/Cs are printed on the reverse side of the Green and Yellow copies respectively.

11/01/12 Revision

Return to Contents

Analyte	Analysis Method	Sediment Target Detection Limits[a,b]
Total Solids	SM 2540 B	0.1%
Total Organic Carbon	9060	0.1%
Arsenic (As)	6020/6010B[d]	0.1 mg/kg
Cadmium (Cd)	6020/6010B[d]	0.1 mg/kg
Chromium (Cr)	6020/6010B[d]	0.1 mg/kg
Copper (Cu)	6020/6010B[d]	0.1 mg/kg
Lead (Pb)	6020/6010B[d]	0.1 mg/kg
Mercury (Hg)	7471A[d]	0.02 mg/kg
Nickel (Ni)	6020/6010B[d]	0.1 mg/kg
Selenium (Se)	6020/6010B[d]	0.1 mg/kg
Silver (Ag)	6020/6010B[d]	0.1 mg/kg
Zinc (Zn)	6020/6010B[d]	2.0 mg/kg
TRPH	418.1M[d]	5.0 mg/kg
PAHs[e]	8270C SIM[d]	20 µg/kg
Chlorinated Pesticides[f]	8081A[d]	0.5 to 30 µg/kg
PCB Congeners[g]	8270C SIM	1.0 µg/kg
Phenols	8270C SIM[d]	20 to 100 µg/kg
Phthalates	8270C SIM[d]	10 µg/kg
Butyltins	Rice/Krone[h]	1.0 µg/kg

Notes:

a Sediment minimum detection limits are on a wet-weight basis.

b Detection limits provided by Calscience Environmental Laboratories, Inc.

c Standard Methods for the Examination of Water and Wastewater, 19th edition, American Public Health Association et al. 1995.

d EPA 1986-1996. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, 3rd Edition.

e Includes naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b,k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene.

f Includes aldrin, BHC, BHC, BHC (lindane), BHC, chlordane, 2,4- and 4,4-DDD, 2,4- and 4,4-DDE, 2,4- and 4,4-DDT, dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, heptachlor, heptachlor epoxide, and toxaphene.

g PCBs (sum of 41 congeners: 18, 28, 37, 44, 49, 52, 66, 70, 74, 77, 81, 87, 99, 101, 105, 110, 114, 118, 119, 123, 126, 128, 138, 149, 151, 153, 156, 157, 158, 167, 168, 169, 170, 177, 180, 183, 187, 189, 194,201, and 206)

h Rice et al. (1987) or Krone et al. (1989)

µg/kg micrograms per kilogram (parts per billion)

mg/kg milligrams per kilogram (parts per million),

µg/L micrograms per liter

mg/L milligrams per liter

N/A not analyzed

PAH polycyclic aromatic hydrocarbon

PCB polychlorinated biphenyl

SM Standard Methods

SOP standard operating procedure

TPH total petroleum hydrocarbons (C6-C44)

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-03-1340

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: TIERRA-DATA DATE: 03/19/13

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 1.8 °C - 0.2 °C (CF) = 1.6 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: ________).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: [initials]

CUSTODY SEALS INTACT:

☐ Cooler ☐ ________ ☐ No (Not Intact) ☑ Not Present ☐ N/A Initial: [initials]

☐ Sample ☐ ________ ☐ No (Not Intact) ☑ Not Present Initial: HH

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☐	☑	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☑8ozCGJ ☑16ozCGJ ☐Sleeve (____) ☐EnCores® ☐TerraCores® ☐________

Water: ☐VOA ☐VOAh ☐VOAna₂ ☐125AGB ☐125AGBh ☐125AGBp ☐1AGB ☐1AGBna₂ ☐1AGBs ☐500AGB ☐500AGJ ☐500AGJs ☐250AGB ☐250CGB ☐250CGBs ☐1PB ☐1PBna ☐500PB ☐250PB ☐250PBn ☐125PB ☐125PBznna ☐100PJ ☐100PJna₂ ☐________ ☐________ ☐________

Air: ☐Tedlar® ☐Canister **Other:** ☐________ **Trip Blank Lot#:**________ **Labeled/Checked by:** HH

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** [initials]

Preservative: **h:** HCL **n:** HNO_3 **na₂:** $Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** [initials]

SOP T100_090 (11/20/12)

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-03-1340

SAMPLE ANOMALY FORM

SAMPLES - CONTAINERS & LABELS:

	Comments:
☐ Sample(s) NOT RECEIVED but listed on COC	
☐ Sample(s) received but NOT LISTED on COC	
☐ Holding time expired – list sample ID(s) and test	
☐ Insufficient quantities for analysis – list test	
☐ Improper container(s) used – list test	
☐ Improper preservative used – list test	
☐ No preservative noted on COC or label – list test & notify lab	
☐ Sample labels illegible – note test/container type	
☑ Sample label(s) do not match COC – Note in comments	
☐ Sample ID	Collection time:
☑ Date and/or Time Collected	(-1) to (-3) (-10)
☐ Project Information	per lid @ 16:00
☐ # of Container(s)	per label @ 14:00
☐ Analysis	
☐ Sample container(s) compromised – Note in comments	
☐ Water present in sample container	
☐ Broken	
☐ Sample container(s) not labeled	
☐ Air sample container(s) compromised – Note in comments	
☐ Flat	
☐ Very low in volume	
☐ Leaking (Not transferred - duplicate bag submitted)	
☐ Leaking (transferred into Calscience Tedlar® Bag*)	
☐ Leaking (transferred into Client's Tedlar® Bag*)	
☐ Other:	

HEADSPACE – Containers with Bubble > 6mm or ¼ inch:

Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Cont. received	Analysis

Comments:

*Transferred at Client's request.

Initial / Date: HH 03 / 19 / 13

SOP T100_090 (08/31/11)

APPENDIX B-2

EELGRASS PRESENCE/ABSENCE SURVEY REPORT

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FINAL

Eelgrass (*Zostera marina*) Presence/Absence Survey

for

Shelter Island Boat Ramp Facility

San Diego Bay, California

□uly 14, 2013

Prepared by:

Tierra Data Inc.
10110 □. Lilac Road
Escondido, California 92026

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Table of Contents

List of Figures

List of Photos

List of Acronyms

Bay	San Diego Bay
CEQA	California Environmental Quality Act
DGPS	Digital Global Positioning System
MLLW	Mean Lower Low Water
Navy	U.S. Navy
NMFS	National Marine Fisheries Service
Port	Port of San Diego
SIBLF	Shelter Island Boat Launch Facility
TDI	Tierra Data Inc.

1.0 INTRODUCTION

The Port of San Diego (Port) contracted TranSystems Inc. to engineer and manage the reconstruction of the Shelter Island Boat Launch Facility (SIBLF) in Point Loma, California. TranSystems Inc. subcontracted ECORP Consulting Inc. (ECORP) to develop a California Environmental Quality Act (CEQA) document investigating existing conditions and potential environmental impacts pertaining to and eventual reconstruction of the SIBLF. Prior to the development of the CEQA document, Tierra Data Inc. (TDI) was contracted by ECORP to perform an eelgrass (*Zostera marina*) presence/absence survey within the SIBLF, proposed project footprint, to document the location and extent of existing eelgrass resources and determine any potential impacts to eelgrass beds from construction activities. The Shelter Island Boat Launch Facility Improvements Project (proposed Project) includes the repair, maintenance, and replacement of several elements comprising the Shelter Island Boat Launching Facility (SIBLF).

1.1 Historical Perspective

Eelgrass resources in San Diego Bay are locally dense and regionally significant, ranking third in California in total eelgrass habitat (square kilometers), supporting nearly 20 percent of all eelgrass habitats within the State of California (U.S. Navy 2012). The spatial extent of eelgrass resources in San Diego Bay (Bay) prior to the use of sonar surveys in 1988 was mostly defined on a large scale through the use of aerial imagery, and on a small scale through the use of grabs or divers. As a result, eelgrass communities were often only partially defined and deeper eelgrass communities were under-reported or missed completely. In 1993, the Navy applied sonar technology to map eelgrass resources in San Diego Bay and completed a comprehensive survey of eelgrass resources within the Bay (Navy 1994). The Navy and the Port followed with additional bay-wide surveys in 1999, 2004, 2008, and 2011 (U.S. Navy 2000, 2005, 2010 and 2012). Additionally, methods used to perform site specific surveys of eelgrass resources improved greatly after the development of the California Eelgrass Mitigation Policy (CEMP).The CEMP was developed to standardize and maintain a consistent policy regarding mitigation of adverse impacts to eelgrass beds by federal and state resource agencies (National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife, U.S. Fish and Wildlife Service) (NMFS 2014).

2.0 SURVEY METHODOLOGY

The SIBLF reconstruction project proposes the demolition and reconstruction of the existing concrete boat ramps, docks, and portions of the rock jetties. The project footprint incorporates the entire interior portion of the launch ramp, contained by the rock jetties, as well as Bay waters and tidelands adjacent to the rock jetties approximately 25 and 50 meters along shore and 50 meters offshore (Figure 1). The SIBLF eelgrass survey investigation included all the areas contained within the project footprint boundary likely to support eelgrass resources based on bathymetry and suitable habitat. Surveys were conducted for the presence/absence of eelgrass utilizing both single beam sonar and diver transects on May 7, 2013.

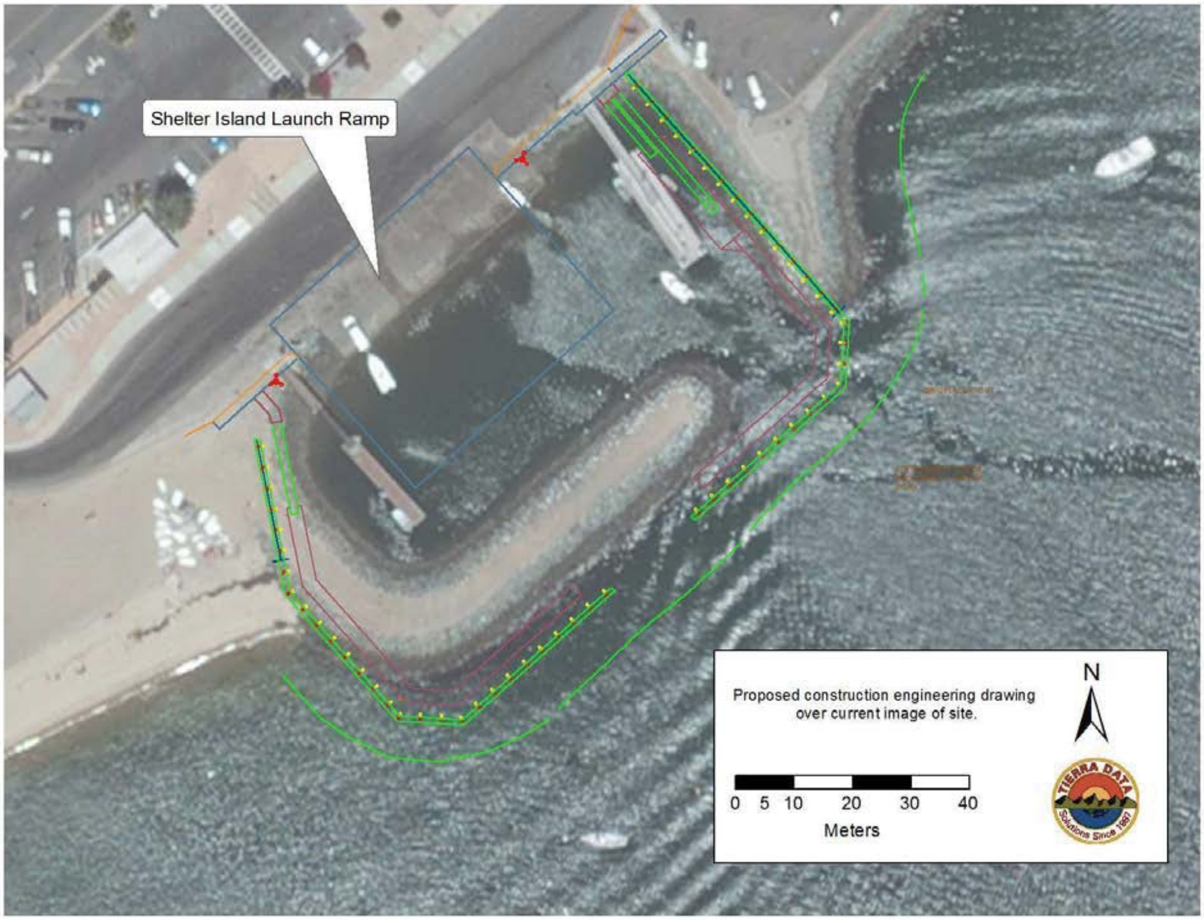

***Figure 1*. Shelter Island Boat Launch Facility project footprint.**

TDI surveyed the project footprint using single beam sonar integrated with real time ArcPad navigation and digital global position system (DGPS) mapping. TDI and ECORP scientific divers visually surveyed all the areas contained within the rock jetties as well as visual confirmation of eelgrass resources immediately adjacent to the rock jetties, mapped by single beam sonar. Divers used compass navigation to perform transects throughout the SIBLF areas, documenting the presence of eelgrass resources and associated biota.

Single beam sonar survey navigation track lines were conducted throughout the SIBLF based on suitable bathymetry and a composite of eelgrass resource layers, collected during Bay-wide surveys conducted from 1994 to 2011. Single beam sonar surveys were performed to document the spatial extent of eelgrass resources and generate bathometric contours specific to the project footprint.

2.1 Eelgrass Survey

Diver surveys were conducted on May 7, 2013 throughout the SIBLF but were concentrated within the launch ramp basin and consisted of swimming transects approximately 2-3 meters apart from the submerged edge of the concrete launch ramp to the rock jetty entrance (Figure 2). Additional diver surveys were conducted outside the rock jetties to visually verify locations where single beam sonar surveys imaged eelgrass resources or adjacent to the exterior portions of the rock jetties to survey for eelgrass presence/absence (Figure 3). Conditions on the day of the survey offered horizontal underwater visibility between 5 and 15 feet. Attention was given to those areas that had previously been documented to support eelgrass resources. Further attention was focused on documenting the health and extent of eelgrass resources within the SIBLF launch basin, and documenting habitat characteristics and associated species in all areas diving surveys were conducted.

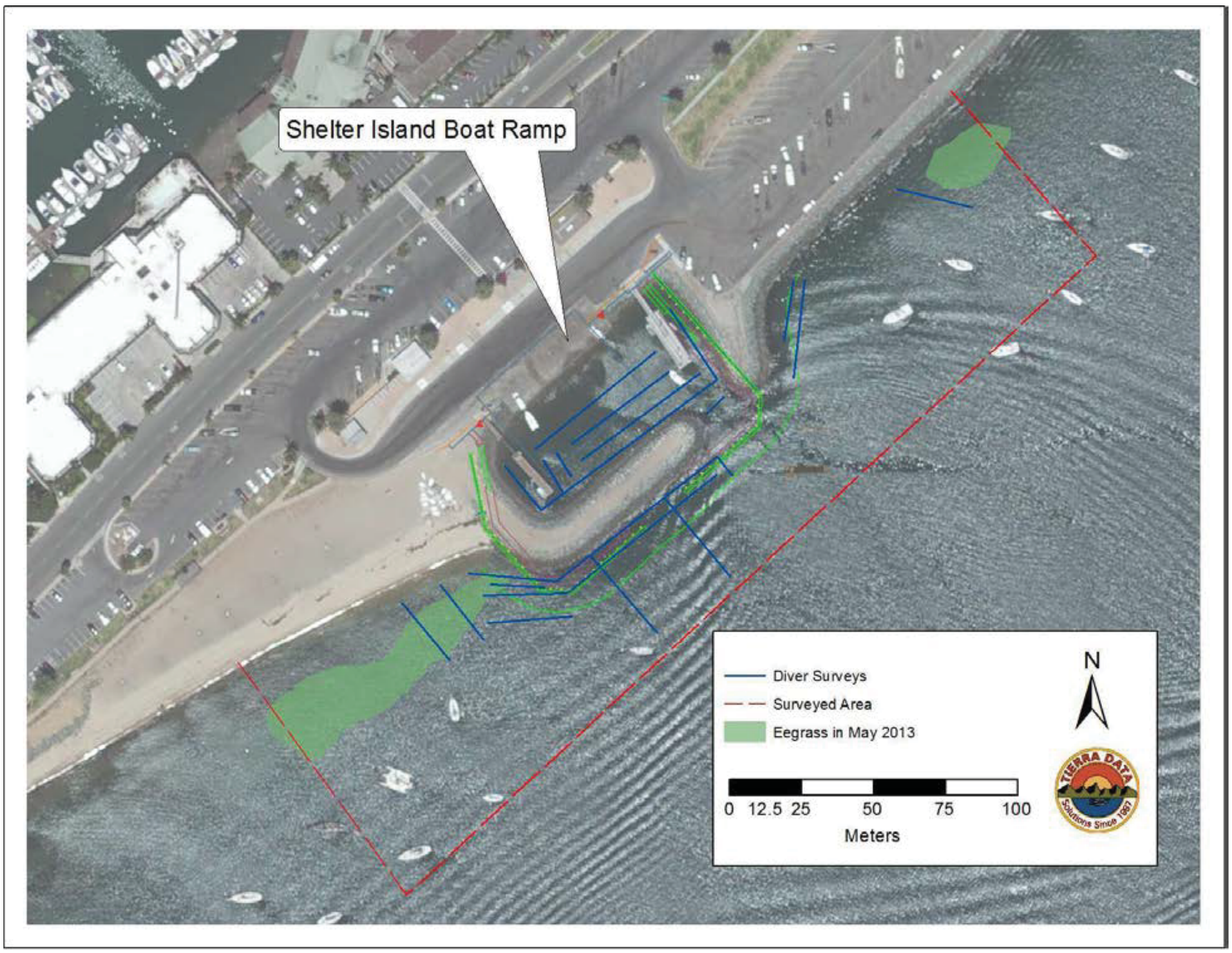

***Figure 2*. Location of diver surveys performed to document Eelgrass presence/absence May 2013.**

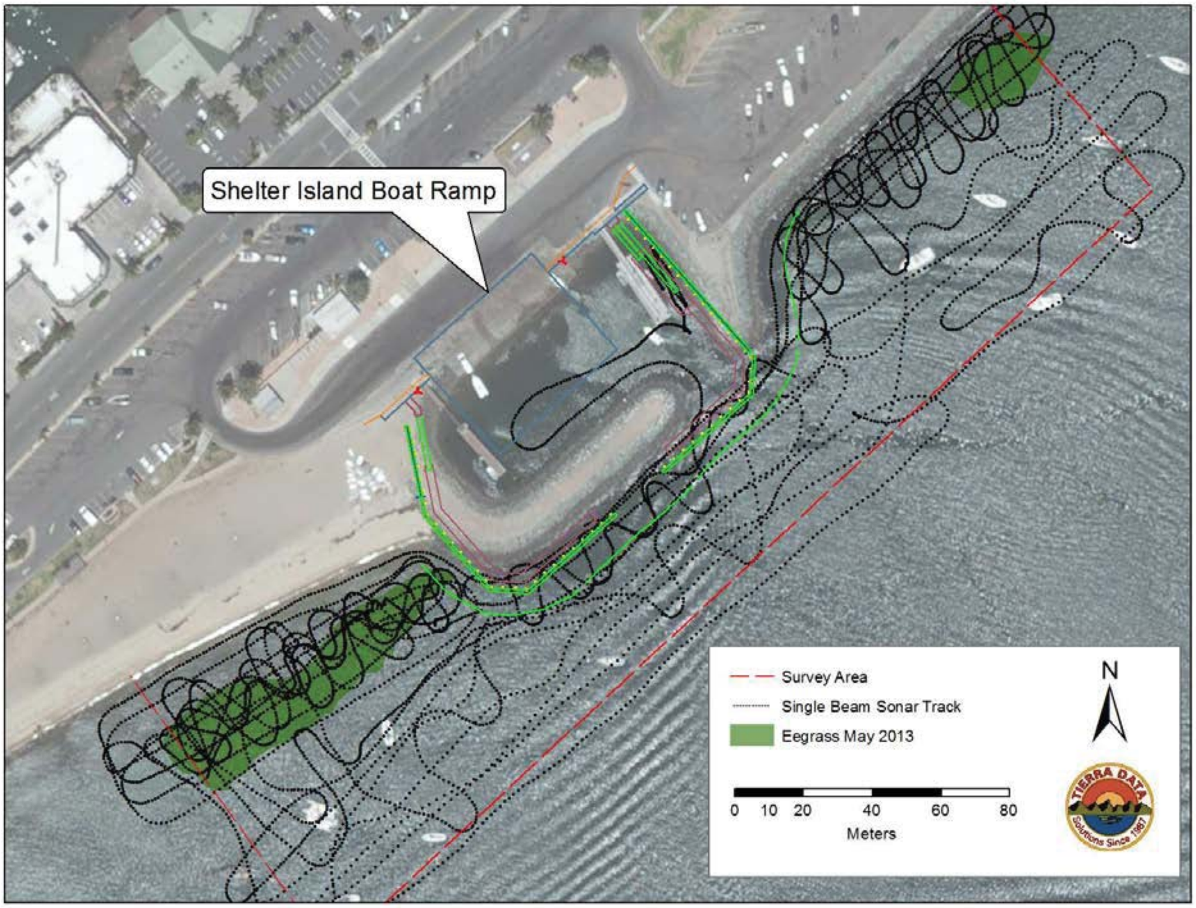

Figure 3**. Single beam sonar track lines and documented Eelgrass resources within the project footprint May 2013.**

3.0 SURVEY RESULTS

3.1 Eelgrass

At the time of the survey, a total of approximately 2,150 m2 (0.53 acres) of eelgrass occurs within the survey area. Eelgrass resources were observed in several locations within the SIBLF, including areas within the launch basin and along the beaches both southwest and northeast of the rock jetties defining the SIBLF. Eelgrass resources observed within the SIBLF launch basin were sparse but generally concentrated near the southwest boat dock (Figure 4). Eelgrass resources did not form a distinguishable bed but consisted of primarily small (<6 inch) solitary individual plants greater than 1 meter apart nearest the outermost rock jetty, and three locations comprised of three to six larger (>12 inch) plants clustered in individual patches less than 1 square meter.

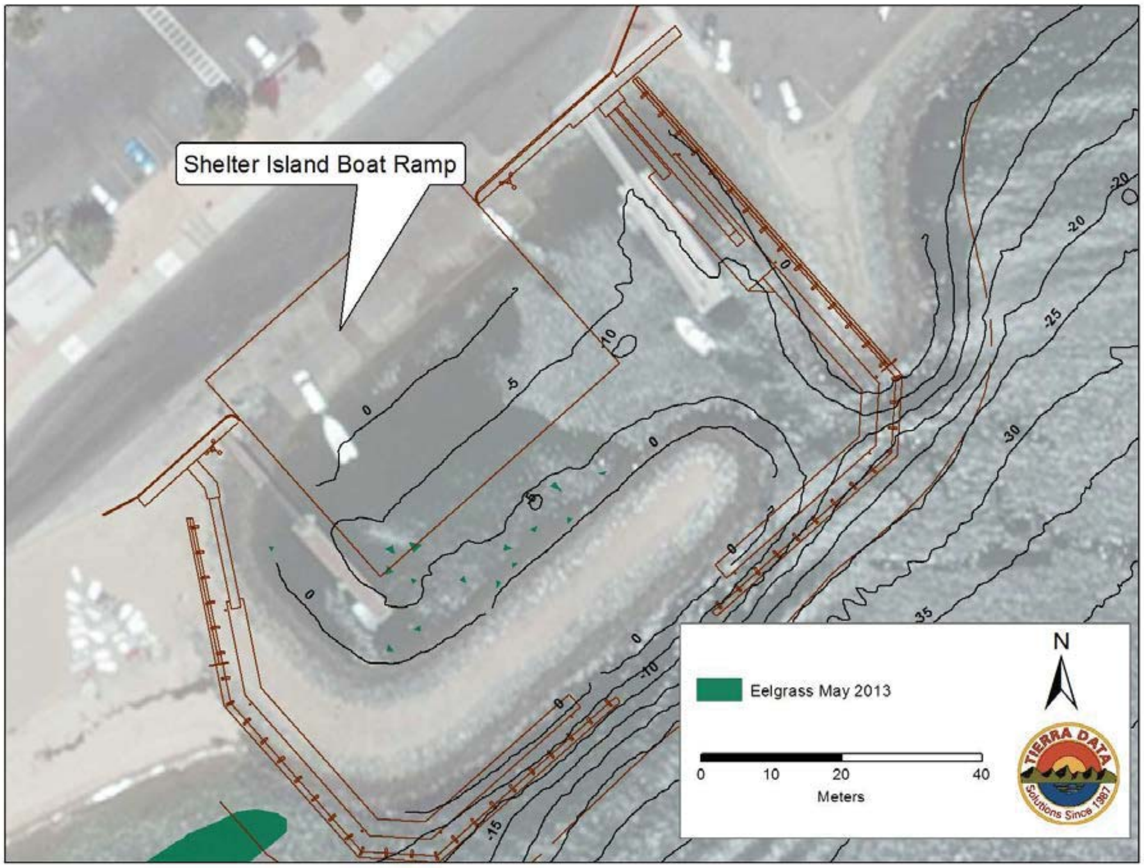

***Figure 41*. Location of eelgrass resources within Shelter Island Boat Launch Facility launch basin May 2013.**

ith the e ception of the delineation of eelgrass resources within the launch basin, which were significantly smaller and less contiguous than previously documented, mapped eelgrass resources outside the launch basin were relatively consistent with eelgrass delineations recorded during Bay-wide surveys conducted by the Port and the .S. avy in 2011. The majority of the eelgrass resources within the SIBLF occur outside the launch basin along the beach within the southwest portion of the project area in waters between -4 and -18 ft MLL (Figure 4).

3.2 Bathymetry and Associated Species

Bathymetry within the project footprint varied from less than -5 feet Mean Lower Low Water (MLLW) in the launch basin to nearly -45 feet MLLW near the edge of the project footprint, offshore of the entrance of SIBLF (Figure 5). Substrate within the SIBLF launch basin was primarily silty/sand with occasional rocks and debris that supported a variety of invertebrate and algal species (Appendix A). No invasive species other than *Sargassum muticum* were observed.

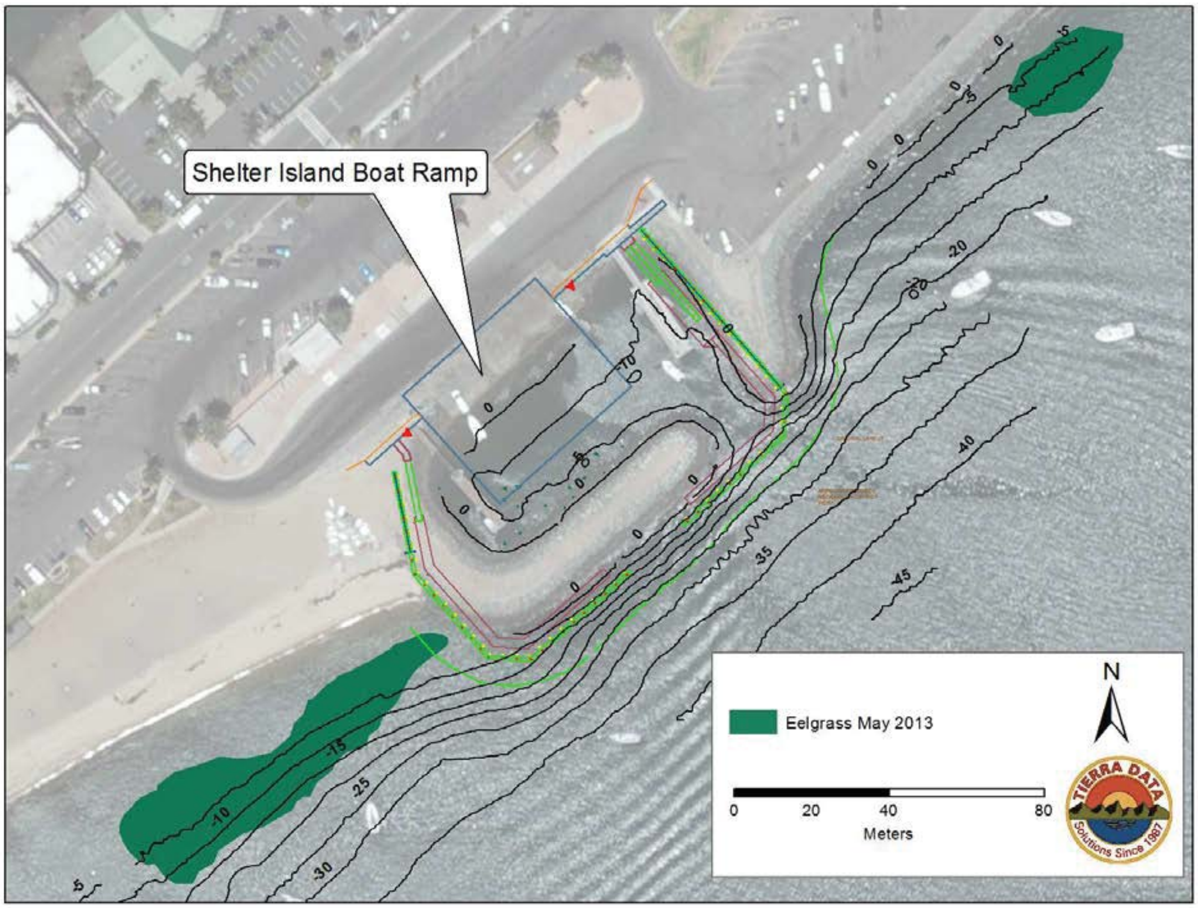

***Figure 5*. Bathymetry of project footprint.**

4.0 DISCUSSION

Eelgrass resources observed within the launch basin did not form a contiguous bed as defined by the CEMP and occur in an area continuously used by commercial and recreational vessels. At the time of the survey, a total of approximately 2,150 m2 (0.53 acres) of eelgrass was documented within the survey area. Individual plants less than 6 inches in height numbered between 12 and 15 individuals that likely represent recent recruitment. The larger plants (>12 inches) within the launch basin did not form a definitive eelgrass bed but the plants were clustered in small patches that occur in an area less frequently disturbed by vessel traffic than the majority of the launch basin . No flowering was observed and water clarity was relatively poor compared areas along the beach just outside the launch basin. Mapped eelgrass beds along the beaches on either side of the launch basin were dense and healthy and provided extensive habitat for associated species (Photo 1-Photo 2).

Eelgrass communities adjacent to the rock jetty, along the beach southwest of the launch basin, were within 20 feet of the existing rock jetty and varied between 8 and 25 feet wide. The substrate drops off rapidly moving offshore, limiting eelgrass habitat suitability in close proximity of the outer portions of the rock jetty. No eelgrass was observed along the rock jetty northeast of the SIBR entrance.

Photo 1. Healthy Eelgrass bed along beach southwest and outside of the Shelter Island Boat Launch Facility.

Photo 2. Barred sand bass using Eelgrass along beach southwest of the SIBLF.

5.0 IMPACT ANALYSIS

Anticipated construction activities required to remove the existing rock jetties and dredge the launch basin may have direct impacts to the eelgrass within the project footprint and should be avoided or minimized to the maximum extent possible. Direct impacts to eelgrass from increased turbidity and redistribution of sediment (covering) could occur to a very small portion of the eelgrass, based on the type of proposed rip rap removal method (clam shell) and the proposed length of the project. Approximately 30 m^2 of the eelgrass is estimated to be directly impacted (removed) from the tip of the southwestern eelgrass bed during the removal of the existing rip rap (Figure 6). The use of silt curtains would eliminate or substantially reduce indirect effects to eelgrass from turbidity during construction activities to less than significant levels.

Eelgrass resources within the project footprint were spatially consistent with previous survey efforts but varied in terms of extent and density. The project footprint was arbitrarily set to insure documentation of all adjacent eelgrass resources but does not represent the potential area of impact. The presence of eelgrass within the SIBR launch basin most certainly has a seasonal component related to suitable growth conditions and disturbance related to increased boat-launch traffic during the summer and early fall. Existing and continued use of the SILBF are not conducive to the persistence and expansion of eelgrass resources within the launch basin. Eelgrass resources along the beaches adjacent to the SIBR are both healthy and robust, and will likely quickly recover from anticipated non lethal indirect impacts.

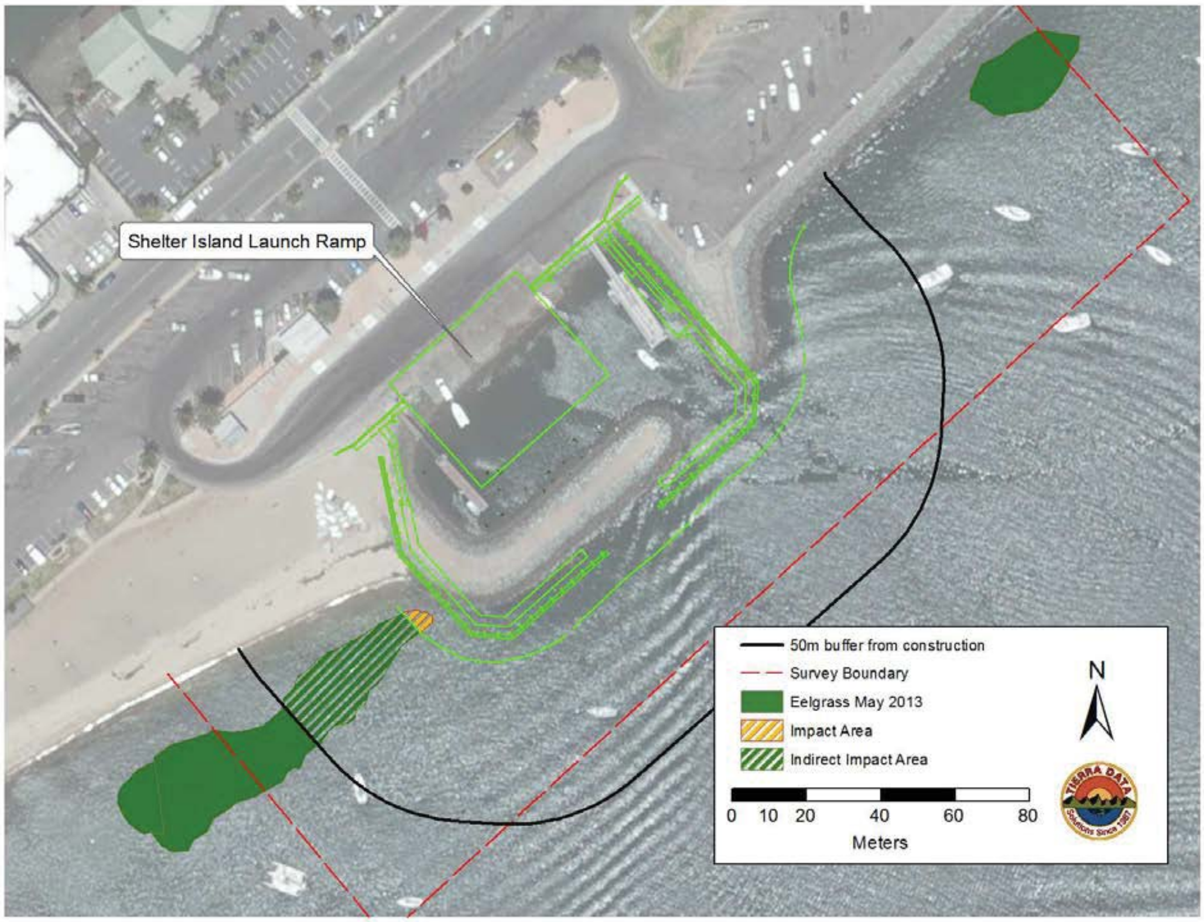

Figure 6. Proposed construction engineering drawings in relationship to existing eelgrass resources.

6.0 REFERENCES

National Marine Fisheries Service, National Oceanographic Atmospheric Administration. 2014. California Eelgrass Mitigation Policy and Implementing GuidelinesNOAA Fisheries, West Coast Region, Long Beach, CA.

U.S. Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC) Southwest. 1994. 1994 San Diego Bay Eelgrass Survey. NAVFAC SW Natural Resources Branch.

U.S. Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC) Southwest. 2000. 1999 San Diego Bay Eelgrass Survey. NAVFAC SW Natural Resources Branch.

U.S. Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC) Southwest. 2005. 2004 San Diego Bay Eelgrass Survey. NAVFAC SW Natural Resources Branch.

U.S. Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC) Southwest. 2010. 2008 San Diego Bay Eelgrass Survey. NAVFAC SW Natural Resources Branch.

U.S. Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC) Southwest. 2012. 2011 San Diego Bay Eelgrass Survey. NAVFAC SW Natural Resources Branch.

Appendix A: Species List from Diver Surveys

Scientific Name	Common Name
Plants/Algae	
Coplomenia spp.	brown alga
Dictyota binghamiae	brown alga
Egregia menziesii	feather boa kelp
Eisenia arborea	southern sea palm
Prionitis spp.	red alga
Sargassum muticum	Japanese wireweed
Ulva spp.	green alga
Invertebrates	
Cancer productus	red rock crab
Navanax inermis	navanax
Pachycerianthus fimbriatus	tube anemone
Panulirus interruptus	California spiny lobster
Renilla koellikeri	sea pansy
Fish	
Cymatogaster aggregata	shiner perch
Girella nigricans	opaleye
Paralabrax clathratus	kelp bass
Paralabrax maculatofasciatus	barred sand bass
Urobatis halleri	round stingray

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APPENDIX B-3

ESSENTIAL FISH HABITAT ASSESSMENT

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ESSENTIAL FISH HABITAT ASSESSMENT

FOR

SHELTER ISLAND BOAT LAUNCH FACILITY

SAN DIEGO BAY, CALIFORNIA

Prepared by:
ECORP Consulting, Inc.
3914 Murphy Canyon Road, Suite A206
San Diego, CA 92123

June 2013

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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BACKGROUND

This assessment of Essential Fish Habitat (EFH) for the San Diego Unified Port District (District) is to identify and protect important habitats of federally managed marine fish species, provided in accordance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (Federal Register 1997). The amendments require the delineation of "Essential Fish Habitat" for all managed species. Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with the National Marine Fisheries Service (NMFS) regarding the potential effects of their actions on EFH, and respond in writing to the NMFS's recommendations.

This EFH Assessment includes a description of the Proposed Action, an overview of the EFH within the project area, a determination of any potential effects of proposed project activities on EFH species and species of concern, and proposed mitigation measures to minimize potential adverse effects resulting from the project.

PROPOSED ACTION

The Shelter Island Boat Launch Facility Improvements Project (proposed Project) includes the repair, maintenance, and replacement of several elements comprising the Shelter Island Boat Launching Facility (SIBLF). Specifically, the proposed work consists of the following elements:

- Demolition of the existing 10-lane concrete launching ramp, docks, vehicle/trailer maneuvering area pavement, area lighting poles, and related improvements.
- Construction of a new 10-lane cast-in-place concrete launching ramp using a temporary steel sheet pile cofferdam to allow the ramp to be constructed in dry conditions. The temporary cofferdam would allow the concrete ramp to be constructed and cured before allowing contact with tidal waters. A total of approximately 200, 24-inch wide (1-inch thick), 35 foot-long vertical sheet piles and 25, 10-inch, 45-foot-long battered steel 'H' piles would be temporarily installed to support the cofferdam.
- Partial removal (approximately 27,154 square feet) of the existing rock jetties and replacement with permanent concrete sheet pile bulkhead walls to expand the boat basin within the existing jetty footprint from approximately 22,800 square feet to approximately 41,000 square feet, creating approximately 18,200 square feet of additional navigable water area within the existing basin. Installation of two new bulkhead walls within the existing jetty footprint, with the west wall measuring 338 feet long and the east wall measuring 169 feet long. The bulkhead walls would have a 60-foot wide opening to allow for boat access to and from the San Diego Bay. Approximately 5-foot-wide accessible walkways with widened overlook areas would be located along the top of the bulkhead walls to provide pedestrian access and viewing of the bay similar to the path that exists on the top of the existing jetties. The bulkhead wall walkways would meet the state accessibility codes and the Americans with Disabilities Act (ADA) requirements. A total of approximately 65 14-inch, 54-foot-long concrete batter piles would be installed to support the permanent concrete sheet piles bulkhead walls.
- Replacement of the existing floating docks, including six dock guide piles, with an interior perimeter (of the basin) floating dock. The new floating dock would include 16 precast concrete

guide pilings that would be approximately 18 inches in diameter and 46 feet long (13 piles would be new, and 3 would be reused).

- Installation of new prefabricated aluminum gangways to provide access from shore to the floating docks (one 34-foot standard gangway, one 42-foot standard gangway, and one 80-foot accessible gangway to accommodate users with disabilities).
- Installation of pavement striping and signage to better designate the existing kayak drop-off area. The kayak launch area is currently 1,300 square feet; no changes to the size of the launch area are proposed.
- Installation of a concrete sidewalk (approximately 160 feet long) and a concrete curb and gutter (approximately 720 feet long) to improve access and safety of the users of the SILBF. The total area to be re-paved would be approximately 16,600 square feet.
- Installation of a Division of Boating and Waterways Project Sign, featuring the facility name and identifying the Division of Boating and Waterways as the Project funding agency and the District as the agency responsible for SIBLF operations and maintenance.
- Minor re-grading of approximately 2,100 square feet of beach area after the western jetty has been removed and the new bulkhead wall has been installed to reinstate the pre-construction beach profile.
- Installation of rock slope protection adjacent to the launch ramp within the basin by beneficially reusing approximately 850 cubic yards of existing rock revetment materials.
- Installation of updated lighting. All proposed lighting would be light-emitting diode (LED) technology for electrical efficiency and longevity.
- Creation of an approximately 600-square-foot (56-square-meter) on-site mitigation area for eelgrass impacts generally between the new east dock and the existing east jetty. Two possible areas for the mitigation area have been identified within the Project footprint.

HISTORY

The SIBLF is located in a small basin that opens onto San Diego Bay (Figure 1). The boat launching area is protected from exposure to open bay waters by rock jetties. A boat launching ramp extends into the launch basin waters, and boarding docks are located on either side of the boat launching ramp. The existing concrete boat launching ramp is approximately 16,090 square feet.

The SIBLF is currently in need of repairs because of the corrosive and wearing actions of seawater and heavy use by boaters. Due to the increased use over time and larger recreational boats, the SIBLF has been experiencing congestion and delays when launching boats in the limited basin area (District 2013).

EXISTING CONDITIONS

Habitats

The proposed project is located within an area designated as EFH for two Fishery Management Plans (FMPs) – Pacific Coast Groundfish (Pacific Fishery Management Council [PFMC] 2014) and Coastal Pelagic Species (PFMC 2011). This project is not expected to impact any designated EFH species or habitat. A preliminary survey for eelgrass (*Zostera marina*) was conducted on May 7th 2013 and found eelgrass resources within the launch basin were limited in extent and quality in terms of habitat for associated species (TDI 2013). In contrast, eelgrass beds along the beaches on either side of the SIBLF were dense and healthy and provided extensive habitat for associated species such as spotted sand bass.

Fishes

The ichthyofauna in the Port of San Diego has been relatively well-studied. Recent surveys characterizing fish communities in San Diego Bay include Vantuna Research Group (VRG) (2006, 2009 and 2012), Merkel & Associates (2000), Allen (1999), and Hoffman (1994).

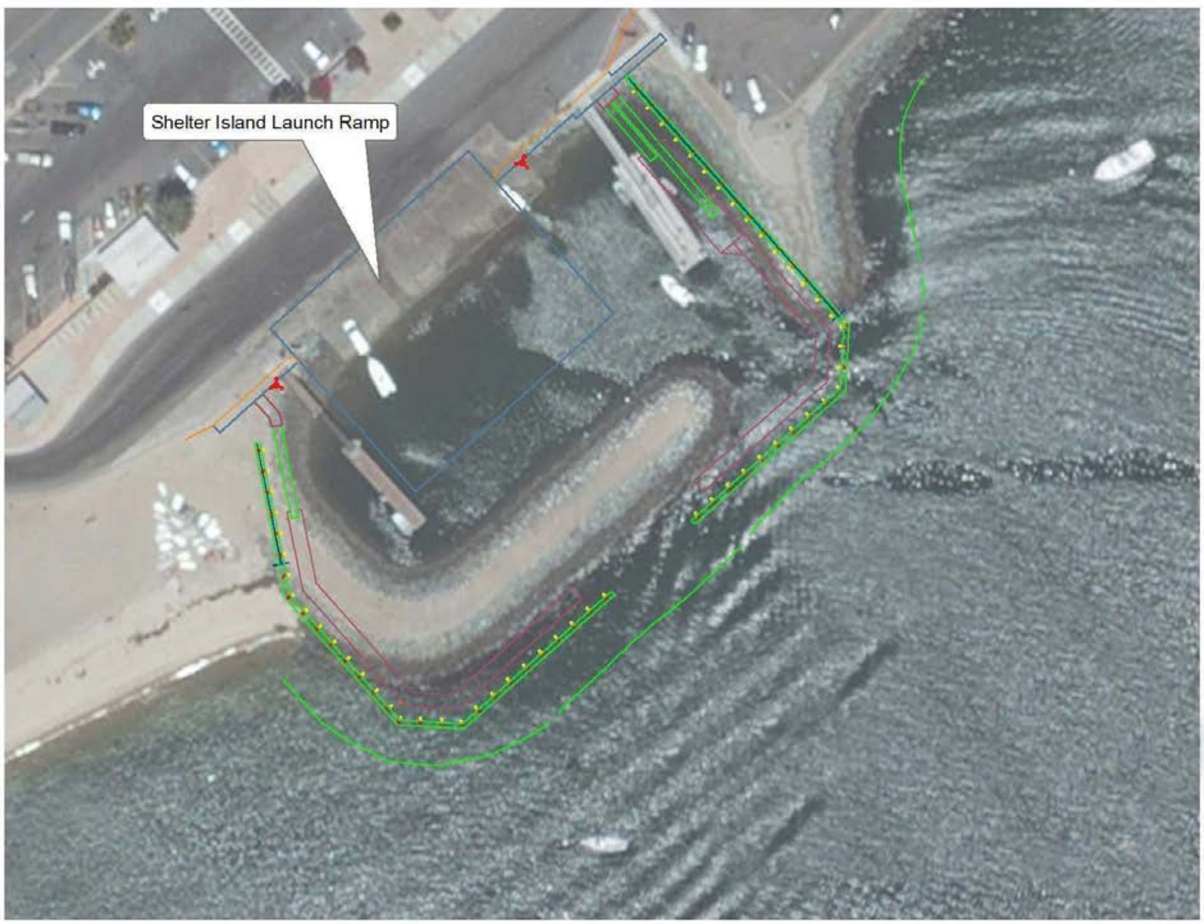

Figure 1 – Map of SIBL Project Area.

These studies have identified nearly 80 fish species in San Diego Bay. The following analysis makes extensive use of information from the VRG 2006, 2009, and 2012 studies because they are the most recent and comprehensive surveys, with a total of 57, 48 and 52 fish species identified, respectively.

Of the 57 species found in 2006, 48 species found in 2009 and 52 species found in 2012, 6 fish species are under two Fishery Management Plans (FMPs): the Coastal Pelagics and Pacific Management Plans. Four of the five fish managed under the Coastal Pelagics FMP are represented in San Diego Bay. The northern anchovy (*Engraulis mordax*) and pacific sardine (*Sardinops sagax*) are the most abundant pelagics identified by Allen (1999) and VRG (2006, 2009, and 2012); Pacific sardines were not caught in 2009 (VRG 2009). Together, these two species accounted for 5.71% of the total abundance and 1.04% of the total biomass of fish collected in 2006 (VRG 2006). No northern anchovy were collected in 2012, while Pacific sardines accounted for 0.01% of total abundance and 0.03% of total biomass (VRG 2012). Pacific mackerel (*Scomber japonicas*) and jack mackerel (*Trachurus symmetricus*) are the other two coastal pelagics of potential concern. These species are much less abundant and were ranked 32nd and 52nd in total abundance and 24th and 73rd in total biomass in 1999 (Allen 1999).

Together the two species accounted for less than 1% of total abundance and biomass of fish captured (Allen 1999). These two species were not found in 2006 or 2009, and only one pacific mackerel was collected in south central San Diego Bay (VRG 2006, 2009, and 2012).

Of the 81 species managed under the Pacific Groundfish FMP, two (California scorpionfish and English sole) have been found in San Diego Bay. These species are rarely collected in San Diego Bay. For example, these two species account for less than 0.5% of the total abundance and biomass of fish captured by Allen (1999). While these two species were not captured in 2006, California scorpionfish accounted for 0.02% of the total abundance and 0.29% of biomass in 2009 (VRG 2009). In 2012, California scorpionfish accounted for 0.05% of total abundance and 1.08% of biomass (VRG 2012).

BIOLOGICAL DESCRIPTIONS FOR EFH AND SPECIES OF CONCERN

Northern anchovy

Northern anchovy historically ranged from the Queen Charlotte Islands, British Columbia, south to Cape San Lucas, Baja California. More recently, populations have moved into the Gulf of California, Mexico. Larvae and juveniles are often abundant in nearshore areas and estuaries with adults being more oceanic. However, adults can be abundant in shallow nearshore areas and estuaries; eggs and larvae have been found offshore. Northern anchovy are non-migratory but do make extensive inshore-offshore and along-shore movements. In some populations, juveniles and adults are observed moving into estuaries during spring and summer and then back out during the fall. Spawning occurs throughout the year dependent upon the population. In southern California, spawning occurs between January and May. Larvae consume copepod eggs and nauplii, naked dinoflagellates, rotifers, ciliates, and foraminiferans. Adults and juveniles typically consume phytoplankton, planktonic crustaceans, and fish larvae. Northern anchovy are one of the most abundant fish in the California current and are important prey for a variety of fish, birds, and marine mammals. Finally, they are used as indicator of environmental stress, being affected by low dissolved oxygen and water-soluble fractions of crude oil (Emmett et al. 1991).

Pacific sardine

Pacific sardine is a pelagic species that can be found from southeastern Alaska to the Gulf of California, Mexico. Individuals can be found in estuaries, but are most common in open coastal habitats and offshore. Changes in sardine distribution are commonly linked to environmental conditions. In California, sardines are highly mobile and move seasonally. Older adults move from southern California and northern Baja spawning grounds to feeding grounds off the Pacific Northwest and Canada. Younger individuals (two to four years old) migrate to feeding grounds in central and northern California. Juveniles occur in nearshore habitats off northern Baja and southern California. Although numbers vary greatly, at times sardines are the most abundant fish species in the California current. In southern populations spawning occurs year-round with a peak from April to August between Point Conception and Magdalena Bay. Eggs and larva are found everywhere adults are found. Sardines are prey for a variety of predators. Eggs and larvae are consumed by numerous planktivores with juvenile and adults being consumed by a variety of fish, birds, and mammals (PFMC 2011).

Pacific mackerel

Pacific mackerel is a pelagic species that ranges in the northeastern Pacific from southeastern Alaska to Banderas Bay, Mexico. Pacific mackerel usually occur within 20 miles of shore. Local sardine populations spawn from late April to July between 3 and 320 km from shore. However, fecundity is more closely tied to sufficient food and environmental conditions than to season. Pacific mackerel larvae eat zooplankton including copepods and fish larvae (PFMC 2011). Juveniles and adults consume small fishes, fish larvae, squid and pelagic crustaceans. Juveniles and adults are important prey for many large fishes, marine mammals, and birds.

Jack mackerel

Jack mackerel is a schooling fish that range widely throughout the northeastern Pacific. Individuals are found along the mainland coasts offshore approximately from the eastern Aleutian Islands, Alaska, to Cabo San Lucas, Baja California. Typically, small jack mackerel (< 6 years of age) are most abundant near the mainland coast and islands in the Southern California Bight. Older individuals fill out the geographic range and are generally found offshore in deep water and along the coastline north of Point Conception, California. Jack mackerel spawn between February and October in California, with peak spawning activity between March and July. Larvae eat primarily copepods with the small jack mackerel found off southern California consuming large zooplankton, juvenile squid and anchovy. Jack mackerel are prey items for large predators such as tuna and billfish. They are likely only of minor significance as prey for marine birds because of the large size of adults and their deep schooling (PFMC 2011).

California scorpionfish

California scorpionfish range from Santa Cruz (California) south to Uncle Sam Bank, Baja California. It is a benthic (bottom-dwelling) species found in both sandy and rocky habitats. Individuals are predominantly solitary, but are known to converge near both natural and man-made prominent features. Young fish live in shallow habitats typically hidden within dense algae and bottom-encrusting organisms. Spawning occurs between May and September and peaks in July. Eggs are laid in a gelatinous mass that floats near the surface. This species preys primarily on crab, squid, octopus, fishes and shrimp (CDFW Website 2013).

English sole

English sole range from Unimak Island, Alaska, to central Baja California, Mexico, but occur in their greatest numbers north of Point Conception, California. Juveniles are often found in estuaries. Adults make limited movements with a northward migration in the spring to summer feeding grounds, returning in the fall. Spawning occurs over soft-bottom substrates at depths of 50-70 m, between December and April. Eggs are buoyant and larvae are pelagic. Adults and juveniles prefer soft sand and mud bottoms generally in less than 12 m of water. Larvae are planktivorous eating different life stages of copepods and other small planktonic organisms. Juveniles feed on copepods, amphipods, shrimp, bivalves, clams, and other benthic invertebrates. Adults eat a variety of benthic organisms, but mostly polychaetes, amphipods, molluscs, and crustaceans. Larvae are likely eaten by larger fishes, with juveniles falling prey to larger fish, marine mammals, and birds. Adults may be eaten by marine mammals, sharks, and other large fish. English sole can accumulate contaminants and have been used as an indicator of environmental stress (Emmett et al. 1991).

EFFECTS OF THE PROPOSED ACTION ON EFH AND SPECIES OF CONCERN

Impacts to fish habitat resulting from the proposed project would predominantly be considered a temporary disturbance related to construction activities. The proposed action will increase the usable surface water area by boaters within the basin between the launching ramp and rock jetty from approximately 22,800 square feet to approximately 41,000 square feet with the proposed bulkhead wall construction. This would reduce congestion and improve boat and ramp operations. As such, the planned replacement of the rock jetty with compact precast concrete bulkhead walls would result in an increase in the usable water area; however, the overall outside area or footprint of the SIBLF would not increase from its existing footprint (District 2013). In addition to the improved access to the boat launch ramp and boarding docks, the proposed Project would include ADA-accessible walkways and lookout areas along the top of the new bulkhead walls. The proposed Project would not increase the capacity or use of the SIBLF. No land use changes would be required for the proposed Project because the work is the repair and maintenance of existing facilities, and the land use designations would remain the same. Therefore, the above construction activities could cause some temporary increases in turbidity, which could subsequently cause a temporary decrease the foraging efficiency of fish. Such increases in turbidity will be minor and of short duration. In addition, some temporary increases in underwater noise from pile driving could occur. Some EFH species may move out of the study area during construction, but are expected to return once construction activities, including pile driving, are completed. These impacts would be less than significant.

Some impacts are expected to protected eelgrass beds from dredging operations inside the basin and potential replacement of the rock jetty. Although approximately 2,150 m2 (0.53 acres) of eelgrass occurs within the survey area, only about 30m^2 would be potentially affected by project activities (see TDI. 2013). Silt curtains will be used during all in-water activity to reduce the indirect effects to eelgrass caused by turbidity produced during construction activities. These impacts will be mitigated using the guidance from the Southern California Eelgrass Mitigation Policy (NMFS 2011) and reduced to less than significant levels by creation of an eelgrass mitigation area on the north side of the new boat docks (see IS/MND Figure 3).

Potential impacts to managed fish species are expected to be minimal and temporary. Impacts from the project from noise from construction activities and increases in suspended sediment from dredging and jetty construction will be minor. Species that may be directly or indirectly affected by sounds levels produced during Project construction includes managed fish species under the CPS and groundfish FMPs The proposed Project would include construction activities (e.g., pile driving) that would generate airborne and underwater sound levels potentially harmful to biological resources. Hydroacoustic impact analysis aims to identify portions of the proposed Project that could have substantially adverse effects, direct or indirect, on marine species identified as candidates, sensitive, or actively maintain protected species-status by the NMFS and CDFW. The criteria for cumulative effects to fish from repeated exposure to pile strikes is based on the size of the fish; 187 dB $SEL_{cumulative}$ is used for fish greater than 2 grams body weight, and 183 dB $SEL_{cumulative}$ for fish under 2 grams. Cumulative impacts to fish as a result of repeated exposure to elevated sound pressure levels from Project construction are possible. However, these fish are highly mobile and are expected to move away from the Project Area during construction. Temporary interruptions in foraging behavior could cause pelagic species such as northern anchovy and sardines to move into other areas but would not cause biologically significant increases in competition due to habitat loss.

Ground fish species are comparatively uncommon in the project area. Only one species, English sole, was recorded in the five years of data collected by Allen (1999), none were recorded by VRG (2006 and 2009), and eight were recorded in North Bay in 2012 (VRG 2012). As a result of the rarity of this species within the Bay, project impacts to English sole are not likely. Additionally, California scorpionfish are also not commonly collected in this part of the bay, will not be impacted by this project.

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APPENDIX B-4

JETTY SOIL SAMPLING REPORT

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June 2, 2015
AMEC Project No. 5014090600

Mr. William Melton, PE
San Diego Unified Port District
3165 Pacific Highway
San Diego, California 92101

Re: Summary Report for the Landfill Classification of the L-Shaped Rock Dike at the Shelter Island Boat Ramp

Dear Mr. Melton:

AMEC Environment & Infrastructure, Inc. (AMEC) is pleased to submit this Summary Report documenting the field collection and sample analysis associated with an assessment of the L-shaped rock dike structure located at the Shelter Island Boat Ramp. The purpose of the assessment was to provide the information needed for the San Diego Unified Port District (Port) to submit an application to dispose of the rock dike materials (both rock and fill soils) at the Otay Landfill operated by Republic Services. The assessment activities were conducted with guidance and input from personnel at Republic.

1.0 BACKGROUND

The Port is proposing to upgrade the Shelter Island Boat Launch(Figures 1 and 2) and that removal of the L-shaped rock dike structure is part of the planned boat launch renovation project. One of the locations proposed for disposal of the rock dike structure (rocks and fill soils) is the Otay Landfill in Chula Vista, California. In order to gain landfill acceptance of the material an investigation of the chemical levels within materials to be excavated from the rock dike structure is necessary.

2.0 MATERIALS AND METHODS

2.1 Sample and Analysis Plan

Based on conversations and e-mail correspondence with landfill personnel at Republic Services, AMEC designed a Sampling and Analysis Plan (SAP) for the collection and analytical testing of soil samples with the intent of gaining approval for acceptance of the material at the intended waste disposal facility. The Port estimates the total volume of material to be excavated from the L-shaped rock dike structure is approximately 16,000 cubic yards (cy). Based upon a telephone conversation between Mr. Melton of the Port and Mr. Snyder of AMEC on August 30, 2013, it was agreed that the rock to soil ratio should be estimated at 50:50 (i.e. approximately

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8,000 cy of rock and 8,000 cy of fill soil). Because the fill soil estimate was greater than 5,000 cy, the California landfill required 30 samples from the fill materials to be analyzed for Extended Range Total Petroleum Hydrocarbons (TPH [C4-C40]), CAM 17/Title 22 Metals, percent solids, and a paint filter test (as a measure of soil moisture content). Additionally, if elevated levels of TPH were detected in the fill materials then benzene, toluene, ethylbenzene, and total xylenes (collectively BTEX) would be analyzed on the samples with elevated TPH. The analytical results would be forwarded to Republic Services for review and acceptance of the waste stream that they represented.

According to landfill personnel at Republic Services, chemical testing would not be required for the rip rap material unless visible staining or oil was observed at the site; however, a separate waste profile application would be required for acceptance of the material at Otay Landfill.

2.2 Health and Safety Plan

AMEC prepared a site-specific health and safety plan (HASP) for the subject project. The HASP was prepared in accordance with currently applicable local, state, and federal regulations. The HASP was designed to minimize the risk of injury to AMEC workers and subcontractors during field activities.

2.3 Soil Boring Permit

AMEC secured permits from the County of San Diego, Land and Water Quality Division, Monitoring Well Program for the installation of soil borings for the purpose of collecting soil samples to classify the material at the Shelter Island Boat Launch for possible disposal.

2.4 Utility Clearance

AMEC contacted Underground Service Alert, a one call system to notify utility owners/operators in the vicinity of the planned sampling area, to identify, locate, and mark their respective underground utilities. On October 24, 2013 an AMEC field scientist met with representatives from SDG&E and UtiliQuest (contracted utility locator for Cox Communications and AT&T) and discussed the scope of the project and locations of the proposed soil borings. No conflicts were identified, and all known underground utilities were identified and marked.

2.5 Soil Boring Installation

On October 29, 2013 AMEC supervised the installation of 8 soil borings to depths ranging from 4 to 24 feet below ground surface (ft bgs, Figure 2). A Wolverine all-terrain truck mounted rotary rig utilizing 6-inch diameter continuous flight hollow stem augers, operated by Pacific Drilling of San Diego, California was used to collect samples. The soil borings were intended to be advanced to depths of approximately 25 ft bgs, but due to the presence of debris, rubble and rocks, refusal was encountered prior to the desired depths. After 3 attempts to refusal, the sampling location was abandoned and drilling operations began on the next sequential sampling location until a total of 30 soil samples were collected.

Soil samples were collected at a sampling interval of approximately 0.75 feet to 1.5 feet using a California split spoon sampler. Soil characteristics were described and recorded on boring logs, and collected into 16-ounce glass jars for chemical analysis. Each jar was labeled and immediately placed on ice for transport to Calscience Environmental Laboratory, Inc. (Calscience) under chain-of-custody protocol for chemical analysis.

After samples were processed, the boreholes were backfilled with bentonite grout slurry to approximately 4 ft bgs. At this depth, bentonite chips were added to the borehole to a depth of approximately 2 ft bgs. The final 2 feet of the borehole was backfilled with native material and compacted before moving approximately 5 feet for another attempt.

Boring logs from the soil boring installation activities are included as Appendix A.

2.6 Waste Management

Excess soil cuttings from the boring installations were collected and placed in a DOT approved 55-gallon drum, properly labeled and stored pending proper disposal by the Port.

2.7 Soil Sample Analysis

The collected soil samples were submitted to Calscience on October 30, 2013 and were analyzed for Extended Range TPH (C4-C40), CAM 17/Title 22 Metals, and percent total solids in accordance with the landfill approved SAP. Another required analysis, paint filter testing, would be performed upon removal of the material to evaluate soil moisture content prior to transfer to the approved landfill.

3.0 RESULTS

3.1 Analytical Chemistry

The analytical chemistry parameters analyzed for this study include total solids, extended range TPH (C4-40), and CAM 17/Title 22 Metals. Total solids ranged from 67.2 percent to 92.7 percent. Extended range TPH (C8-C40) concentrations ranged from less than the method detection limit to 4,600 milligrams per kilogram (mg/kg). Of the 17 metals analyzed, 15 were detected above their respective detection limits. In particular, lead was detected in all 30 samples, at concentrations ranging from 5.21 mg/kg to 665 mg/kg. A summary of the laboratory analytical results are presented in Table 1. Laboratory analytical reports are included as Appendix B.

3.2 Comparison to Hazardous Waste Criteria

Soils from the Shelter Island Boat Launch were analyzed for comparison with Total Threshold Limit Concentrations (TTLC). None of the analytes were detected above TTLC values; however, lead was detected at a concentration which exceeded the Soluble Threshold Limit Concentration (STLC) trigger level of ten times the STLC value in 13 samples, and the Toxicity Characteristic Leaching Procedure (TCLP) trigger of 20 times the TCLP value in 6 samples. In addition, one sample from the waste stream (B-3B/2.1-3.5) contained detectable concentrations of TPH range C23-C40 above threshold values. No other analytes were above STLC or TCLP trigger levels.

Statistical analysis was performed for lead and TPH range C8-C40 to determine the significance of the samples which exceeded threshold values. Although TPH range C8-C40 met the upper 80 percent confidence interval requirements as identified by the landfill for waste stream disposal, lead did not. Due to this, STLC and TCLP tests were initiated for all 30 samples for STLC analysis and 5 of the 6 samples which exceeded TCLP trigger levels. Of the 30 samples tested for STLC analysis, eight exceeded the STLC threshold value of 5.0 milligrams per liter (mg/L); additional statistical analysis of the entire waste stream indicated that the STLC concentrations for lead do not meet the upper 80 percent confidence interval required by the landfill. However, all five of the samples subjected to TCLP analysis met the threshold value of 5.0 mg/L, and four of the results were non-detect. A summary of the STLC and TCLP results are summarized in Table 2. Statistical worksheets are included as Appendix C.

One sample which exceeded the TCLP trigger level for lead (sample B-3C@6.1-6.75) was not tested using the TCLP because the trigger level exceedance was discovered following the initial STLC testing which yielded an anomalous result compared to the TTLC concentration. Due to this, the lab re-tested the sample for the TTLC lead concentration in mg/kg and confirmed that the concentration of lead was much higher than originally detected. The sample results for the TTLC and STLC indicated the sample may be heterogeneous; therefore the sample was re-homogenized by the lab and re-tested for lead twice as a quality assurance/quality control measure. The re-analysis is documented in the narrative for Calscience deliverable 13-10-2303. An average of the three lead concentrations was used for the TTLC statistical analysis for lead for this sample as noted on the TTLC statistical sheet for lead (Appendix C). None of the three results exceeded the TTLC threshold value for lead.

4.0 CONCLUSIONS

Based on the statistical analysis performed on the TTLC and STLC lead results, the waste stream does not meet the 80 percent confidence interval required by the Otay Landfill for acceptance. An alternate disposal facility, Copper Mountain Landfill, in Wellton, Arizona, has been identified by Republic Services for possible disposal of the boat launch materials.

According to landfill personnel (personal communication, Holly Aasen and Stacy Loveland of Republic Landfill with Kimbrie Gobbi of AMEC 21 January 2014), to gain acceptance of the Shelter Island fill material and rip rap at Copper Mountain Landfill, the following acceptance criteria and protocol will need to be met by the Port prior to disposal:

- The landfill will need to accept analytical results greater than one year old.
    - Data collected in October 2013 will likely be expired by the time the boat launch construction occurs; however, because the samples were taken at depth, the analyte concentrations are likely to be undisturbed prior to removal and analyte concentrations may still be accepted as valid by the landfill reviewers.

- Additional sampling and testing of an undefined number of representative samples will need to be analyzed at an Arizona State Certified laboratory. The additional analysis includes:
  - BTEX
  - Polycyclic Aromatic Hydrocarbons
  - Lead TCLP analysis for sample results for sample B-3C@6.1-6.75.
    - If analysis of this sample is not approved due to expired holding time, a sample collected near this location will likely need to be evaluated.
- An updated landfill approval package and waste profile will need to be compiled and submitted to Copper Mountain waste stream reviewers prior to acceptance of the fill materials.
  - For Copper Mountain consideration, only one profile is required for acceptance of both sand fill and rip rap at the Shelter Island Boat Launch.
    - This simplifies the transport needs and costs associated with disposal of the material.

Official landfill approval is still undetermined at this time. However, according to Otay Landfill waste profile reviewers Holly Aasen and Stacy Loveland, Copper Mountain appears to be the most likely disposal option.

Respectfully submitted,

AMEC Environment & Infrastructure, Inc.

Barry J. Snyder

Barry J. Snyder
Aquatic Scientist

Enclosures:
Figure 1 – Regional Map
Figure 2 – Soil Boring Locations

Appendix A – Boring Logs
Appendix B – Boring Photographs
Appendix C – Laboratory Analytical Reports
Appendix D – Statistical Worksheets

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FIGURES

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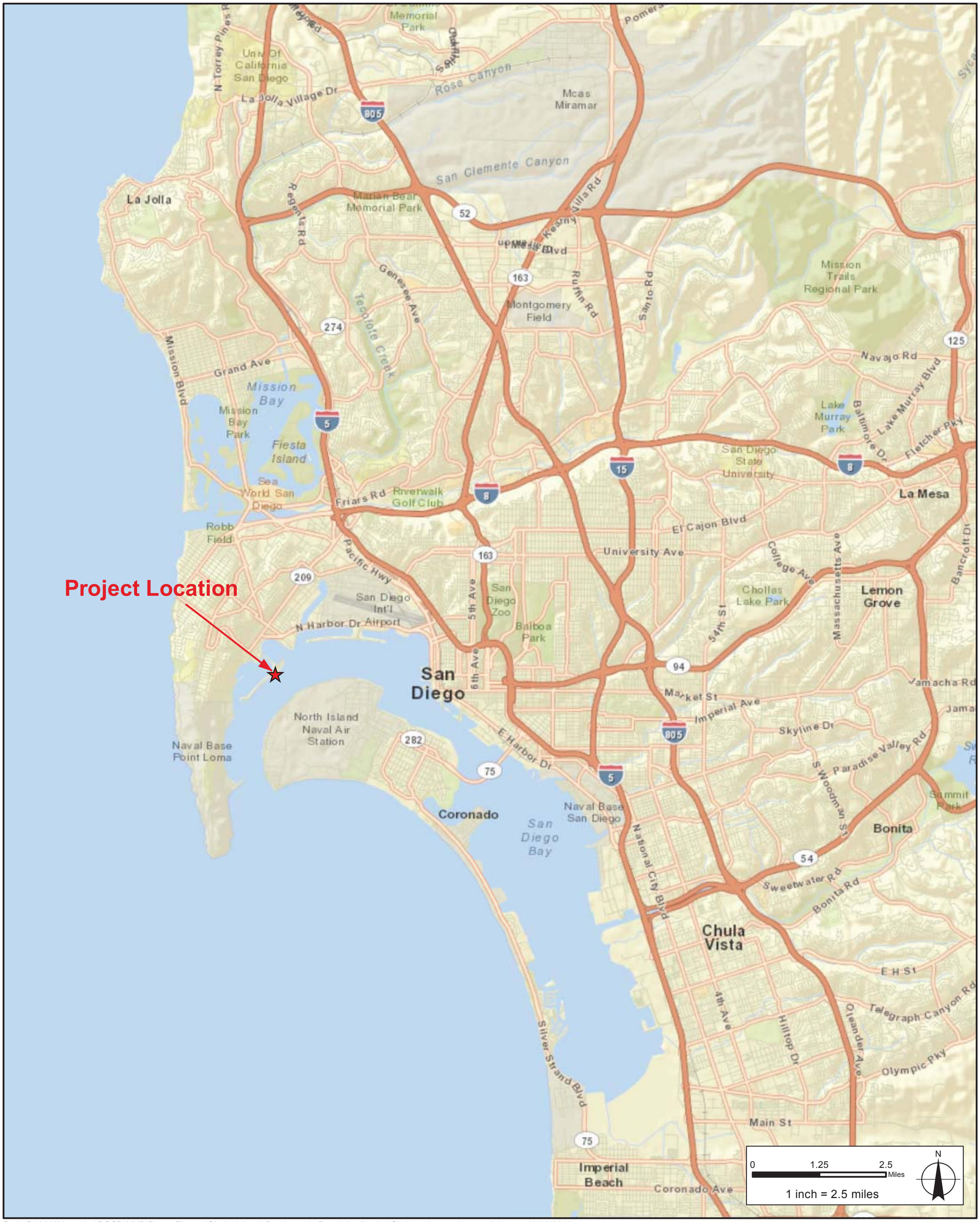

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Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, METI, TomTom, 2012

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Regional Map
Shelter Island Boat Launch Redevelopment
Landfill Classification Study
San Diego County, CA

FIGURE

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Aerial Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

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San Diego Unified Port District
Summary Report for the Landfill Classification of the
L-Shaped Rock Dike at the Shelter Island Boat Ramp
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EPA 6010B	Barium	□□□□	2000	□□□□□	10□	□□.6	56.□	□5.6	□9.5	41.□	122	95.6	91.□	□1.□
EPA 6010B	Beryllium	□□□	.	□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 6010B	Cadmium	□□	20	□□□	0.2□1	0.265	0.201	ND	0.□□2	0.126	0.196	0.□12	0.255	0.20□
EPA 6010B	Chromium	□□	100	□□□□	1□.1	1□.□	10.4	□.9□	16.2	9.25	11.□	16.9	9.1□	1□.0
EPA 6010B	Cobalt	□□□	.	□□□□	4.25	4.□□	2.94	2.06	□.14	2.19	4.56	4.00	2.□□	2.□□
EPA 6010B	Copper	□□□	.	□□□□	12.9	9.24	□.61	6.20	6.55	5.55	15.0	19.9	12.□	1□.1
EPA 6010B	Lead	□□	100	□□□□	29.4	12.4	□.□□	6.9□	*146*	21.6	2□.5	□□□	14.1	1□.0
EPA □1□4A	Mercury	□□□	4.0	□□	0.0215	ND	ND	ND	ND	ND	0.04□□	0.122	0.0□□5	0.0□16
EPA 6010B	Molybdenum	□□□□	.	□□□□	0.6□4	0.□□□	1.□6	4.□1	1.□5	0.9□□	0.461	0.419	0.45□	1.12
EPA 6010B	Nickel	□□□	.	□□□□	5.6□	4.9□	□.90	4.□□	4.□1	□.4□	5.□□	6.66	5.0□	5.62
EPA 6010B	Selenium	□□	20	□□□	ND	ND	ND	ND	0.209	ND	0.251	ND	ND	ND
EPA 6010B	Sil□er	□□	100	□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 6010B	Thallium	□□	.	□□□	0.102	0.1□6	ND	ND	ND	ND	ND	ND	ND	ND
EPA 6010B	□anadium	□□□	.	□□□□	29.□	□□.□	20.0	14.9	22.□	16.9	26.□	2□.0	21.□	1□.2
EPA 6010B	□inc	□□□□	.	□□□□	5□6	45.9	□2.6	29.0	119	2□4	5□5	6□.□	□□4	□□.5
□ota□ Petro□e□□ □□□rocar□on□ □□ten□e□ □an□e □□□ □□□□□□□ □□□□□														
EPA □015B □M□	C4-C5	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C6	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C9-C10	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C11-C12	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	□R□ □C4-C12□Total	□	.	□□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C9-C10	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C11-C12	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C1□-C14	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C15-C16	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C1□-C1□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C19-C20	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C21-C22	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	C□-C22 Total	□	.	□□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C2□-C24	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C25-C2□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C29-C□2	□	.	□	26	ND	ND	ND	ND	ND	12	65	11	ND
EPA □550B	C□□-C□6	□	.	□	□□	ND	ND	ND	ND	ND	15	110	1□	ND
EPA □550B	C□□-C40	□	.	□	□9	ND	ND	ND	ND	ND	16	1□0	1□	ND
EPA □550B	C□-C40 Total	□	.	□□□□	110	ND	ND	ND	ND	ND	52	□10	56	ND

San Diego Unified Port District
Summary Report for the Landfill Classification of the
L-Shaped Rock Dike at the Shelter Island Boat Ramp
AMEC Project No. 5014090600
□0 January 2014

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□□L□ □na□tica□□e□□t□ □or □□e□ter □□an□ □oat La□nc□ □ont□□

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□enera□□□e□ i□tr□ □□ □														
SM 2540B □M□	Total Solids	□	□	□	□5.0	6□2	□2.0	□0.5	□4.4	□5.2	□9.9	□9.0	□6.1	□□.□
□□□ □□ □eta□□ □□ □□□□□														
EPA 6010B	Antimony	□□□	.	□□□	ND	ND	ND	ND	ND	ND	0.□□0	ND	ND	0.5□1
EPA 6010B	Arsenic	□□	100	□□□	□.99	5.45	4.64	4.04	□.26	4.20	□.4□	4.2□	□.4□	5.65
EPA 6010B	Barium	□□□□	2000	□□□□□	□6.1	5□.□	□5.5	50.□	6□.5	66.9	94.□	□9.4	95.0	10□
EPA 6010B	Beryllium	□□	.	□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 6010B	Cadmium	□□	20	□□□	0.21□	0.169	0.154	0.12□	0.141	0.240	0.□66	0.451	1.20	0.5□5
EPA 6010B	Chromium	□□	100	□□□□	14.1	□.45	□.09	9.90	20.6	20.6	1□.2	□.59	11.2	1□.5
EPA 6010B	Cobalt	□□□	.	□□□□	2.□2	1.6□	1.99	1.44	1.56	2.1□	4.51	□.10	□.66	4.45
EPA 6010B	Copper	□□□	.	□□□□	21.2	10.4	□2.□	16.5	9.□0	12.5	10□	1□.4	□0.5	49.4
EPA 6010B	Lead	□□	100	□□□□	10.9	6.92	□.6□	5.21	10.1	□.49	115	□□□	103	184
EPA □1□4A	Mercury	□□	4.0	□□	ND	ND	ND	ND	ND	ND	0.121	0.129	0.0651	0.□60
EPA 6010B	Molybdenum	□□□□	.	□□□□	0.404	0.664	0.□□□	0.521	0.□0□	1.11	0.914	0.4□6	1.□5	0.400
EPA 6010B	Nickel	□□□	.	□□□□	4.14	4.16	□.90	□.64	2.□6	□.60	2□.5	10.9	21.0	11.4
EPA 6010B	Selenium	□□	20	□□□	ND	ND	ND	0.□9□	ND	ND	0.21□	ND	ND	ND
EPA 6010B	Sil□er	□□	100	□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 6010B	Thallium	□□	.	□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 6010B	□anadium	□□□	.	□□□□	1□.□	1□.4	1□.6	10.9	1□.□	15.5	□0.9	21.9	54.6	□□.0
EPA 6010B	□inc	□□□□	.	□□□□	45.1	2□.6	□2.□	2□.4	2□.0	42.9	19□	□□.6	□12	249
□ota□Petro□e□□ □□□rocar□on□ □□ten□e□ □an□e □□ □□ □□□□□□ □□□□□														
EPA □015B □M□	C4-C5	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C6	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C9-C10	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C11-C12	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	□R□ □C4-C12□Total	□	.	□□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C9-C10	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C11-C12	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C1□-C14	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C15-C16	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C1□-C1□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C19-C20	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C21-C22	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	C□-C22 Total	□	.	□□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C2□-C24	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	5.0	ND
EPA □550B	C25-C2□	□	.	□	ND	ND	ND	ND	ND	ND	6□	ND	14	4□
EPA □550B	C29-C□2	□	.	□	ND	ND	ND	ND	ND	ND	240	1100	41	140
EPA □550B	C□□-C□6	□	.	□	ND	ND	ND	ND	ND	ND	2□0	1500	52	1□0
EPA □550B	C□□-C40	□	.	□	ND	ND	ND	ND	ND	ND	□□0	1□00	62	240
EPA □550B	C□-C40 Total	□	.	□□□□	ND	ND	ND	ND	ND	ND	9□0	□□□□	1□0	620

□a□e □□
□□L□ □na□tica□□e□□t□ □or □□e□ter □□an□ □oat La□nc□ □ont□□

[illegible]	□□□P□□□□ □□□□	□□L□ □ri□□er Le□e□	□□LP □ri□□er Le□e□	□□L□ □□et □ei□□t□	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
□enera□□□e□ i□tr□□□															
SM 2540B □M□	Total Solids	□	□	□	□□.□	92.□	□4.□	□6.4	□5.1	□□4	□□6	□□4	□□6	□4.□	□6.4
□□□ □□ □eta□□□ □□□□□															
EPA 6010B	Antimony	□□□	.	□□□	ND	ND	ND	ND	ND	ND	ND	ND	1.95	ND	21□.□
EPA 6010B	Arsenic	□□	100	□□□	□.16	4.□1	2.94	5.29	6.59	4.14	2.□□	2.5□	□.□□	□62	5□.0
EPA 6010B	Barium	□□□□	2000	□□□□□	94.9	□4.2	□6.5	59.1	44.9	95.2	10□	□2.6	95.6	□5.□	1062.0
EPA 6010B	Beryllium	□□□	.	□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 6010B	Cadmium	□□	20	□□□	0.410	0.□4□	0.□95	0.2□5	0.226	0.52□	0.294	0.1□1	0.2□0	0.264	10.2
EPA 6010B	Chromium	□□	100	□□□□	11.4	29.9	15.0	□.69	□.09	1□.9	12.9	9.□1	15.2	9.□6	214.4
EPA 6010B	Cobalt	□□□	.	□□□□	5.01	4.55	5.25	2.□4	2.□1	2.□0	□.29	2.□2	□.25	2.64	□□6.2
EPA 6010B	Copper	□□□	.	□□□□	4□.1	26.□	26.□	20.9	22.1	21.2	12.9	11.5	1□.1	11.4	24□.4
EPA 6010B	Lead	□□	100	□□□□	□□□□	□□□□	108	522*	49.□	□□□□	□□□□	26.6	226	16.□	□□□□□
EPA □1□4A	Mercury	□□□	4.0	□□	0.04□0	0.05□9	0.0□05	0.0□90	0.0□9□	ND	0.049□	0.161	0.0□69	ND	2.4
EPA 6010B	Molybdenum	□□□□	.	□□□□	0.□50	□.05	0.2□□	0.4□□	0.616	1.25	0.294	0.294	0.4□2	0.9□2	5□4.0
EPA 6010B	Nickel	□□□	.	□□□□	19.□	14.□	11.5	□.0□	□.6□	□.6□	6.4□	4.□□	6.46	□.□□	191.2
EPA 6010B	Selenium	□□	20	□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4□.□
EPA 6010B	Sil□er	□□	100	□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA 6010B	Thallium	□□	.	□□□	ND	ND	0.11□	ND	ND	ND	ND	0.104	ND	ND	192.6
EPA 6010B	□anadium	□□□	.	□□□□	64.2	□□.2	49.9	25.□	29.□	21.6	□5.□	24.1	□□.□	1□.4	24□.□
EPA 6010B	□inc	□□□□	.	□□□□	11□	94.□	□4.9	5□.5	□1.4	66.6	122	99.□	9□.0	201	□09.9
□ota□ Petro□e□□ □□□rocar□on□ □□ten□e□ □an□e □□□□□□□□□ □□□□															
EPA □015B □M□	C4-C5	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C6	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C9-C10	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	C11-C12	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □015B □M□	□R□ □C4-C12□Total	□	.	□□□□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C9-C10	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C11-C12	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C1□-C14	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C15-C16	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C1□-C1□	□	.	□	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPA □550B	C19-C20	□	.	□	ND	ND	ND	5.2	ND	ND	ND	ND	6.□	ND	6.0
EPA □550B	C21-C22	□	.	□	ND	ND	□.□	□.0	ND	6.□	ND	ND	9.□	ND	□.0
	C□-C22 Total	□	.	□□□□	ND	ND	□.□	1□.2	ND	6.□	ND	ND	16.5	ND	60□.□
EPA □550B	C2□-C24	□	.	□	ND	ND	5.5	6.1	ND	6.4	ND	ND	11	ND	□.□
EPA □550B	C25-C2□	□	.	□	ND	□9	16	11	6.□	19	ND	9.4	26	6□	□0.0
EPA □550B	C29-C□2	□	.	□	96	□40	55	□1	2□	6□	41	□□	6□	□60	112
EPA □550B	C□□-C□6	□	.	□	120	460	6□	□□	□2	□□	54	56	69	5□0	154
EPA □550B	C□□-C40	□	.	□	140	6□0	□1	5□	49	100	62	□□	9□	960	229
EPA □550B	C□-C40 Total	□	.	□□□□	□□0	1600	240	160	120	2□0	160	1□0	290	2000	□65

Notes□
□ an a□erage of the three analytical results for this sample
mg□kg - milligrams per kilogram
ND - Non-detect
STLC - Soluble Threshold Limit Concentration
TCLP - To□icity Characteristic Leaching Procedure
TTLC - Total Threshold Limit Concentration

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□a□□e □
□□L□ an□ □□LP Lea□ □e□□□t□ □or □□e□ter □□an□ □oat La□nc□

□a□ □e □□	□na□te	□□L□ □ri□□er □a□□e □□ □□□□□	□□LP □ri□□er □a□□e □□ □□□□□	□oncentration in □e□i□ ent □□ □□□□□	□□L□ □□LP □□re□□o□□ □a□□e □□ □□L□	□oncentration in □e□i□ ent □□ □□L□ □□L□ □e□t	□oncentration in □e□i□ ent □□ □□L□ □□LP □e□t
B-1□4.1-5.5	Lead			29.4		1.1□	--
B-1□6.1-□.5	Lead			12.4		0.521	--
B-1□□.1-9.5	Lead			□.□□		0.405	--
B-1□10.1-12.5	Lead			6.9□		0.569	--
B-1□12.1-1□.5	Lead			*146*		0.□04	ND
B-1□14.1-15.5	Lead			21.6		0.□□2	--
B-2A□4.1-5.5	Lead			2□.5		0.□□6	--
B-2B□4.1-5.5	Lead			□□□		2.42	--
B-2B□6.1-□.5	Lead			14.1		0.60□	--
B-2C□10.1-11.5	Lead			1□.0		ND	--
B-2C□12.1-1□.5	Lead			10.9		0.546	--
B-2C□14.1-16.5	Lead			6.92		0.□09	--
B-2C□16.1-1□.5	Lead			□.6□		0.□52	--
B-2C□1□.1-19.5	Lead			5.21		0.5□0	--
B-2C□20.1-22.5	Lead			10.1		0.52□	--
B-2C□22.1-2□.5	Lead	□□	*100*	□.49	□□	ND	--
B-□□4.1-5.5	Lead			*115*		□□□	ND
B-□B□2.1-□.5	Lead			□□□		□□□	--
B-□B□□.1-□.5	Lead			*103*		1.□□	ND
B-□C□2.1-2.□5	Lead			*184*		□□□	0.12□
B-□C□2.□5-□.5	Lead			□□□		2.24	--
B-□C□4.1-4.□5	Lead			□□□		2.90	--
B-□C□4.□5-5.5	Lead			*108*		4.□9	ND
B-□C□6.1-6.□5	Lead			*522**		□□□	--
B-□C□6.□5-□.5	Lead			□□□		□□□	--
B-□C□10.1-10.□5	Lead			□□□		□□□	--
B-4□□.1-□.□5	Lead			□□□		□□□	--
B-4□□.□5-4.5	Lead			26.6		1.□□	--
B-4□5.1-5.□5	Lead			*226*		□□□	ND
B-4□5.□5-6.5	Lead			16.□		0.□16	--
□□□□□□□	Lead			□□□		4.□□	0.021

Notes□
□ an a□erage of the three analytical results for this sample
mg□kg - milligrams per liter
mg□L - milligrams per liter
ND - Non-detect
STLC - Soluble Threshold Limit Concentration
TCLP - To□icity Characteristic Leaching Procedure

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□PP□□□□□ □

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Project Name: Shelter Island Boat Launch Redevelopment

Project Number: 5014090500 **Boring ID:** B-1

Date: 10/29/13

Boring Location:	B-1	**Logged By:**	BL/KG
Elevation and Datum:	N/A	**Project Manager:**	Barry Snyder
Start Date:	10-29-13	**Drilling Contractor:**	Pacific Drilling
Completion Date:	10-29-13	**Drilling Method:**	Hollow Stem Auger
Total Depth (ft bgs):	16	**Drilling Equipment:**	Wolverine All Terrain Truck Mount Rotary Rig
Depth to Water (ft bgs):	10	**Sampling Method:**	SPT

Depth Below Ground Surface (feet)	Graphical Log	Sample	Blow Counts	PID Meter Reading (ppm)		Unified Soil Classification System	**Soil Classification, Description and Notes** Name (USCS Symbol): color, moisture, material with description [i.e. % by weight, gradation, angularity] starting with largest percent, cementation, plasticity, odor, staining. Any additional descriptive information may be included in the soil description or notes.
0						SM	**FILL Material** **SILTY SAND WITH GRAVEL,** dark reddish-brown (2.5YR 3/4), damp, fine grained sand, fine to medium gravel
		No Recovery	3				
		No Recovery	2				
5		Recovery	1			SM	**FILL Material** **SILTY SAND,** brown (10YR 4/3), damp, fine grained sand, trace fine gravel
		No Recovery	3				
		No Recovery	2				
		Recovery	2				
						SM	**FILL Material** **SILTY SAND,** black (10YR 2/1), damp, fine grained sand, trace fine to medium gravel
		No Recovery	8			SW-SM	**FILL Material** **WELL GRADED SAND WITH SILT,** very dark gray (2.5Y 3/1), damp, fine to medium sand, trace fine to medium gravel
		Recovery	13			SM	**FILL Material** **SILTY SAND,** very dark gray (2.5Y 3/1), damp, fine to medium grained sand, trace fine to medium gravel
		Recovery	5			SW-SM	**FILL Material** **WELL GRADED SAND WITH SILT & GRAVEL,** light olive brown (2.5Y 5/3), wet, fine to medium grained sand, fine to medium, angular gravel
∇ 10							
		No Recovery	12				
		Recovery	11				
		Recovery	13				
		Recovery	24				
		Recovery	16				note: wet at 10' (Sea Water/Sea Level)
		Recovery	4				As above - gravel content increases, light yellowish-brown (2.5Y 6/3) at 12'
		No Recovery	4				As above - gravel content decreases, light yellowish-brown (2.5Y 6/3) at 13.5'
		Recovery	5				
15		Recovery	9				As above - silt content increases, olive brown (2.5Y 4/3) at 15'
							As above - rounded to subrounded gravel, black (2.5Y 2.5/1), organic odor at 15.5'
							Refusal at 16'
20							
25							

No Recovery Recovery

Project Name: Shelter Island Boat Launch Redevelopment

Project Number: 5014090500

Date: 10/29/13

Boring ID: B-2A

Boring Location:	B-2A	**Logged By:**	BL/KG
Elevation and Datum:	N/A	**Project Manager:**	Barry Snyder
Start Date:	10-29-13	**Drilling Contractor:**	Pacific Drilling
Completion Date:	10-29-13	**Drilling Method:**	Hollow Stem Auger
Total Depth (ft bgs):	6	**Drilling Equipment:**	Wolverine All Terrain Truck Mount Rotary Rig
Depth to Water (ft bgs):	N/A	**Sampling Method:**	SPT

Depth Below Ground Surface (feet)	Graphical Log	Sample	Blow Counts	PID Meter Reading (ppm)		Unified Soil Classification System	**Soil Classification, Description and Notes** Name (USCS Symbol): color, moisture, material with description [i.e. % by weight, gradation, angularity] starting with largest percent, cementation, plasticity, odor, staining. Any additional descriptive information may be included in the soil description or notes.
0						SM	**FILL Material** **SILTY SAND WITH GRAVEL,** olive brown (2.5Y 4/3), damp, fine grained sand, fine to medium, angular to subangular gravel
		No Recovery	4				
5		Recovery	21				As above - light gray (2.5Y 7/2), broken rock in sampler
		Recovery	14				As above - olive brown (2.5Y 4/4), shell hash in sampler
							Refusal at 6'
10							
15							
20							
25							

No Recovery Recovery

Project Name: Shelter Island Boat Launch Redevelopment

Project Number: 5014090500 **Boring ID:** B-2B

Date: 10/29/13

Boring Location:	B-2B	**Logged By:**	BL/KG
Elevation and Datum:	N/A	**Project Manager:**	Barry Snyder
Start Date:	10-29-13	**Drilling Contractor:**	Pacific Drilling
Completion Date:	10-29-13	**Drilling Method:**	Hollow Stem Auger
Total Depth (ft bgs):	10	**Drilling Equipment:**	Wolverine All Terrain Truck Mount Rotary Rig
Depth to Water (ft bgs):	10	**Sampling Method:**	SPT

Depth Below Ground Surface (feet)	Graphical Log	Sample	Blow Counts	PID Meter Reading (ppm)		Unified Soil Classification System	**Soil Classification, Description and Notes** Name (USCS Symbol): color, moisture, material with description [i.e. % by weight, gradation, angularity] starting with largest percent, cementation, plasticity, odor, staining. Any additional descriptive information may be included in the soil description or notes.
0						SM	**FILL Material** **SILTY SAND WITH GRAVEL,** light olive brown (2.5Y 5/4), damp, fine to medium grained sand, fine to medium, rounded to subrounded gravel
		No Recovery	1				
		No Recovery	3				
5		Recovery	1				As above - gravel content decreases
		No Recovery	8				
		No Recovery	6				
		Recovery	20				As above - subangular to subrounded gravel
		No Recovery	14				
		No Recovery	17				No sample recovery
		No Recovery	21				
▽ 10							Refusal at 10'
15							
20							
25							

No Recovery Recovery

Project Name: Shelter Island Boat Launch Redevelopment

Project Number: 5014090500

Boring ID: B-2C

Date: 10/29/13

Boring Location:	B-2C	**Logged By:**	BL/KG
Elevation and Datum:	N/A	**Project Manager:**	Barry Snyder
Start Date:	10-29-13	**Drilling Contractor:**	Pacific Drilling
Completion Date:	10-29-13	**Drilling Method:**	Hollow Stem Auger
Total Depth (ft bgs):	24	**Drilling Equipment:**	Wolverine All Terrain Truck Mount Rotary Rig
Depth to Water (ft bgs):	8.5	**Sampling Method:**	SPT

Depth Below Ground Surface (feet)	Graphical Log	Sample	Blow Counts	PID Meter Reading (ppm)		Unified Soil Classification System	**Soil Classification, Description and Notes** Name (USCS Symbol): color, moisture, material with description [i.e. % by weight, gradation, angularity] starting with largest percent, cementation, plasticity, odor, staining. Any additional descriptive information may be included in the soil description or notes.
0						SM	**FILL Material** **SILTY SAND WITH GRAVEL,** light olive brown (2.5Y 5/4), damp, fine to medium grained sand, fine to medium, rounded to subrounded gravel
5							note: hard rock or concrete at 5'
▽							note: wet at 8.5'
10		Recovery	19				As above - very hard drilling, light olive brown (2.5Y 5/3)
		Recovery	19				
		Recovery	6				
		Recovery	7				As above
		Recovery	7				
		Recovery	8				
		Recovery	6				As above
		Recovery	6				
15		Recovery	15				
		No Recovery	6				As above - gravel content decreases
		Recovery	8				
		Recovery	8				
		Recovery	50/6"				As above - silt content increases SPT bends during sampling from 18' to 19.5' interval
		No Recovery					
		No Recovery					
20		Recovery	5				
		Recovery	3				As above - piece of concrete at 21.5'
		Recovery	10				
		Recovery	50/4"				As above - very dark gray (2.5Y 3/1)
		No Recovery					
		No Recovery					
							Refusal at 24'
25							

No Recovery   Recovery

Project Name: Shelter Island Boat Launch Redevelopment

Project Number: 5014090500

Boring ID: B-3

Date: 10/29/13

Boring Location:	B-3	**Logged By:**	BL/KG
Elevation and Datum:	N/A	**Project Manager:**	Barry Snyder
Start Date:	10-29-13	**Drilling Contractor:**	Pacific Drilling
Completion Date:	10-29-13	**Drilling Method:**	Hollow Stem Auger
Total Depth (ft bgs):	4	**Drilling Equipment:**	Wolverine All Terrain Truck Mount Rotary Rig
Depth to Water (ft bgs):	N/A	**Sampling Method:**	SPT

Depth Below Ground Surface (feet)	Graphical Log	Sample	Blow Counts	PID Meter Reading (ppm)		Unified Soil Classification System	**Soil Classification, Description and Notes** Name (USCS Symbol): color, moisture, material with description [i.e. % by weight, gradation, angularity] starting with largest percent, cementation, plasticity, odor, staining. Any additional descriptive information may be included in the soil description or notes.
0						SM	**FILL Material** **SILTY SAND WITH GRAVEL,** light olive brown (2.5Y 5/3), damp, fine to medium grained sand, fine to medium, subangular to subrounded gravel
		No Recovery	7				
		Recovery	9				As above - light gray (2.5Y 7/2), possible concrete
		Recovery	12				
							Refusal at 4'
5							
10							
15							
20							
25							

No Recovery Recovery

Project Name: Shelter Island Boat Launch Redevelopment

Project Number: 5014090500 **Boring ID:** B-3B

Date: 10/29/13

Boring Location:	B-3B	**Logged By:**	BL/KG
Elevation and Datum:	N/A	**Project Manager:**	Barry Snyder
Start Date:	10-29-13	**Drilling Contractor:**	Pacific Drilling
Completion Date:	10-29-13	**Drilling Method:**	Hollow Stem Auger
Total Depth (ft bgs):	10.5	**Drilling Equipment:**	Wolverine All Terrain Truck Mount Rotary Rig
Depth to Water (ft bgs):	9	**Sampling Method:**	SPT

Depth Below Ground Surface (feet)	Graphical Log	Sample	Blow Counts	PID Meter Reading (ppm)		Unified Soil Classification System	**Soil Classification, Description and Notes** Name (USCS Symbol): color, moisture, material with description [i.e. % by weight, gradation, angularity] starting with largest percent, cementation, plasticity, odor, staining. Any additional descriptive information may be included in the soil description or notes.
0						SM	**FILL Material** **SILTY SAND WITH GRAVEL,** light olive brown (2.5Y 5/3), damp, fine to medium grained sand, fine to medium, subangular to subrounded gravel
		No Recovery	9				
		Recovery	7				As above - trace clay, dark olive brown (2.5Y 3/3), very hard drilling from 2' to 3'
		Recovery	9				
							note: hard drilling at 4', sample skipped until drilling becomes easier
5		No Recovery	14				
		No Recovery	17				
		No Recovery	22				
		No Recovery	12				
		No Recovery	16				As above - clay & gravel content decrease, light olive brown (2.5Y 5/6)
		Recovery	9				note: piece of brick in sampler at 8'
▽							
		No Recovery	6				
		No Recovery	5				note: rock stuck in sampler
10		No Recovery	5				
							Refusal at 10.5'
15							
20							
25							

No Recovery Recovery

Project Name: Shelter Island Boat Launch Redevelopment

Project Number: 5014090500 **Boring ID:** B-3C

Date: 10/29/13

Boring Location:	B-3C	**Logged By:**	BL/KG
Elevation and Datum:	N/A	**Project Manager:**	Barry Snyder
Start Date:	10-29-13	**Drilling Contractor:**	Pacific Drilling
Completion Date:	10-29-13	**Drilling Method:**	Hollow Stem Auger
Total Depth (ft bgs):	11.5	**Drilling Equipment:**	Wolverine All Terrain Truck Mount Rotary Rig
Depth to Water (ft bgs):	10	**Sampling Method:**	SPT

Depth Below Ground Surface (feet)	Graphical Log	Sample	Blow Counts	PID Meter Reading (ppm)		Unified Soil Classification System	**Soil Classification, Description and Notes** Name (USCS Symbol): color, moisture, material with description [i.e. % by weight, gradation, angularity] starting with largest percent, cementation, plasticity, odor, staining. Any additional descriptive information may be included in the soil description or notes.
0						SM	**FILL Material** **SILTY SAND WITH GRAVEL,** dark olive brown (2.5Y 3/3), damp, trace clay, fine to medium grained sand, fine to medium, subangular to subrounded gravel
		No Recovery	9				
		Recovery	6				As above
		Recovery	5				
		No Recovery	6				As above
		Recovery	6				
5		Recovery	38				note: piece of concrete in sampler at 5'
		No Recovery	10				
		Recovery	33				As above - olive brown (2.5Y 4/3)
		Recovery	18				
		No Recovery	12				
		No Recovery	17				
		No Recovery	16				
▽ 10		No Recovery	2				As above - light olive brown (2.5Y 5/4)
		Recovery	7				
		Recovery	50				
							Refusal at 11.5'
15							
20							
25							

No Recovery Recovery

Project Name: Shelter Island Boat Launch Redevelopment

Project Number: 5014090500

Boring ID: B-4

Date: 10/29/13

Boring Location:	B-4	**Logged By:**	BL/KG
Elevation and Datum:	N/A	**Project Manager:**	Barry Snyder
Start Date:	10-29-13	**Drilling Contractor:**	Pacific Drilling
Completion Date:	10-29-13	**Drilling Method:**	Hollow Stem Auger
Total Depth (ft bgs):	7	**Drilling Equipment:**	Wolverine All Terrain Truck Mount Rotary Rig
Depth to Water (ft bgs):	N/A	**Sampling Method:**	SPT

Depth Below Ground Surface (feet)	Graphical Log	Sample	Blow Counts	PID Meter Reading (ppm)		Unified Soil Classification System	**Soil Classification, Description and Notes** Name (USCS Symbol): color, moisture, material with description [i.e. % by weight, gradation, angularity] starting with largest percent, cementation, plasticity, odor, staining. Any additional descriptive information may be included in the soil description or notes.
0						SM	**FILL Material** **SILTY SAND WITH GRAVEL,** light olive brown (2.5Y 5/4), damp, fine to medium grained sand, fine to medium, subangular to subrounded gravel
		No Recovery	7				As above
		Recovery	21				
		Recovery	15				note: clay stringers at 4'
5		No Recovery	10				note: rock in end of sampler at 4.5'
		Recovery	11				note: rubble, broken concrete, brick at 5.5'
		Recovery	12				As above - gravel content increases, black (2.5Y 2.5/1), organic odor
							note: very hard drilling, concrete at 6.5'
							Refusal at 7'
10							
15							
20							
25							

No Recovery   Recovery

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Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-1_4.1-5.5
Depth Interval (feet): 4.1 - 5.5
Sample Date & Time: 10/29/2013 0905

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-1_6.1-7.5
Depth Interval (feet): 6.1 - 7.5
Sample Date & Time: 10/29/2013 0905

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-1_8.1-9.5
Depth Interval (feet): 8.1 - 9.5
Sample Date & Time: 10/29/2013 0915

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-1_10.1-12.5
Depth Interval (feet): 10.1 - 11.5
Sample Date & Time: 10/29/2013 0920

Port of San Diego
Shelter Island Boat Launch Redevelopment Sediment Study
AMEC Project No. 5014090500
October 2013

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-1_12.1-13.5
Depth Interval (feet): 12.1 - 13.5
Sample Date & Time: 10/29/2013 0925

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-1_14.1-15.5
Depth Interval (feet): 14.1 - 15.5
Sample Date & Time: 10/29/2013 0935

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2A_4.1-5.5
Depth Interval (feet): 4.1 - 5.5
Sample Date & Time: 10/29/2013 1020

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2B_4.1-5.5
Depth Interval (feet): 4.1 - 5.5
Sample Date & Time: 10/29/2013 1035

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2B_6.1-7.5
Depth Interval (feet): 6.1 - 7.5
Sample Date & Time: 10/29/2013 1045

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2C_10.1-11.5
Depth Interval (feet): 10.1 - 11.5
Sample Date & Time: 10/29/2013 1120

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2C_12.1-13.5
Depth Interval (feet): 12.1 - 13.5
Sample Date & Time: 10/29/2013 1125

Port of San Diego
Shelter Island Boat Launch Redevelopment Sediment Study
AMEC Project No. 5014090500
October 2013

amec

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2C_14.1-16.5
Depth Interval (feet): 14.1 - 15.5
Sample Date & Time: 10/29/2013 1130

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2C_16.1-17.5
Depth Interval (feet): 16.1 - 17.5
Sample Date & Time: 10/29/2013 1135

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2C_18.1-19.5
Depth Interval (feet): 18.1 - 19.5
Sample Date & Time: 10/29/2013 1140

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2C_20.1-22.5
Depth Interval (feet): 20.1 - 21.5
Sample Date & Time: 10/29/2013 1150

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-2C_22.1-23.5
Depth Interval (feet): 22.1 - 23.5
Sample Date & Time: 10/29/2013 1155

Location: Shelter Island Boat Launch Redevelopment
Sample ID: B-3_4.1-5.5
Depth Interval (feet): 4.1 - 5.5
Sample Date & Time: 10/29/2013 1315

Location: Shelter Island Boat Launch Redevelopment
Sample ID: B-3B_2.1-3.5
Depth Interval (feet): 2.1 - 3.5
Sample Date & Time: 10/29/2013 1335

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-3B_7.1-8.5
Depth Interval (feet): 7.1 - 8.5
Sample Date & Time: 10/29/2013 1340

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-3C_2.1-3.5 and B-3C_2.75-3.5
Depth Interval (feet): 2.1 - 3.5
Sample Date & Time: 10/29/2013 1430

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-3C_4.1-4.75 and B-3C_4.75-5.5
Depth Interval (feet): 4.1 - 5.5
Sample Date & Time: 10/29/2013 1440

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B-3C-6.1-6.75 and B-3C_6.75-7.5
Depth Interval (feet): 6.1 - 7.5
Sample Date & Time: 10/29/2013 1455

Location: Shelter Island Boat Launch Redevelopment
Laboratory ID: B3-C_10.1-10.75
Depth Interval (feet): 10.1 - 10.75
Sample Date & Time: 10/29/2013 1500

Location: Shelter Island Boat Launch Redevelopment
Sample ID: B4_3.1-3.75 and B4_3.75-4.5
Depth Interval (feet): 3.1 - 4.5
Sample Date & Time: 10/29/2013 1545

Location: Shelter Island Boat Launch Redevelopment
Sample ID: B-4_5.1-5.75 and B-4_5.75-6.5
Depth Interval (feet): 5.1 - 6.5
Sample Date & Time: 10/29/2013 1600

APPENDIX C

LABORATORY ANALYTICAL REPORTS

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SEDI□ENT C□E□ISTRY
ANALYTICAL RES□LTS

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Supplemental Report 6

CALSCIENCE

WORK ORDER NUMBER: [illegible]

The difference is service

AIR | SOIL | WATER | MARINE CHEMISTRY

Analytical Report For

Client: AMEC Environment & Infrastructure

Client Project Name: [illegible]P[illegible]SD Shelter Island Boat Launch

Attention: Barry Snyder
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Approved for release on 01/09/2014 by:
Danielle Gonsman
Project Manager

ResultLink ▸

Email your PM ▸

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Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: P□SD Shelter Island Boat Launch
Work Order Number: 13-10-2303

7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Calscience
Environmental
Laboratories, Inc.

CASE NARRATI□E
C□□□□□□□□□ □ □□□ O□□□□N□□ □□□□ □□□□□□□□□
POSD S□□□□□I□□□□ B□□□L□□□□□

Sample B-3C_6.1-6.75 was re-analyzed for Total Lead two addtional times due to a higher than expected STLC Lead result. All three Total Lead results are presented within this report.

Return to Contents

Calscience Environmental Laboratories, Inc.

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C□□□□□□□ □□□□ R□□□□□□

Samples □ere recei□ed under Chain of Custody □C□C□on 10□30□13. □hey □ere assigned to □ ork □rder 13-10-2303.

Unless other□ise noted on the Sample Recei□ing forms all samples □ere recei□ed in good condition and □ithin the recommended EPA temperature criteria for the methods noted on the C□C. □he C□C and Sample Recei□ing Documents are integral elements of the analytical report and are presented at the □ack of the report.

□□□□□□□ T□ □□□

All samples □ere analy□ed □ithin prescri□ed holding times □□□□and□or in accordance □ith the Calscience Sample Acceptance Policy unless other□ise noted in the analytical report and□or comprehensi□e case narrati□e□if re□uired.

Any parameter identified in 40C□R Part 136.3 □a□le II that is designated as □analy□e immediately□□ith a holding time of □□ 15 minutes □40C□R-136.3 □a□le II□footnote 4□□is considered a □field□test and the reported results □ill □e □ualified as □eing recei□ed outside of the stated holding time unless recei□ed at the la□oratory □ithin 15 minutes of the collection time.

□ □□□□□□ C□□□□□□

All □uality control parameters □□C□□ere □ithin esta□lished control limits e□cept □here noted in the □C summary forms or descri□ed further □ithin this report.

A□□□□□□□□□C□□ □ □□□□□

Air - Sor□ent-e□tracted air methods □EPA □□-4A□EPA □□-10□EPA □□-13A□EPA □□-1□□□Analytical results are con□erted from mass□sample □asis to mass□□olume □asis using client-supplied air □olumes.

Ne□ □ork NELAP air certification does not certify for all reported methods and analytes□reference the accredited items here□ http□□□□□.calscience.com□PD□□Ne□□□ork.pdf

Solid - Unless other□ise indicated□solid sample data is reported on a □et □eight □asis□not corrected for □ moisture. All □C results are al□ays reported on a □et □eight □asis.

S□□□□□□□□□□□□I□□□□□ □□□□□

Unless other□ise noted □elo□ □or on the su□contract form□□no samples □ere su□contracted.

Calscience Environmental Laboratories, Inc.

Sample Summary

Client:	AMEC Environment & Infrastructure	Work Order:	13-10-2303
	9210 Sky Park Court, Suite 200	Project Name:	PO SD Shelter Island Boat Launch
	San Diego, CA 92123-4302	PO Number:	C013101641
		Date/Time Received:	10/30/13 19:15
		Number of Containers:	35
Attn:	Barry Snyder		

Sample Identification	Lab Number	Collection Date and Time	Number of Containers	Matrix
B-1@4.1-5.5	13-10-2303-1	10/29/13 09:05	1	Sediment
B-1@6.1-[illegible].5	13-10-2303-2	10/29/13 09:10	1	Sediment
B-1@[illegible].1-9.5	13-10-2303-3	10/29/13 09:15	1	Sediment
B-1@10.1-12.5	13-10-2303-4	10/29/13 09:20	1	Sediment
B-1@12.1-13.5	13-10-2303-5	10/29/13 09:25	1	Sediment
B-1@14.1-15.5	13-10-2303-6	10/29/13 09:35	1	Sediment
B-2A@4.1-5.5	13-10-2303-[illegible]	10/29/13 10:20	1	Sediment
B-2B@4.1-5.5	13-10-2303-[illegible]	10/29/13 10:35	1	Sediment
B-2B@6.1-[illegible].5	13-10-2303-9	10/29/13 10:45	1	Sediment
B-2C@10.1-11.5	13-10-2303-10	10/29/13 11:20	1	Sediment
B-2C@12.1-13.5	13-10-2303-11	10/29/13 11:25	1	Sediment
B-2C@14.1-16.5	13-10-2303-12	10/29/13 11:30	1	Sediment
B-2C@16.1-1[illegible].5	13-10-2303-13	10/29/13 11:35	1	Sediment
B-2C@1[illegible].1-19.5	13-10-2303-14	10/29/13 11:40	1	Sediment
B-2C@20.1-22.5	13-10-2303-15	10/29/13 11:50	1	Sediment
B-2C@22.1-23.5	13-10-2303-16	10/29/13 11:55	1	Sediment
B-3@4.1-5.5	13-10-2303-1[illegible]	10/29/13 13:15	1	Sediment
B-3B@2.1-3.5	13-10-2303-1[illegible]	10/29/13 13:35	1	Sediment
B-3B@[illegible].1-[illegible].5	13-10-2303-19	10/29/13 13:40	1	Sediment
B-3C@2.1-2.[illegible]5	13-10-2303-20	10/29/13 14:30	1	Sediment
B-3C@2.[illegible]5-3.5	13-10-2303-21	10/29/13 14:30	1	Sediment
B-3C@4.1-4.[illegible]5	13-10-2303-22	10/29/13 14:40	1	Sediment
B-3C@4.[illegible]5-5.5	13-10-2303-23	10/29/13 14:40	1	Sediment
B-3C@6.1-6.[illegible]5	13-10-2303-24	10/29/13 14:55	1	Sediment
B-3C@6.[illegible]5-[illegible].5	13-10-2303-25	10/29/13 14:55	1	Sediment
B-3C@10.1-10.[illegible]5	13-10-2303-26	10/29/13 15:00	1	Sediment
B-4@3.1-3.[illegible]5	13-10-2303-2[illegible]	10/29/13 13:45	1	Sediment
B-4@3.[illegible]5-4.5	13-10-2303-2[illegible]	10/29/13 13:45	1	Sediment
B-4@5.1-5.[illegible]5	13-10-2303-29	10/29/13 16:00	1	Sediment
B-4@5.[illegible]5-6.5	13-10-2303-30	10/29/13 16:00	1	Sediment
B-5A@1.0-1.5	13-10-2303-31	10/30/13 12:00	1	Sediment
B-5B@1.0-1.5	13-10-2303-32	10/30/13 12:10	1	Sediment
B-5C@1.0-1.5	13-10-2303-33	10/30/13 12:25	1	Sediment
B-3C@6.1-6.[illegible]5 (Re-analysis)	13-10-2303-34	10/29/13 14:55	1	Sediment
B-3C@6.1-6.[illegible]5 (2nd Re-analysis)	13-10-2303-35	10/29/13 14:55	1	Sediment

Calscience Environmental Laboratories, Inc.

A□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ N□A
	Method□ SM 2540 B □M□
	Units□ □

Project□P□SD Shelter Island Boat Launch

Page 1 of 4

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□	□□□□□□□□□□□□A	□□□□□□□□ □□□□	S□□□ □□□	N□A	□□□□□□□□	□□□□□□□□ □□□□	D□□□□TSB□

Parameter	Result	RL	D□	□ualifiers
Solids□□otal	□9.0	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Solids□□otal	□4.5	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Solids□□otal	□3.3	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Solids□□otal	□0.1	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Solids□□otal	□□.0	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Solids□□otal	□6.□	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Solids□□otal	□6.6	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Solids□□otal	□5.9	0.100	1	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

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AMEC Enironment Infrastructure	Date Receied: 10 30 13
9210 Sky Park Court Suite 200	ork rder: 13-10-2303
San Diego CA 92123-4302	Preparation: N A
	Method: SM 2540 B M
	Units:
Project P SD Shelter Island Boat Launch	Page 2 of 4

Client Sample Numer	La Sample Numer	Date ime Collected	Matri	Instrument	Date Prepared	Date ime Analyed	C Batch ID
B B	A		S	N A			D TSB

Parameter	Result	RL	D	ualifiers
Solids otal	9.0	0.100	1	

Parameter	Result	RL	D	ualifiers
Solids otal	3.0	0.100	1	

Parameter	Result	RL	D	ualifiers
Solids otal	5.0	0.100	1	

Parameter	Result	RL	D	ualifiers
Solids otal	6 .2	0.100	1	

Parameter	Result	RL	D	ualifiers
Solids otal	2.0	0.100	1	

Parameter	Result	RL	D	ualifiers
Solids otal	0.5	0.100	1	

Parameter	Result	RL	D	ualifiers
Solids otal	4.4	0.100	1	

Parameter	Result	RL	D	ualifiers
Solids otal	5.2	0.100	1	

Return to Contents

RL Reporting Limit. D Dilution actor. MDL Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: N/A
	Method: SM 2540 B (M)
	Units: [illegible]
Project: P/SD Shelter Island Boat Launch	Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	N/A	[illegible]	[illegible]	D[illegible]TSB[illegible]

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible]9.9	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible]9.0	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible]6.1	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible]	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible]	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	92.[illegible]	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible]4.3	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible]6.4	0.100	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	N/A
		Method:	SM 2540 B (M)
		Units:	
Project: P/SD Shelter Island Boat Launch			Page 4 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B□C [illegible]	[illegible] A	[illegible]	S[illegible]	N/A	[illegible]	[illegible]	D[illegible] TSB[illegible]

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible]5.1	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible].4	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible].6	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible].4	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible].6	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	[illegible]4.[illegible]	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	ND	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Solids, Total	ND	0.100	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 1 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□	□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	25	5	
C9-C10	ND	25	5	
C11-C12	ND	25	5	
C13-C14	ND	25	5	
C15-C16	ND	25	5	
C1□-C1□	ND	25	5	
C19-C20	ND	25	5	
C21-C22	ND	25	5	
C23-C24	ND	25	5	
C25-C2□	ND	25	5	
C29-C32	26	25	5	
C33-C36	33	25	5	
C3□-C40	39	25	5	
C□-C40 □otal	110	25	5	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□5	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 2 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□	□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□1	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 3 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□	□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□□	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 4 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□□□	□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□□	Control Limits	□ualifiers
n-□ctacosane	92	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3550B
		Method□	EPA □015B □M□
		Units□	mg□kg
Project□P□SD Shelter Island Boat Launch			Page 5 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□□□	□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□□	61-145	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)
		Units:	mg/kg
Project: P[illegible]SD Shelter Island Boat Launch			Page 6 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C [illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C8	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C17-C18	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C28	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C37-C40	ND	5.0	1	
C8-C40 Total	ND	5.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	[illegible]	61-145	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page □of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□A□□□□□□	□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	12	5.0	1	
C33-C36	15	5.0	1	
C3□-C40	16	5.0	1	
C□-C40 □otal	52	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	92	61-145	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Date Recei□ed□	10□30□13
□ork □rder□	13-10-2303
Preparation□	EPA 3550B
Method□	EPA □015B □M□
Units□	mg□kg

Project□P□SD Shelter Island Boat Launch

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□B□□□□□□□	□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□ □□□	□C □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	50	10	
C9-C10	ND	50	10	
C11-C12	ND	50	10	
C13-C14	ND	50	10	
C15-C16	ND	50	10	
C1□-C1□	ND	50	10	
C19-C20	ND	50	10	
C21-C22	ND	50	10	
C23-C24	ND	50	10	
C25-C2□	ND	50	10	
C29-C32	65	50	10	
C33-C36	110	50	10	
C3□-C40	130	50	10	
C□-C40 □otal	310	50	10	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	110	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 9 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□B□□□□□□□	□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□ □□□	□C □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	11	5.0	1	
C33-C36	13	5.0	1	
C3□-C40	1□	5.0	1	
C□-C40 □otal	56	5.0	1	

Surrogate	Rec. □□□	Control Limits	□ualifiers
n-□ctacosane	□1	61-145	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 10 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□□	□□□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□□ □□□	□C □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	93	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 11 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□ □□□	□C □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□□	Control Limits	□ualifiers
n-□ctacosane	□0	61-145	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)
		Units:	mg/kg
Project: PBSD Shelter Island Boat Launch			Page 12 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Parameter	Result	RL	DF	Qualifiers
C8	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C17-C18	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C28	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C37-C40	ND	5.0	1	
C8-C40 Total	ND	5.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	[illegible]	61-145	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 13 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□ □□□	□C □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□5	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Date Recei□ed□	10□30□13
□ork □rder□	13-10-2303
Preparation□	EPA 3550B
Method□	EPA □015B □M□
Units□	mg□kg

Project□P□SD Shelter Island Boat Launch

Page 14 of 32

Client Sample Num□er	La□ Sample Num□er	Date□ime Collected	Matri□	Instrument	Date Prepared	Date□ime Analy□ed	□C Batch ID
B□C□□□□□□□□	□□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□5	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received: 10/30/13
Work Order: 13-10-2303
Preparation: EPA 3550B
Method: EPA 8015B (M)
Units: mg/kg

Project: P[illegible]SD Shelter Island Boat Launch

Page 15 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C [illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C8	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C17-C18	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C28	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C37-C40	ND	5.0	1	
C8-C40 Total	ND	5.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	[illegible]	61-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3550B
		Method□	EPA □015B □M□
		Units□	mg□kg
Project□P□SD Shelter Island Boat Launch			Page 16 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□	□□□□□□□□□□□□□**A**	□□□□□□□□ □□□□□	**S**□□□ □□□	□**C** □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□**B**□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□9	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received:	10/30/13
Work Order:	13-10-2303
Preparation:	EPA 3550B
Method:	EPA 8015B (M)
Units:	mg/kg

Project: P/SD Shelter Island Boat Launch — Page 1[illegible] of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C [illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C8	ND	50	10	
C9-C10	ND	50	10	
C11-C12	ND	50	10	
C13-C14	ND	50	10	
C15-C16	ND	50	10	
C17-C18	ND	50	10	
C19-C20	ND	50	10	
C21-C22	ND	50	10	
C23-C24	ND	50	10	
C25-C28	6[illegible]	50	10	
C29-C32	240	50	10	
C33-C36	2[illegible]0	50	10	
C37-C40	3[illegible]0	50	10	
C8-C40 Total	9[illegible]0	50	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	90	61-145	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3550B
	Method: EPA [illegible]015B (M)
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 1[illegible] of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]B[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C [illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C[illegible]	ND	500	100	
C9-C10	ND	500	100	
C11-C12	ND	500	100	
C13-C14	ND	500	100	
C15-C16	ND	500	100	
C1[illegible]-C1[illegible]	ND	500	100	
C19-C20	ND	500	100	
C21-C22	ND	500	100	
C23-C24	ND	500	100	
C25-C2[illegible]	ND	500	100	
C29-C32	1100	500	100	
C33-C36	1500	500	100	
C3[illegible]-C40	1[illegible]00	500	100	
C[illegible]-C40 Total	4600	500	100	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	94	61-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 19 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□B□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	5.0	5.0	1	
C25-C2□	14	5.0	1	
C29-C32	41	5.0	1	
C33-C36	52	5.0	1	
C3□-C40	62	5.0	1	
C□-C40 □otal	1□0	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□6	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A R

AMEC En ironment Infrastructure
9210 Sky Park Court Suite 200
San Diego CA 92123-4302

Date Recei ed 10 30 13
ork rder 13-10-2303
Preparation EPA 3550B
Method EPA 015B M
Units mg kg

Project P SD Shelter Island Boat Launch

Client Sample Num er	La Sample Num er	Date ime Collected	Matri	Instrument	Date Prepared	Date ime Analy ed	C Batch ID
B C	A		S	C			B

Parameter	Result	RL	D	ualifiers
C	ND	25	5	
C9-C10	ND	25	5	
C11-C12	ND	25	5	
C13-C14	ND	25	5	
C15-C16	ND	25	5	
C1 -C1	ND	25	5	
C19-C20	ND	25	5	
C21-C22	ND	25	5	
C23-C24	ND	25	5	
C25-C2	43	25	5	
C29-C32	140	25	5	
C33-C36	1 0	25	5	
C3 -C40	240	25	5	
C -C40 otal	620	25	5	

Surrogate	Rec.	Control Limits	ualifiers
n- ctacosane	91	61-145	

Return to Contents

RL Reporting Limit. D Dilution actor. MDL Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3550B
	Method: EPA 8015B (M)
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 21 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C [illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C8	ND	50	10	
C9-C10	ND	50	10	
C11-C12	ND	50	10	
C13-C14	ND	50	10	
C15-C16	ND	50	10	
C17-C18	ND	50	10	
C19-C20	ND	50	10	
C21-C22	ND	50	10	
C23-C24	ND	50	10	
C25-C28	ND	50	10	
C29-C32	96	50	10	
C33-C36	120	50	10	
C37-C40	140	50	10	
C8-C40 Total	3[illegible]0	50	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	102	61-145	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received:	10/30/13
Work Order:	13-10-2303
Preparation:	EPA 3550B
Method:	EPA 8015B (M)
Units:	mg/kg

Project: P: SD Shelter Island Boat Launch

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C [illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C8	ND	50	10	
C9-C10	ND	50	10	
C11-C12	ND	50	10	
C13-C14	ND	50	10	
C15-C16	ND	50	10	
C17-C18	ND	50	10	
C19-C20	ND	50	10	
C21-C22	ND	50	10	
C23-C24	ND	50	10	
C25-C28	[illegible]9	50	10	
C29-C32	340	50	10	
C33-C36	460	50	10	
C37-C40	6[illegible]0	50	10	
C8-C40 Total	1600	50	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	90	61-145	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 23 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	□.3	5.0	1	
C23-C24	5.5	5.0	1	
C25-C2□	16	5.0	1	
C29-C32	55	5.0	1	
C33-C36	6□	5.0	1	
C3□-C40	□1	5.0	1	
C□-C40 □otal	240	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□2	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3550B
	Method: EPA 8015B (M)
	Units: mg/kg
Project: POSD Shelter Island Boat Launch	Page 24 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C8	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C17-C18	ND	5.0	1	
C19-C20	5.2	5.0	1	
C21-C22	[illegible].0	5.0	1	
C23-C24	6.1	5.0	1	
C25-C28	11	5.0	1	
C29-C32	31	5.0	1	
C33-C36	3[illegible]	5.0	1	
C37-C40	5[illegible]	5.0	1	
C8-C40 Total	160	5.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	90	61-145	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3550B
		Method□	EPA □015B □M□
		Units□	mg□kg
Project□P□SD Shelter Island Boat Launch			Page 25 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□□	□□□□□□□□□□□□□**A**	□□□□□□□□ □□□□□	**S**□□□□ □□□	□**C** □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□**B**□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	6.□	5.0	1	
C29-C32	23	5.0	1	
C33-C36	32	5.0	1	
C3□-C40	49	5.0	1	
C□-C40 □otal	120	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□1	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 26 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□C□□□□□□□□□	□□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	6.□	5.0	1	
C23-C24	6.4	5.0	1	
C25-C2□	19	5.0	1	
C29-C32	6□	5.0	1	
C33-C36	□3	5.0	1	
C3□-C40	100	5.0	1	
C□-C40 □otal	2□0	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□6	61-145	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 2□ of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□□	□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	25	5	
C9-C10	ND	25	5	
C11-C12	ND	25	5	
C13-C14	ND	25	5	
C15-C16	ND	25	5	
C1□-C1□	ND	25	5	
C19-C20	ND	25	5	
C21-C22	ND	25	5	
C23-C24	ND	25	5	
C25-C2□	ND	25	5	
C29-C32	41	25	5	
C33-C36	54	25	5	
C3□-C40	62	25	5	
C□-C40 □otal	160	25	5	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	93	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□□ R□□□□□

AMEC En□ironment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Date Recei□ed□	10□30□13
□ ork □rder□	13-10-2303
Preparation□	EPA 3550B
Method□	EPA □015B □M□
Units□	mg□kg

Project□P□SD Shelter Island Boat Launch

Page 2□ of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	9.4	5.0	1	
C29-C32	3□	5.0	1	
C33-C36	56	5.0	1	
C3□-C40	□3	5.0	1	
C□-C40 □otal	1□0	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	□3	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3550B
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 29 of 32

Client Sample Num□er	La□ Sample Num□er	Date□ime Collected	Matri□	Instrument	Date Prepared	Date□ime Analy□ed	□C Batch ID
B□□□□□□□□	□□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	6.□	5.0	1	
C21-C22	9.□	5.0	1	
C23-C24	11	5.0	1	
C25-C2□	26	5.0	1	
C29-C32	6□	5.0	1	
C33-C36	69	5.0	1	
C3□-C40	9□	5.0	1	
C□-C40 □otal	290	5.0	1	

Surrogate	Rec. □□	Control Limits	□ualifiers
n-□ctacosane	□3	61-145	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Date Received:	10/30/13
Work Order:	13-10-2303
Preparation:	EPA 3550B
Method:	EPA 8015B (M)
Units:	mg/kg

Project: P[illegible]SD Shelter Island Boat Launch

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C [illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C8	ND	50	10	
C9-C10	ND	50	10	
C11-C12	ND	50	10	
C13-C14	ND	50	10	
C15-C16	ND	50	10	
C17-C18	ND	50	10	
C19-C20	ND	50	10	
C21-C22	ND	50	10	
C23-C24	ND	50	10	
C25-C28	63	50	10	
C29-C32	360	50	10	
C33-C36	5[illegible]0	50	10	
C37-C40	960	50	10	
C8-C40 Total	2000	50	10	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	[illegible]2	61-145	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Date Recei□ed□	10□30□13
□ork □rder□	13-10-2303
Preparation□	EPA 3550B
Method□	EPA □015B □M□
Units□	mg□kg

Project□P□SD Shelter Island Boat Launch

Client Sample Num□er	La□ Sample Num□er	Date□ime Collected	Matri□	Instrument	Date Prepared	Date□ime Analy□ed	□C Batch ID
□ □□□□ B□□□	□□□□□□□□□□□	N□A	S□□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C□	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C1□-C1□	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C2□	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C3□-C40	ND	5.0	1	
C□-C40 □otal	ND	5.0	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
n-□ctacosane	94	61-145	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 3550B
		Method:	EPA 8015B (M)
		Units:	mg/kg
Project: POSD Shelter Island Boat Launch			Page 32 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
[illegible]	[illegible]	N/A	S[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Parameter	Result	RL	DF	Qualifiers
C8	ND	5.0	1	
C9-C10	ND	5.0	1	
C11-C12	ND	5.0	1	
C13-C14	ND	5.0	1	
C15-C16	ND	5.0	1	
C17-C18	ND	5.0	1	
C19-C20	ND	5.0	1	
C21-C22	ND	5.0	1	
C23-C24	ND	5.0	1	
C25-C28	ND	5.0	1	
C29-C32	ND	5.0	1	
C33-C36	ND	5.0	1	
C37-C40	ND	5.0	1	
C8-C40 Total	ND	5.0	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
n-Octacosane	[illegible]6	61-145	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Date Recei□ed□	10□30□13
□ork □rder□	13-10-2303
Preparation□	EPA 5030C
Method□	EPA □015B □M□
Units□	mg□kg

Project□P□SD Shelter Island Boat Launch

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□	□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	95	42-126	

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	93	42-126	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC Environment [illegible] Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 5030C
	Method: EPA [illegible]015B (M)
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 2 of 16

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C[illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C7	ND	0.50	1	
C8	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
[illegible]R[illegible] (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	93	42-126	

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C7	ND	0.50	1	
C8	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
[illegible]R[illegible] (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	96	42-126	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC Environment & Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 5030C
		Method:	EPA 8015B (M)
		Units:	mg/kg
Project: P□SD Shelter Island Boat Launch			Page 3 of 16

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C[illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	92	42-126	

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	91	42-126	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment [illegible] Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 5030C
	Method: EPA 8015B (M)
	Units: mg/kg

Project: P[illegible]SD Shelter Island Boat Launch

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C7	ND	0.50	1	
C8	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
TPH (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	[illegible]	42-126	

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C7	ND	0.50	1	
C8	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
TPH (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	90	42-126	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 5030C
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 5 of 16

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□B□□□□□□□	□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□ □□□	□C □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	93	42-126	

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	91	42-126	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC Environment □ Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 5030C
	Method: EPA □015B (M)
	Units: mg/kg
Project: P□SD Shelter Island Boat Launch	Page 6 of 16

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B□C□□□□□□□□	□□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□□B□□

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	93	42-126	

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	99	42-126	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 5030C
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page □ of 16

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□□ □□□	□C □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	100	42-126	

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	93	42-126	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 5030C
		Method□	EPA □015B □M□
		Units□	mg□kg
Project□P□SD Shelter Island Boat Launch			Page □ of 16

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□**C**□□□□□□□□□	□□□□□□□□□□□□□**A**	□□□□□□□ □□□□	**S**□□□□ □□□	□**C** □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□**B**□□

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	□9	42-126	

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	96	42-126	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 5030C
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 9 of 16

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□	□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	94	42-126	

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	94	42-126	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 5030C
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 10 of 16

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□B□□□□□□	□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	9□	42-126	

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	96	42-126	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 5030C
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 11 of 16

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□	□□□□□□□□□□□□□**A**	□□□□□□□ □□□□	**S**□□□□ □□□	□**C** □	□□□□□□□	□□□□□□□ □□□□	□□□□□□**B**□□

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□□	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	6□	42-126	

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□□	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	65	42-126	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 5030C
	Method: EPA 8015B (M)
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 12 of 16

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C7	ND	0.50	1	
C8	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
GRO (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	6[illegible]	42-126	

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C7	ND	0.50	1	
C8	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
GRO (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	6[illegible]	42-126	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 5030C
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 13 of 16

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□□ □□□	□C □	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	6□	42-126	

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	6□	42-126	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 5030C
		Method:	EPA 8015B (M)
		Units:	mg/kg

Project: POSD Shelter Island Boat Launch

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	[illegible]C[illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C[illegible]	ND	0.50	1	
C[illegible]	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
TPH (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	6[illegible]	42-126	

Parameter	Result	RL	DF	Qualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C[illegible]	ND	0.50	1	
C[illegible]	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
TPH (C4-C12) Total	ND	0.50	1	

Surrogate	Rec. (%)	Control Limits	Qualifiers
1,4-Bromofluorobenzene - FID	6[illegible]	42-126	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 5030C
	Method□ EPA □015B □M□
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 15 of 16

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□□	□□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	□C □	□□□□□□	□□□□□□ □□□□	□□□□□B□□

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	6□	42-126	

Parameter	Result	RL	D□	□ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C□	ND	0.50	1	
C□	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
□R□ □C4-C12□□otal	ND	0.50	1	

Surrogate	Rec. □□ □	Control Limits	□ualifiers
1□4-Bromofluoro□en□ene - □ID	64	42-126	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC En[illegible]ironment [illegible] Infrastructure
9210 Sky Park Court[illegible]Suite 200
San Diego[illegible]CA 92123-4302

Date Recei[illegible]ed[illegible]	10[illegible]30[illegible]13
[illegible]ork [illegible]rder[illegible]	13-10-2303
Preparation[illegible]	EPA 5030C
Method[illegible]	EPA [illegible]015B [illegible]M[illegible]
Units[illegible]	mg[illegible]kg

Project[illegible]P[illegible]SD Shelter Island Boat Launch

Client Sample Num[illegible]er	La[illegible] Sample Num[illegible]er	Date[illegible]ime Collected	Matri[illegible]	Instrument	Date Prepared	Date[illegible]ime Analy[illegible]ed	[illegible]C Batch ID
[illegible] B[illegible]	[illegible]	N[illegible]A	S[illegible]	[illegible]C [illegible]	[illegible]	[illegible]	[illegible]B[illegible]

Parameter	Result	RL	D[illegible]	[illegible]ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C[illegible]	ND	0.50	1	
C[illegible]	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
[illegible]R[illegible] [illegible]C4-C12[illegible]otal	ND	0.50	1	

Surrogate	Rec. [illegible]	Control Limits	[illegible]ualifiers
1[illegible]4-Bromofluoro[illegible]en[illegible]ene - [illegible]ID	6[illegible]	42-126	

Parameter	Result	RL	D[illegible]	[illegible]ualifiers
C4-C5	ND	0.50	1	
C6	ND	0.50	1	
C[illegible]	ND	0.50	1	
C[illegible]	ND	0.50	1	
C9-C10	ND	0.50	1	
C11-C12	ND	0.50	1	
[illegible]R[illegible] [illegible]C4-C12[illegible]otal	ND	0.50	1	

Surrogate	Rec. [illegible]	Control Limits	[illegible]ualifiers
1[illegible]4-Bromofluoro[illegible]en[illegible]ene - [illegible]ID	[illegible]5	42-126	

RL[illegible]Reporting Limit. D[illegible]Dilution [illegible]actor. MDL[illegible]Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3050B
		Method□	EPA 6020
		Units□	mg□kg
Project□P□SD Shelter Island Boat Launch			Page 1 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□	□□□□□□□□□□□□**A**	□□□□□□□ □□□□	**S□□□ □□□**	**ICP□□S □□**	□□□□□□□	□□□□□□□ □□□□	□□□□□□**L**□□**E**

Parameter	Result	RL	D□	□ualifiers
Antimony	ND	0.500	1	
Arsenic	4.63	0.100	1	
Barium	103	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.2□1	0.100	1	
Chromium	13.1	0.100	1	
Co□alt	4.25	0.100	1	
Copper	12.9	0.100	1	
Lead	29.4	0.100	1	
Moly□denum	0.634	0.200	1	
Nickel	5.6□	0.100	1	
Selenium	ND	0.100	1	
Sil□er	ND	0.100	1	
□hallium	0.102	0.100	1	
□anadium	29.□	1.00	1	
□inc	5□.6	1.00	1	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible]R[illegible]

AMEC Environment [illegible] Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg/kg
Project: P[illegible]SD Shelter Island Boat Launch			Page 2 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]**A**	[illegible]	**S**[illegible]	**ICP**[illegible]**S**	[illegible]	[illegible]	[illegible]**L**[illegible]**E**

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	3.39	0.100	1	
Barium	[illegible]3.6	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.265	0.100	1	
Chromium	13.3	0.100	1	
Cobalt	4.[illegible]3	0.100	1	
Copper	9.24	0.100	1	
Lead	12.4	0.100	1	
Molybdenum	0.33[illegible]	0.200	1	
Nickel	4.93	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	0.136	0.100	1	
Vanadium	33.3	1.00	1	
Zinc	45.9	1.00	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC Environment [illegible] Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg/kg
Project: P[illegible]SD Shelter Island Boat Launch			Page 3 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	2.90	0.100	1	
Barium	56.[illegible]	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.201	0.100	1	
Chromium	10.4	0.100	1	
Cobalt	2.94	0.100	1	
Copper	[illegible].61	0.100	1	
Lead	[illegible]	0.100	1	
Molybdenum	1.36	0.200	1	
Nickel	3.90	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	20.0	1.00	1	
Zinc	32.6	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 4 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP/MS [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	2.0[illegible]	0.100	1	
Barium	35.6	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	ND	0.100	1	
Chromium	[illegible].93	0.100	1	
Cobalt	2.06	0.100	1	
Copper	6.20	0.100	1	
Lead	6.93	0.100	1	
Molybdenum	4.31	0.200	1	
Nickel	4.[illegible]	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	14.9	1.00	1	
Zinc	29.0	1.00	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□ R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3050B
	Method□ EPA 6020
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 5 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□□□	**□□□□□□□□□□□□A**	□□□□□□□ □□□□	**S□□□ □□□**	**ICP□□S □□**	□□□□□□□	□□□□□□□ □□□□	**□□□□□□L□□E**

Parameter	Result	RL	D□	□ualifiers
Antimony	ND	0.500	1	
Arsenic	2.□1	0.100	1	
Barium	□9.5	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.3□2	0.100	1	
Chromium	16.2	0.100	1	
Co□alt	3.14	0.100	1	
Copper	6.55	0.100	1	
Lead	146	0.100	1	
Moly□denum	1.□5	0.200	1	
Nickel	4.31	0.100	1	
Selenium	0.209	0.100	1	
Sil□er	ND	0.100	1	
□hallium	ND	0.100	1	
□anadium	22.□	1.00	1	
□inc	119	1.00	1	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg/kg
Project: POSD Shelter Island Boat Launch			Page 6 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	2.05	0.100	1	
Barium	41.[illegible]	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.126	0.100	1	
Chromium	9.25	0.100	1	
Cobalt	2.19	0.100	1	
Copper	5.55	0.100	1	
Lead	21.6	0.100	1	
Molybdenum	0.93[illegible]	0.200	1	
Nickel	3.43	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	16.9	1.00	1	
Zinc	2[illegible].4	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page [illegible] of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
[illegible]	[illegible]	[illegible]	[illegible]	ICP/MS [illegible]	[illegible]	[illegible]	[illegible]

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	[illegible].52	0.100	1	
Barium	122	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.196	0.100	1	
Chromium	11.3	0.100	1	
Cobalt	4.56	0.100	1	
Copper	15.0	0.100	1	
Lead	23.5	0.100	1	
Molybdenum	0.461	0.200	1	
Nickel	5.[illegible]	0.100	1	
Selenium	0.251	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	26.[illegible]	1.00	1	
Zinc	53.5	1.00	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page [illegible] of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP/MS [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	6.21	0.100	1	
Barium	95.6	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.312	0.100	1	
Chromium	16.9	0.100	1	
Cobalt	4.00	0.100	1	
Copper	19.9	0.100	1	
Lead	60.2	0.100	1	
Molybdenum	0.419	0.200	1	
Nickel	6.66	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	2[illegible].0	1.00	1	
Zinc	6[illegible].3	1.00	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P□SD Shelter Island Boat Launch	Page 9 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B□B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	5.10	0.100	1	
Barium	91.3	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.255	0.100	1	
Chromium	9.1[illegible]	0.100	1	
Cobalt	2.[illegible]	0.100	1	
Copper	12.3	0.100	1	
Lead	14.1	0.100	1	
Molybdenum	0.45[illegible]	0.200	1	
Nickel	5.0[illegible]	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	21.[illegible]	1.00	1	
Zinc	3[illegible].4	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3050B
	Method□ EPA 6020
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 10 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□L□□E

Parameter	Result	RL	D□	□ualifiers
Antimony	ND	0.500	1	
Arsenic	4.□1	0.100	1	
Barium	□1.□	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.203	0.100	1	
Chromium	13.0	0.100	1	
Co□alt	2.□□	0.100	1	
Copper	1□.1	0.100	1	
Lead	13.0	0.100	1	
Moly□denum	1.12	0.200	1	
Nickel	5.62	0.100	1	
Selenium	ND	0.100	1	
Sil□er	ND	0.100	1	
□hallium	ND	0.100	1	
□anadium	1□.2	1.00	1	
□inc	3□.5	1.00	1	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 11 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	3.99	0.100	1	
Barium	[illegible]6.1	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.213	0.100	1	
Chromium	14.1	0.100	1	
Cobalt	2.32	0.100	1	
Copper	21.2	0.100	1	
Lead	10.9	0.100	1	
Molybdenum	0.404	0.200	1	
Nickel	4.14	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	1[illegible]	1.00	1	
Zinc	45.1	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3050B
	Method□ EPA 6020
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 12 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□□	□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□L□□E

Parameter	Result	RL	D□	□ualifiers
Antimony	ND	0.500	1	
Arsenic	5.45	0.100	1	
Barium	5□.□	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.169	0.100	1	
Chromium	□.45	0.100	1	
Co□alt	1.6□	0.100	1	
Copper	10.4	0.100	1	
Lead	6.92	0.100	1	
Moly□denum	0.664	0.200	1	
Nickel	4.16	0.100	1	
Selenium	ND	0.100	1	
Sil□er	ND	0.100	1	
□hallium	ND	0.100	1	
□anadium	13.4	1.00	1	
□inc	2□.6	1.00	1	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg/kg
Project: P□SD Shelter Island Boat Launch			Page 13 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B□□C□□□□□□□□	□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□L□□E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	4.64	0.100	1	
Barium	□5.5	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.154	0.100	1	
Chromium	□.09	0.100	1	
Cobalt	1.99	0.100	1	
Copper	32.3	0.100	1	
Lead	□.6□	0.100	1	
Molybdenum	0.3□□	0.200	1	
Nickel	3.90	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	13.6	1.00	1	
Zinc	32.□	1.00	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 14 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	4.04	0.100	1	
Barium	50.[illegible]	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.123	0.100	1	
Chromium	9.90	0.100	1	
Cobalt	1.44	0.100	1	
Copper	16.5	0.100	1	
Lead	5.21	0.100	1	
Molybdenum	0.521	0.200	1	
Nickel	3.64	0.100	1	
Selenium	0.[illegible]9[illegible]	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	10.9	1.00	1	
Zinc	23.4	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3050B
	Method□ EPA 6020
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 15 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□□	□□□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□□ □□□	ICP□□S □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□L□□E

Parameter	Result	RL	D□	□ualifiers
Antimony	ND	0.500	1	
Arsenic	3.26	0.100	1	
Barium	63.5	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.141	0.100	1	
Chromium	20.6	0.100	1	
Co□alt	1.56	0.100	1	
Copper	9.30	0.100	1	
Lead	10.1	0.100	1	
Moly□denum	0.□03	0.200	1	
Nickel	2.□6	0.100	1	
Selenium	ND	0.100	1	
Sil□er	ND	0.100	1	
□hallium	ND	0.100	1	
□anadium	13.□	1.00	1	
□inc	2□.0	1.00	1	

Return to Contents

RL□Reporting Limit.   D□□Dilution □actor.   MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg

Project: P: SD Shelter Island Boat Launch

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	4.20	0.100	1	
Barium	66.9	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.240	0.100	1	
Chromium	20.6	0.100	1	
Cobalt	2.13	0.100	1	
Copper	12.5	0.100	1	
Lead	[illegible].49	0.100	1	
Molybdenum	1.11	0.200	1	
Nickel	3.60	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	15.5	1.00	1	
Zinc	42.9	1.00	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3050B
	Method□ EPA 6020
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 1□of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□	□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□L□□E

Parameter	Result	RL	D□	□ualifiers
Antimony	0.□30	0.500	1	
Arsenic	3.4□	0.100	1	
Barium	94.□	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.□66	0.100	1	
Chromium	13.2	0.100	1	
Co□alt	4.51	0.100	1	
Copper	10□	0.100	1	
Lead	115	0.100	1	
Moly□denum	0.914	0.200	1	
Nickel	2□.5	0.100	1	
Selenium	0.21□	0.100	1	
Sil□er	ND	0.100	1	
□hallium	ND	0.100	1	
□anadium	30.9	1.00	1	
□inc	19□	1.00	1	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□□

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P□SD Shelter Island Boat Launch	Page 1□ of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B□B□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□□ □□□	ICP□□S □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□L□□E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	4.2□	0.100	1	
Barium	□9.4	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.451	0.100	1	
Chromium	□.59	0.100	1	
Cobalt	3.10	0.100	1	
Copper	1□.4	0.100	1	
Lead	5□.0	0.100	1	
Molybdenum	0.4□6	0.200	1	
Nickel	10.9	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	21.9	1.00	1	
Zinc	□□.6	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3050B
		Method□	EPA 6020
		Units□	mg□kg
Project□P□SD Shelter Island Boat Launch			Page 19 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□B□□□□□□	□□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□L□□E

Parameter	Result	RL	D□	□ualifiers
Antimony	ND	0.500	1	
Arsenic	3.4□	0.100	1	
Barium	95.0	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	1.20	0.100	1	
Chromium	11.2	0.100	1	
Co□alt	3.66	0.100	1	
Copper	□0.5	0.100	1	
Lead	103	0.100	1	
Moly□denum	1.□5	0.200	1	
Nickel	21.0	0.100	1	
Selenium	ND	0.100	1	
Sil□er	ND	0.100	1	
□hallium	ND	0.100	1	
□anadium	54.6	1.00	1	
□inc	312	1.00	1	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Date Recei□ed□	10□30□13
□ork □rder□	13-10-2303
Preparation□	EPA 3050B
Method□	EPA 6020
Units□	mg□kg

Project□P□SD Shelter Island Boat Launch

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□C□□□□□□	□□□□□□□□□□□A	□□□□□□ □□□□	S□□□ □□□	ICP□□S □□	□□□□□□	□□□□□□ □□□□	□□□□□L□□E

Parameter	Result	RL	D□	□ualifiers
Antimony	0.531	0.500	1	
Arsenic	5.65	0.100	1	
Barium	10□	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.5□5	0.100	1	
Chromium	13.5	0.100	1	
Co□alt	4.45	0.100	1	
Copper	49.4	0.100	1	
Lead	1□4	0.100	1	
Moly□denum	0.400	0.200	1	
Nickel	11.4	0.100	1	
Selenium	ND	0.100	1	
Sil□er	ND	0.100	1	
□hallium	ND	0.100	1	
□anadium	3□.0	1.00	1	
□inc	249	1.00	1	

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC Environment & Infrastructure		Date Received:	10/30/13
9210 Sky Park Court, Suite 200		Work Order:	13-10-2303
San Diego, CA 92123-4302		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg/kg
Project: P SD Shelter Island Boat Launch			Page 21 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	3.16	0.100	1	
Barium	94.9	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.410	0.100	1	
Chromium	11.4	0.100	1	
Cobalt	5.01	0.100	1	
Copper	4[illegible].1	0.100	1	
Lead	9[illegible].4	0.100	1	
Molybdenum	0.350	0.200	1	
Nickel	19.[illegible]	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	64.2	1.00	1	
Zinc	113	1.00	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC Environment [illegible] Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 22 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	4.31	0.100	1	
Barium	[illegible]4.2	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.343	0.100	1	
Chromium	29.9	0.100	1	
Cobalt	4.55	0.100	1	
Copper	26.[illegible]	0.100	1	
Lead	66.9	0.100	1	
Molybdenum	3.05	0.200	1	
Nickel	14.[illegible]	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	33.2	1.00	1	
Zinc	94.[illegible]	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□□R□□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3050B
		Method□	EPA 6020
		Units□	mg□kg
Project□P□SD Shelter Island Boat Launch			Page 23 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□□ □□□	ICP□□S □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□L□□E

Parameter	Result	RL	D□	□ualifiers
Antimony	ND	0.500	1	
Arsenic	2.94	0.100	1	
Barium	□6.5	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.395	0.100	1	
Chromium	15.0	0.100	1	
Co□alt	5.25	0.100	1	
Copper	26.□	0.100	1	
Lead	10□	0.100	1	
Moly□denum	0.2□3	0.200	1	
Nickel	11.5	0.100	1	
Selenium	ND	0.100	1	
Sil□er	ND	0.100	1	
□hallium	0.11□	0.100	1	
□anadium	49.9	1.00	1	
□inc	□4.9	1.00	1	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: POSD Shelter Island Boat Launch	Page 24 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	ICP/MS [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	5.29	0.100	1	
Barium	59.1	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.2[illegible]5	0.100	1	
Chromium	[illegible].69	0.100	1	
Cobalt	2.34	0.100	1	
Copper	20.9	0.100	1	
Lead	5[illegible].9	0.100	1	
Molybdenum	0.43[illegible]	0.200	1	
Nickel	[illegible].0[illegible]	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	25.[illegible]	1.00	1	
Zinc	5[illegible].5	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 25 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	6.59	0.100	1	
Barium	44.9	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.226	0.100	1	
Chromium	[illegible].09	0.100	1	
Cobalt	2.[illegible]1	0.100	1	
Copper	22.1	0.100	1	
Lead	49.[illegible]	0.100	1	
Molybdenum	0.616	0.200	1	
Nickel	[illegible].6[illegible]	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	29.[illegible]	1.00	1	
Zinc	[illegible]1.4	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A[illegible] R[illegible]

AMEC Environment [illegible] Infrastructure		Date Received:	10[illegible]30[illegible]13
9210 Sky Park Court[illegible]Suite 200		Work Order:	13-10-2303
San Diego[illegible]CA 92123-4302		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg[illegible]kg
Project[illegible]P[illegible]SD Shelter Island Boat Launch			Page 26 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]C[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	4.14	0.100	1	
Barium	95.2	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.52[illegible]	0.100	1	
Chromium	1[illegible].9	0.100	1	
Cobalt	2.[illegible]0	0.100	1	
Copper	21.2	0.100	1	
Lead	[illegible]6.0	0.100	1	
Molybdenum	1.25	0.200	1	
Nickel	[illegible].6[illegible]	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	21.6	1.00	1	
Zinc	66.6	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment □ Infrastructure		Date Received:	10□30□13
9210 Sky Park Court□Suite 200		Work Order:	13-10-2303
San Diego□CA 92123-4302		Preparation:	EPA 3050B
		Method:	EPA 6020
		Units:	mg□kg
Project□P□SD Shelter Island Boat Launch			Page 2□ of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B□□□□□□□□□	□□□□□□□□□□□□□**A**	□□□□□□□□ □□□□	**S□□□ □□□**	**ICP□□S □□**	□□□□□□□□	□□□□□□□□ □□□□	□□□□□□**L**□□**E**

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	2.□□	0.100	1	
Barium	10□	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.294	0.100	1	
Chromium	12.9	0.100	1	
Cobalt	3.29	0.100	1	
Copper	12.9	0.100	1	
Lead	□1.9	0.100	1	
Molybdenum	0.294	0.200	1	
Nickel	6.4□	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	35.□	1.00	1	
Zinc	122	1.00	1	

Return to Contents

RL□Reporting Limit. DF□Dilution Factor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment [illegible] Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P[illegible]SD Shelter Island Boat Launch	Page 2[illegible] of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP[illegible]S [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	2.5[illegible]	0.100	1	
Barium	[illegible]2.6	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.1[illegible]1	0.100	1	
Chromium	9.[illegible]1	0.100	1	
Cobalt	2.[illegible]2	0.100	1	
Copper	11.5	0.100	1	
Lead	26.6	0.100	1	
Molybdenum	0.294	0.200	1	
Nickel	4.[illegible]3	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	0.104	0.100	1	
Vanadium	24.1	1.00	1	
Zinc	99.3	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P/SD Shelter Island Boat Launch	Page 29 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP/MS [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	1.95	0.500	1	
Arsenic	3.33	0.100	1	
Barium	95.6	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.2[illegible]0	0.100	1	
Chromium	15.2	0.100	1	
Cobalt	3.25	0.100	1	
Copper	1[illegible].1	0.100	1	
Lead	226	0.100	1	
Molybdenum	0.432	0.200	1	
Nickel	6.46	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	3[illegible].3	1.00	1	
Zinc	9[illegible].0	1.00	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg/kg
Project: P/SD Shelter Island Boat Launch	Page 30 of 32

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP/MS [illegible]	[illegible]	[illegible]	[illegible]L[illegible]E

Parameter	Result	RL	DF	Qualifiers
Antimony	ND	0.500	1	
Arsenic	3.62	0.100	1	
Barium	[illegible]5.[illegible]	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	0.264	0.100	1	
Chromium	9.[illegible]6	0.100	1	
Cobalt	2.64	0.100	1	
Copper	11.4	0.100	1	
Lead	16.[illegible]	0.100	1	
Molybdenum	0.9[illegible]2	0.200	1	
Nickel	[illegible].[illegible]	0.100	1	
Selenium	ND	0.100	1	
Silver	ND	0.100	1	
Thallium	ND	0.100	1	
Vanadium	1[illegible].4	1.00	1	
Zinc	201	1.00	1	

Parameter	Result	RL	DF	Qualifiers
Lead	665	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	[illegible]43	0.100	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Return to Contents

Calscience Environmental Laboratories, Inc.

A R

AMEC En ironment Infrastructure	Date Recei ed: 10 30 13
9210 Sky Park Court Suite 200	ork rder: 13-10-2303
San Diego CA 92123-4302	Preparation: EPA 3050B
	Method: EPA 6020
	Units: mg kg
Project P SD Shelter Island Boat Launch	Page 31 of 32

Client Sample Num er	La Sample Num er	Date ime Collected	Matri	Instrument	Date Prepared	Date ime Analy ed	C Batch ID
B		N A	S	ICP S			L E

Parameter	Result	RL	D	ualifiers
Antimony	ND	0.500	1	
Arsenic	ND	0.100	1	
Barium	ND	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	ND	0.100	1	
Chromium	ND	0.100	1	
Co alt	ND	0.100	1	
Copper	ND	0.100	1	
Lead	ND	0.100	1	
Moly denum	ND	0.200	1	
Nickel	ND	0.100	1	
Selenium	0.3 6	0.100	1	
Sil er	ND	0.100	1	
hallium	ND	0.100	1	
anadium	ND	1.00	1	
inc	ND	1.00	1	

Return to Contents

RL Reporting Limit. D Dilution actor. MDL Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3050B
	Method□ EPA 6020
	Units□ mg□kg
Project□P□SD Shelter Island Boat Launch	Page 32 of 32

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
□ □□□□ B□□□	□□□□□□□□□□□□□	N□A	S□□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□L□□E

Parameter	Result	RL	D□	□ualifiers
Antimony	ND	0.500	1	
Arsenic	ND	0.100	1	
Barium	ND	0.100	1	
Beryllium	ND	0.500	1	
Cadmium	ND	0.100	1	
Chromium	ND	0.100	1	
Co□alt	ND	0.100	1	
Copper	ND	0.100	1	
Lead	ND	0.100	1	
Moly□denum	ND	0.200	1	
Nickel	ND	0.100	1	
Selenium	ND	0.100	1	
Sil□er	ND	0.100	1	
□hallium	ND	0.100	1	
□anadium	ND	1.00	1	
□inc	ND	1.00	1	

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A R

AMEC En ironment Infrastructure	Date Recei ed 10 30 13
9210 Sky Park Court Suite 200	ork rder 13-10-2303
San Diego CA 92123-4302	Preparation EPA 4 1A otal
	Method EPA 4 1A
	Units mg kg
Project P SD Shelter Island Boat Launch	Page 1 of 4

Client Sample Num er	La Sample Num er	Date ime Collected	Matri	Instrument	Date Prepared	Date ime Analy ed	C Batch ID
B	A		S				L E

Parameter	Result	RL	D	ualifiers
Mercury	0.0215	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.04	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.122	0.0200	1	

RL Reporting Limit. D Dilution actor. MDL Method Detection Limit.

Return to Contents

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 7471A Total
	Method: EPA 7471A
	Units: mg/kg

Project: POSD Shelter Island Boat Launch

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Parameter	Result	RL	DF	Qualifiers
Mercury	0.03[illegible]5	0.0200	1	

Parameter	Result	RL	DF	Qualifiers
Mercury	0.0316	0.0200	1	

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	DF	Qualifiers
Mercury	ND	0.0200	1	

Return to Contents

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A R

AMEC En ironment Infrastructure
9210 Sky Park Court Suite 200
San Diego CA 92123-4302

Date Recei ed	10 30 13
ork rder	13-10-2303
Preparation	EPA 4 1A otal
Method	EPA 4 1A
Units	mg kg

Project P SD Shelter Island Boat Launch

Client Sample Num er	La Sample Num er	Date ime Collected	Matri	Instrument	Date Prepared	Date ime Analy ed	C Batch ID
B	A		S				L E

Parameter	Result	RL	D	ualifiers
Mercury	0.121	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.129	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.0651	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.360	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.04 0	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.05 9	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.0 05	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.0 90	0.0200	1	

RL Reporting Limit. D Dilution actor. MDL Method Detection Limit.

Return to Contents

Calscience Environmental Laboratories, Inc.

A R

AMEC En ironment Infrastructure
9210 Sky Park Court Suite 200
San Diego CA 92123-4302

Date Recei ed: 10 30 13
ork rder: 13-10-2303
Preparation: EPA 4 1A otal
Method: EPA 4 1A
Units: mg kg

Project P SD Shelter Island Boat Launch

Client Sample Num er	La Sample Num er	Date ime Collected	Matri	Instrument	Date Prepared	Date ime Analy ed	C Batch ID
B C	A		S				L E

Parameter	Result	RL	D	ualifiers
Mercury	0.0 93	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.049	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.161	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	0.0369	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	ND	0.0200	1	

Parameter	Result	RL	D	ualifiers
Mercury	ND	0.0200	1	

RL Reporting Limit. D Dilution actor. MDL Method Detection Limit.

Return to Contents

Calscience Environmental Laboratories, Inc.

□ □□□□ C□□□□□□S□□□□S□□□□ D□□□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3550B
		Method□	EPA □015B □M□
Project□P□SD Shelter Island Boat Launch			Page 1 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
B□□□□□□□	S□□ □□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□S□□
B□□□□□□□	□ □□□□ S□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□S□□
B□□□□□□□	□ □□□□ S□□□ D□□□□□□	S□□□ □□□	□C □□	□□□□□□	□□□□□□ □□□□	□□□□□S□□

Parameter	Sample Conc.	Spike Added	MS Conc.	MS □ Rec.	MSD Conc.	MSD □ Rec.	□ Rec. CL	RPD	RPD CL	□ualifiers
□P□ as Diesel	ND	400.0	319.2	□0	323.□	□1	64-130	1	0-15	

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□ C□□□□□□S□□□□S□□□□D□□□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3550B
		Method□	EPA □015B □M□
Project□P□SD Shelter Island Boat Launch			Page 2 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
B□C[illegible]	S[illegible]	S[illegible]	□C □□	[illegible]	[illegible]	[illegible]S□□
B□C[illegible]	□ □□□□ S□□□□	S[illegible]	□C □□	[illegible]	[illegible]	[illegible]S□□
B□C[illegible]	□ □□□□ S□□□□ D□□□□□□	S[illegible]	□C □□	[illegible]	[illegible]	[illegible]S□□

Parameter	Sample Conc.	Spike Added	MS Conc.	MS □ Rec.	MSD Conc.	MSD □ Rec.	□ Rec. CL	RPD	RPD CL	□ualifiers
□P□ as Diesel	10.05	400.0	30□.9	□5	305.0	□4	64-130	1	0-15	

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

[illegible] C[illegible] S[illegible] S[illegible] D[illegible]

AMEC En[illegible]ironment [illegible] Infrastructure		Date Recei[illegible]ed[illegible]	10[illegible]30[illegible]13
9210 Sky Park Court[illegible]Suite 200		[illegible]ork [illegible]rder[illegible]	13-10-2303
San Diego[illegible]CA 92123-4302		Preparation[illegible]	EPA 5030C
		Method[illegible]	EPA [illegible]015B [illegible]M[illegible]
Project[illegible]P[illegible]SD Shelter Island Boat Launch			Page 3 of 10

[illegible]uality Control Sample ID	[illegible]ype	Matri[illegible]	Instrument	Date Prepared	Date Analy[illegible]ed	MS[illegible]MSD Batch Num[illegible]er
[illegible]	S[illegible]	S[illegible]	[illegible]C[illegible]	[illegible]	[illegible]	[illegible]S[illegible]
[illegible]	[illegible]S[illegible]	S[illegible]	[illegible]C[illegible]	[illegible]	[illegible]	[illegible]S[illegible]
[illegible]	[illegible]S[illegible]D[illegible]	S[illegible]	[illegible]C[illegible]	[illegible]	[illegible]	[illegible]S[illegible]

Parameter	Sample Conc.	Spike Added	MS Conc.	MS [illegible] Rec.	MSD Conc.	MSD [illegible] Rec.	[illegible] Rec. CL	RPD	RPD CL	[illegible]ualifiers
[illegible]R[illegible] [illegible]C4-C12[illegible]otal	ND	10.00	10.0[illegible]	101	12.[illegible]	12[illegible]	4[illegible]-114	24	0-25	3

RPD[illegible]Relati[illegible]e Percent Difference. CL[illegible]Control Limits

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 5030C
	Method□ EPA □015B □M□
Project□P□SD Shelter Island Boat Launch	Page 4 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
B□□□□□□□□	S□□ □□□	S□□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□□	□□□□□□S□□
B□□□□□□□□	□ □□□□□S□□□□	S□□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□□	□□□□□□S□□
B□□□□□□□□	□ □□□□□S□□□□D□□□□□□□	S□□□□ □□□	□C □□	□□□□□□□	□□□□□□□ □□□□□	□□□□□□S□□

Parameter	Sample Conc.	Spike Added	MS Conc.	MS □ Rec.	MSD Conc.	MSD □ Rec.	□ Rec. CL	RPD	RPD CL	□ualifiers
□R□ □C4-C12□□otal	ND	10.00	□.446	□4	□.004	□0	4□-114	5	0-25	

RPD□Relati□e Percent Difference. CL□Control Limits

Return to Contents

Calscience Environmental Laboratories, Inc.

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AMEC Environment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Project□P□SD Shelter Island Boat Launch

Date Received□	10□30□13
□ork □rder□	13-10-2303
Preparation□	EPA 3050B
Method□	EPA 6020

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
B□C□□□□□□□ □□□ R□□□□□□□□	S□□ □□	S□□□ □□□	ICP□□S □□	□□□□□□	□□□□□□ □□□□	□□□□□□S□□
B□C□□□□□□□ □□□ R□□□□□□□□	□ □□□□ S□□□	S□□□ □□□	ICP□□S □□	□□□□□□	□□□□□□ □□□□	□□□□□□S□□
B□C□□□□□□□ □□□ R□□□□□□□□	□ □□□□ S□□□ D□□□□□□	S□□□ □□□	ICP□□S □□	□□□□□□	□□□□□□ □□□□	□□□□□□S□□

Parameter	Sample Conc.	Spike Added	MS Conc.	MS □Rec.	MSD Conc.	MSD □Rec.	□Rec. CL	RPD	RPD CL	□ualifiers
Lead	□43.0	25.00	1014	4□	16□□	4□	□0-120	4□	0-20	□

Return to Contents

RPD□Relative Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3050B
	Method□ EPA 6020
Project□P□SD Shelter Island Boat Launch	Page 6 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
□□□□□□□□□□	S□□ □□	S□□□	ICP□□S □□	□□□□□□	□□□□□□ □□□□	□□□□□S□□
□□□□□□□□□□	□ □□□□ S□□□□	S□□□	ICP□□S □□	□□□□□□	□□□□□□ □□□□	□□□□□S□□
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Parameter	Sample Conc.	Spike Added	MS Conc.	MS □ Rec.	MSD Conc.	MSD □ Rec.	□ Rec. CL	RPD	RPD CL	□ualifiers
Antimony	ND	25.00	□.953	32	□.629	31	1-9□	4	0-39	
Arsenic	4.□2□	25.00	31.05	105	31.06	105	□2-132	0	0-13	
Barium	□1.32	25.00	103.6	□9	105.□	9□	50-152	2	0-41	
Beryllium	0.5446	25.00	2□.9□	110	2□.36	111	61-121	1	0-13	
Cadmium	0.62□1	25.00	2□.9□	109	2□.16	110	□5-121	1	0-12	
Chromium	15.96	25.00	40.□□	100	41.06	100	20-1□2	0	0-15	
Co□alt	5.159	25.00	31.59	106	31.54	106	40-166	0	0-14	
Copper	11.50	25.00	3□.63	109	3□.□9	110	25-15□	1	0-22	
Lead	5.□11	25.00	31.91	105	32.4□	10□	62-134	2	0-23	
Moly□denum	1.5□3	25.00	24.□9	93	25.23	95	69-123	2	0-13	
Nickel	9.□41	25.00	35.□□	104	36.62	10□	46-154	2	0-15	
Selenium	ND	25.00	26.15	105	26.50	106	54-132	1	0-14	
Sil□er	ND	12.50	13.44	10□	13.□6	110	□□-126	2	0-15	
□hallium	0.20□□	25.00	25.0□	99	25.□□	103	□9-115	3	0-11	
□anadium	23.□6	25.00	49.12	101	49.10	101	2□-1□□	0	0-2□	
□inc	63.16	25.00	□9.□4	10□	92.0□	116	23-1□3	2	0-1□	

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3050B
		Method□	EPA 6020
Project□P□SD Shelter Island Boat Launch			Page □of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
B□□□□□□□□	S□□ □□□	S□□□□ □□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□S□□
B□□□□□□□□	□ □□□□ S□□□□	S□□□□ □□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□S□□
B□□□□□□□□	□ □□□□ S□□□□ D□□□□□□□	S□□□□ □□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□S□□

Parameter	Sample Conc.	Spike Added	MS Conc.	MS □Rec.	MSD Conc.	MSD □Rec.	□Rec. CL	RPD	RPD CL	□ualifiers
Antimony	0.□299	25.00	9.94□	3□	10.□4	40	□0-120	□	0-20	3
Arsenic	3.469	25.00	30.4□	10□	30.6□	109	□0-120	1	0-20	
Barium	94.□0	25.00	100.0	21	92.59	0	□0-120	□	0-20	3
Beryllium	ND	25.00	2□.24	109	2□.□□	116	□0-120	6	0-20	
Cadmium	0.□659	25.00	2□.90	109	2□.□6	112	□0-120	3	0-20	
Chromium	13.15	25.00	40.05	10□	42.5□	11□	□0-120	6	0-20	
Co□alt	4.509	25.00	30.3□	103	30.20	103	□0-120	1	0-20	
Copper	10□.□	25.00	14□.6	4□	12□.2	4□	□0-120	4□	0-20	□
Lead	114.6	25.00	12□.6	4□	124.3	4□	□0-120	4□	0-20	□
Moly□denum	0.9143	25.00	22.1□	□5	23.26	□9	□0-120	5	0-20	
Nickel	2□.50	25.00	3□.15	39	35.34	31	□0-120	5	0-20	3
Selenium	0.21□5	25.00	24.66	9□	24.□6	9□	□0-120	0	0-20	
Sil□er	ND	12.50	13.62	109	13.52	10□	□0-120	1	0-20	
□hallium	ND	25.00	23.□3	95	24.95	100	□0-120	5	0-20	
□anadium	30.□□	25.00	65.93	140	□2.66	16□	□0-120	10	0-20	3
□inc	196.5	25.00	225.5	4□	222.2	4□	□0-120	4□	0-20	□

RPD□Relati□e Percent Difference. CL□Control Limits

Return to Contents

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200	□ ork □rder□	13-10-2303
San Diego□CA 92123-4302	Preparation□	EPA 3050B
	Method□	EPA 6020
Project□P□SD Shelter Island Boat Launch	Page □of 10	

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
□□□□□□□□□□□	S□□ □□□	S□□□□ □□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□□	□□□□□□S□□
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Parameter	Sample Conc.	Spike Added	MS Conc.	MS □Rec.	MSD Conc.	MSD □Rec.	□Rec. CL	RPD	RPD CL	□ualifiers
Lead	15.62	25.00	44.0□	114	4□.46	12□	□0-120	□	0-20	3

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA □4□1A □otal
	Method□ EPA □4□1A
Project□P□SD Shelter Island Boat Launch	Page 9 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
□□□□□□□□□□□	S□□ □□□	S□□□	□ □□□□□	□□□□□□□	□□□□□□□ □□□□□	□□□□□□S□□
□□□□□□□□□□□	□ □□□□ S□□□□	S□□□	□ □□□□□	□□□□□□□	□□□□□□□ □□□□□	□□□□□□S□□
□□□□□□□□□□□	□ □□□□ S□□□□ D□□□□□□□	S□□□	□ □□□□□	□□□□□□□	□□□□□□□ □□□□□	□□□□□□S□□

Parameter	Sample Conc.	Spike Added	MS Conc.	MS □ Rec.	MSD Conc.	MSD □ Rec.	□ Rec. CL	RPD	RPD CL	□ualifiers
Mercury	0.4316	0.□350	1.0□□	□□	1.046	□4	□1-13□	3	0-14	

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□ C□□□□□□S□□□□S□□□ D□□□□□□

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA □4□1A □otal
		Method□	EPA □4□1A
Project□P□SD Shelter Island Boat Launch			Page 10 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
B□□□□□□□	S□□ □□□	S□□□ □□□	□ □□□□□	□□□□□□	□□□□□□ □□□□	□□□□□S□□
B□□□□□□□	□ □□□□ S□□□	S□□□ □□□	□ □□□□□	□□□□□□	□□□□□□ □□□□	□□□□□S□□
B□□□□□□□	□ □□□□ S□□□ D□□□□□□	S□□□ □□□	□ □□□□□	□□□□□□	□□□□□□ □□□□	□□□□□S□□

Parameter	Sample Conc.	Spike Added	MS Conc.	MS □ Rec.	MSD Conc.	MSD □ Rec.	□ Rec. CL	RPD	RPD CL	□ualifiers
Mercury	0.1205	0.□350	0.□590	□6	0.□54□	□6	□6-136	1	0-16	

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3050B
		Method□	EPA 6020
Project□P□SD Shelter Island Boat Launch			Page 1 of 5

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	PDS□PDSD Batch Num□er
B□C□□□□□□□ □□□ R□□□□□□□□□	**S□□ □□□**	**S□□□ □□□**	**ICP□ S □□**	**□□□□□□□ □□□□**	**□□□□□□□ □□□□**	**□□□□□□S□□**
B□C□□□□□□□ □□□ R□□□□□□□□□	**PDS**	**S□□□ □□□**	**ICP□ S □□**	**□□□□□□□ □□□□**	**□□□□□□□ □□□□**	**□□□□□□S□□**

Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS □ Rec.	□ Rec. CL	□ualifiers
Lead	□43.0	25.00	□53.□	4□	□5-125	□

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 3050B
	Method□ EPA 6020
Project□P□SD Shelter Island Boat Launch	Page 2 of 5

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	PDS□PDSD Batch Num□er
□□□□□□□□□□□□	S□□ □□□	S□□□	ICP□□S □□	□□□□□□□ □□□□□	□□□□□□□ □□□□□	□□□□□□S□□
□□□□□□□□□□□□	PDS	S□□□	ICP□□S □□	□□□□□□□ □□□□□	□□□□□□□ □□□□□	□□□□□□S□□
□□□□□□□□□□□□	PDSD	S□□□	ICP□□S □□	□□□□□□□ □□□□□	□□□□□□□ □□□□□	□□□□□□S□□

Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS □Rec.	PDSD Conc.	PDSD □Rec.	□Rec. CL	RPD	RPD CL	□ualifiers
Antimony	ND	25.00	26.13	105	26.66	10□	□5-125	2	0-20	
Arsenic	4.□2□	25.00	30.41	102	30.94	104	□5-125	2	0-20	
Barium	□1.32	25.00	104.3	92	105.9	9□	□5-125	2	0-20	
Beryllium	0.5446	25.00	26.46	104	26.99	106	□5-125	2	0-20	
Cadmium	0.62□1	25.00	26.62	104	2□.02	106	□5-125	1	0-20	
Chromium	15.96	25.00	41.□2	103	42.□5	10□	□5-125	2	0-20	
Co□alt	5.159	25.00	29.9□	99	30.□□	103	□5-125	3	0-20	
Copper	11.50	25.00	3□.54	10□	39.59	112	□5-125	3	0-20	
Lead	5.□11	25.00	30.69	100	31.31	102	□5-125	2	0-20	
Moly□denum	1.5□3	25.00	26.24	99	26.9□	102	□5-125	3	0-20	
Nickel	9.□41	25.00	35.1□	101	35.□1	103	□5-125	1	0-20	
Selenium	ND	25.00	25.56	102	26.9□	10□	□5-125	5	0-20	
Sil□er	ND	12.50	11.64	93	11.90	95	□5-125	2	0-20	
□hallium	0.20□□	25.00	24.45	9□	24.□2	9□	□5-125	1	0-20	
□anadium	23.□6	25.00	4□.2□	94	4□.99	9□	□5-125	1	0-20	
□inc	63.16	25.00	□6.25	92	□□.10	96	□5-125	1	0-20	

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□□ C □□□□□□PDS□PDSD

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3050B
		Method□	EPA 6020
Project□P□SD Shelter Island Boat Launch			Page 3 of 5

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	PDS□PDSD Batch Num□er
B□□□□□□□	S□□ □□□	S□□□□ □□□	ICP□□S □□	□□□□□□□ □□□□□	□□□□□□□ □□□□□	□□□□□□S□□
B□□□□□□□	PDS	S□□□□ □□□	ICP□□S □□	□□□□□□□ □□□□□	□□□□□□□ □□□□□	□□□□□□S□□

Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS □ Rec.	□ Rec. CL	□ualifiers
Antimony	0.□299	25.00	2□.2□	110	□5-125	
Arsenic	3.469	25.00	29.3□	104	□5-125	
Barium	94.□0	25.00	123.4	114	□5-125	
Beryllium	ND	25.00	26.52	106	□5-125	
Cadmium	0.□659	25.00	2□.94	109	□5-125	
Chromium	13.15	25.00	3□.12	100	□5-125	
Co□alt	4.509	25.00	29.41	100	□5-125	
Copper	10□.□	25.00	133.□	4□	□5-125	□
Lead	114.6	25.00	132.2	4□	□5-125	□
Moly□denum	0.9143	25.00	25.90	100	□5-125	
Nickel	2□.50	25.00	52.□0	101	□5-125	
Selenium	0.21□5	25.00	26.43	105	□5-125	
Sil□er	ND	12.50	12.61	101	□5-125	
□hallium	ND	25.00	24.3□	9□	□5-125	
□anadium	30.□□	25.00	54.56	95	□5-125	
□inc	196.5	25.00	222.3	4□	□5-125	□

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

PDS / PDSD

AMEC Environment Infrastructure
9210 Sky Park Court Suite 200
San Diego CA 92123-4302

Project P SD Shelter Island Boat Launch

Date Received	10 30 13
ork rder	13-10-2303
Preparation	EPA 3050B
Method	EPA 6020

uality Control Sample ID	ype	Matri	Instrument	Date Prepared	Date Analy ed	PDS PDSD Batch Num er
	S	S	ICP S			S
	PDS	S	ICP S			S
	PDSD	S	ICP S			S

Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS Rec.	PDSD Conc.	PDSD Rec.	Rec. CL	RPD	RPD CL	ualifiers
Lead	15.62	25.00	43.03	110	41.96	105	5-125	3	0-20	

RPD Relati e Percent Difference. CL Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□□ C□□□□□□□PDS□PDSD

AMEC En□ironment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Project□P□SD Shelter Island Boat Launch

Date Recei□ed□	10□30□13
□ork □rder□	13-10-2303
Preparation□	EPA □4□1A □otal
Method□	EPA □4□1A

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	PDS□PDSD Batch Num□er
□□□□□□□□□□□□	S□□ □□□	S□□□	□ □□□□□	□□□□□□□ □□□□□	□□□□□□□ □□□□□	□□□□□□S□□
□□□□□□□□□□□□	PDS	S□□□	□ □□□□□	□□□□□□□ □□□□□	□□□□□□□ □□□□□	□□□□□□S□□
□□□□□□□□□□□□	PDSD	S□□□	□ □□□□□	□□□□□□□ □□□□□	□□□□□□□ □□□□□	□□□□□□S□□

Parameter	Sample Conc.	Spike Added	PDS Conc.	PDS □Rec.	PDSD Conc.	PDSD □Rec.	□Rec. CL	RPD	RPD CL	□ualifiers
Mercury	0.4316	0.□350	1.1□□	90	1.1□6	90	□5-125	0	0-20	

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Sample Duplicate

AMEC Environment & Infrastructure
9210 Sky Park Court, Suite 200
San Diego, CA 92123-4302

Project: P[illegible]SD Shelter Island Boat Launch

Date Received:	10/30/13
Work Order:	13-10-2303
Preparation:	N/A
Method:	SM 2540 B (M)

Page 1 of 2

Quality Control Sample ID	Type	Matrix	Instrument	Date Prepared	Date Analyzed	Duplicate Batch Number
B[illegible]	S[illegible]	S[illegible]	N/A	[illegible]	[illegible]	D[illegible]TSD[illegible]
B[illegible]	S[illegible] D[illegible]	S[illegible]	N/A	[illegible]	[illegible]	D[illegible]TSD[illegible]

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	Qualifiers
Solids, Total	[illegible]9.00	[illegible]9.60	1	0-10	

Return to Contents

RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ N□A
	Method□ SM 2540 B □M□
Project□P□SD Shelter Island Boat Launch	Page 2 of 2

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	Duplicate Batch Num□er
B□C□□□□□□□	**S□□ □□□**	**S□□□ □□□**	**N□A**	□□□□□□ □□□□	□□□□□□ □□□□	**D□□□□TSD□**
B□C□□□□□□□	**S□□ □□□ D□□□□□□□**	**S□□□ □□□**	**N□A**	□□□□□□ □□□□	□□□□□□ □□□□	**D□□□□TSD□**

Parameter	Sample Conc.	DUP Conc.	RPD	RPD CL	□ualifiers
Solids□□otal	□□.□0	□□.30	1	0-10	

Return to Contents

RPD□Relati□e Percent Difference.   CL□Control Limits

Calscience Environmental Laboratories, Inc.

C LCS

AMEC En ironment Infrastructure		Date Recei ed	10 30 13
9210 Sky Park Court Suite 200		ork rder	13-10-2303
San Diego CA 92123-4302		Preparation	EPA 3550B
		Method	EPA 015B M
Project P SD Shelter Island Boat Launch			Page 1 of 10

uality Control Sample ID	ype	Matri	Instrument	Date Prepared	Date Analy ed	LCS Batch Num er
	LCS	S	C			B

Parameter	Spike Added	Conc. Reco ered	LCS Rec.	Rec. CL	ualifiers
P as Diesel	400.0	32 .3	2	5-123	

RPD Relati e Percent Difference. CL Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□□ C□□□□□□□LCS

AMEC En□ironment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Project□P□SD Shelter Island Boat Launch

Date Recei□ed□	10□30□13
□ork □rder□	13-10-2303
Preparation□	EPA 3550B
Method□	EPA □015B □M□
	Page 2 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□	LCS	S□□□	□C □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Spike Added	Conc. Reco□ered	LCS □Rec.	□Rec. CL	□ualifiers
□P□ as Diesel	400.0	341.0	□5	□5-123	

Return to Contents

RPD□Relati□e Percent Difference.   CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□□ C□□□□□□□LCS

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 5030C
		Method□	EPA □015B □M□
Project□P□SD Shelter Island Boat Launch			Page 3 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□□	LCS	S□□□	□C □	□□□□□□□	□□□□□□□ □□□□	□□□□□□B□□

Parameter	Spike Added	Conc. Reco□ered	LCS □Rec.	□Rec. CL	□ualifiers
□R□ □C4-C12□□otal	10.00	9.236	92	□0-124	

RPD□Relati□e Percent Difference. CL□Control Limits

Return to Contents

Calscience Environmental Laboratories, Inc.

□ □□□□□ C□□□□□□□LCS

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 5030C
		Method□	EPA □015B □M□
Project□P□SD Shelter Island Boat Launch			Page 4 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□□□	LCS	S□□□	□C □□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□B□□

Parameter	Spike Added	Conc. Reco□ered	LCS □Rec.	□Rec. CL	□ualifiers
□R□ □C4-C12□□otal	10.00	9.□61	9□	□0-124	

RPD□Relati□e Percent Difference.   CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□ C□□□□□□LCS

AMEC En□ironment □ Infrastructure
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Project□P□SD Shelter Island Boat Launch

Date Recei□ed□	10□30□13
□ork □rder□	13-10-2303
Preparation□	EPA 3050B
Method□	EPA 6020
	Page 5 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□	LCS	S□□□	ICP□□S □□	□□□□□□	□□□□□□ □□□□	□□□□□□L□□

Parameter	Spike Added	Conc. Reco□ered	LCS □Rec.	□Rec. CL	□ualifiers
Lead	25.00	25.□9	104	□0-120	

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□ C□□□□□LCS

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3050B
		Method□	EPA 6020
Project□P□SD Shelter Island Boat Launch			Page 6 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□□	**LCS**	**S□□□**	**ICP□□S □□**	□□□□□□□	□□□□□□□ □□□□□	□□□□□□L□□E

Parameter	Spike Added	Conc. Reco□ered	LCS □ Rec.	□ Rec. CL	ME CL	□ualifiers
Antimony	25.00	26.05	104	□0-120	□3-12□	
Arsenic	25.00	25.5□	102	□0-120	□3-12□	
Barium	25.00	24.3□	9□	□0-120	□3-12□	
Beryllium	25.00	26.9□	10□	□0-120	□3-12□	
Cadmium	25.00	25.9□	104	□0-120	□3-12□	
Chromium	25.00	2□.96	112	□0-120	□3-12□	
Co□alt	25.00	25.94	104	□0-120	□3-12□	
Copper	25.00	29.16	11□	□0-120	□3-12□	
Lead	25.00	25.53	102	□0-120	□3-12□	
Moly□denum	25.00	24.94	100	□0-120	□3-12□	
Nickel	25.00	26.45	106	□0-120	□3-12□	
Selenium	25.00	26.11	104	□0-120	□3-12□	
Sil□er	12.50	11.□3	94	□0-120	□3-12□	
□hallium	25.00	24.3□	9□	□0-120	□3-12□	
□anadium	25.00	24.53	9□	□0-120	□3-12□	
□inc	25.00	29.21	11□	□0-120	□3-12□	

□otal num□er of LCS compounds□16
□otal num□er of ME compounds□0
□otal num□er of ME compounds allo□ed□1
LCS ME CL □alidation result□Pass

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□ C□□□□□□LCS

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3050B
		Method□	EPA 6020
Project□P□SD Shelter Island Boat Launch			Page □of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□□	LCS	S□□□	ICP□□S □□	□□□□□□	□□□□□□ □□□□	□□□□□□L□□E

Parameter	Spike Added	Conc. Reco□ered	LCS □Rec.	□Rec. CL	ME CL	□ualifiers
Antimony	25.00	2□.3□	109	□0-120	□3-12□	
Arsenic	25.00	26.□4	10□	□0-120	□3-12□	
Barium	25.00	25.20	101	□0-120	□3-12□	
Beryllium	25.00	2□.56	110	□0-120	□3-12□	
Cadmium	25.00	2□.1□	109	□0-120	□3-12□	
Chromium	25.00	2□.26	109	□0-120	□3-12□	
Co□alt	25.00	2□.09	10□	□0-120	□3-12□	
Copper	25.00	29.92	120	□0-120	□3-12□	
Lead	25.00	26.02	104	□0-120	□3-12□	
Moly□denum	25.00	25.□0	103	□0-120	□3-12□	
Nickel	25.00	2□.36	109	□0-120	□3-12□	
Selenium	25.00	25.09	100	□0-120	□3-12□	
Sil□er	12.50	12.□6	103	□0-120	□3-12□	
□hallium	25.00	25.42	102	□0-120	□3-12□	
□anadium	25.00	25.45	102	□0-120	□3-12□	
□inc	25.00	29.30	11□	□0-120	□3-12□	

□otal num□er of LCS compounds□16
□otal num□er of ME compounds□0
□otal num□er of ME compounds allo□ed□1
LCS ME CL □alidation result□Pass

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□□ C □□□□□□□LCS

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA 3050B
		Method□	EPA 6020
Project□P□SD Shelter Island Boat Launch			Page □of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□□□	LCS	S□□□	ICP□□S □□	□□□□□□□	□□□□□□□ □□□□	□□□□□□L□□E

Parameter	Spike Added	Conc. Reco□ered	LCS □ Rec.	□ Rec. CL	□ualifiers
Lead	25.00	25.66	103	□0-120	

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□□ C □□□□□□□□LCS

AMEC En□ironment □ Infrastructure		Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200		□ ork □rder□	13-10-2303
San Diego□CA 92123-4302		Preparation□	EPA □4□1A □otal
		Method□	EPA □4□1A
Project□P□SD Shelter Island Boat Launch			Page 9 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□□□	LCS	S□□□	□ □□□□□	□□□□□□□	□□□□□□□ □□□□□	□□□□□□L□□E

Parameter	Spike Added	Conc. Reco□ered	LCS □ Rec.	□ Rec. CL	□ualifiers
Mercury	0.□350	0.□043	96	□2-124	

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□□ C □□□□□□□LCS

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA □4□1A □otal
	Method□ EPA □4□1A
Project□P□SD Shelter Island Boat Launch	Page 10 of 10

□uality Control Sample ID	□ype	Matri□	Instrument	Date Prepared	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□□	LCS	S□□□	□ □□□□□	□□□□□□□	□□□□□□□ □□□□□	□□□□□□L□□E

Parameter	Spike Added	Conc. Reco□ered	LCS □ Rec.	□ Rec. CL	□ualifiers
Mercury	0.□350	0.□964	95	□2-124	

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Qualifiers	Definition
*	See applicable analysis comment.
<	Less than the indicated value.
>	Greater than the indicated value.
1	Surrogate compound recovery was out of control due to a required sample dilution. Therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to suspected matrix interference. The associated LCS recovery was in control.
4	The MS/MSD RPD was out of control due to suspected matrix interference.
5	The PDS/PDSD or PES/PESD associated with this batch of samples was out of control due to suspected matrix interference.
6	Surrogate recovery below the acceptance limit.
7	Surrogate recovery above the acceptance limit.
B	Analyte was present in the associated method blank.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
E	Concentration exceeds the calibration range.
ET	Sample was extracted past end of recommended max. holding time.
HD	The chromatographic pattern was inconsistent with the profile of the reference fuel standard.
HDH	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons were also present (or detected).
HDL	The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but lighter hydrocarbons were also present (or detected).
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
JA	Analyte positively identified but quantitation is an estimate.
ME	LCS Recovery Percentage is within Marginal Exceedance (ME) Control Limit range (+/- 4 SD from the mean).
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
SG	The sample extract was subjected to Silica Gel treatment prior to analysis.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.
	Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.
	Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.
	A calculated total result (Example: Total Pesticides) is the summation of each component concentration and/or, if "J" flags are reported, estimated concentration. Component concentrations showing not detected (ND) are summed into the calculated total result as zero concentrations.

Return to Contents

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE: 10/30/13

PAGE: 1 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure
ADDRESS: 9210 Sky Park Ct. Ste 200
CITY: San Diego, California 92123
TEL: 858-300-4300 FAX: 858-300-4301 E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch
P.O. NO.: 5014090500.51
PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
QUOTE NO.: 956972
SAMPLER(S): (SIGNATURE)
LAB USE ONLY: 13-10-2303

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___ / ___ / ___

SPECIAL INSTRUCTIONS
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead
Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
1	B-1_4.1-5.5	S.I. Boat Launch	10/29/13	905	Soil	1	X	X	X
2	B-1_6.1-7.5	S.I. Boat Launch	10/29/13	910	Soil	1	X	X	X
3	B-1_8.1-9.5	S.I. Boat Launch	10/29/13	915	Soil	1	X	X	X
4	B-1_10.1-12.5	S.I. Boat Launch	10/29/13	920	Soil	1	X	X	X
5	B-1_12.1-13.5	S.I. Boat Launch	10/29/13	925	Soil	1	X	X	X
6	B-1_14.1-15.5	S.I. Boat Launch	10/29/13	935	Soil	1	X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature) CEL	Date: 10/30/13	Time: 1400
Relinquished by: (Signature)	Received by: (Signature) Dannyle CEL	Date: 10/30/13	Time: 19:15
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Return to Contents

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CHAIN OF CUSTODY RECORD

DATE: 10/30/13

PAGE: 2 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure
ADDRESS: 9210 Sky Park Ct. Ste 200
CITY: San Diego, California 92123
TEL: 858-300-4300
FAX: 858-300-4301
E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch
P.O. NO.: 5014090500.51
PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
QUOTE NO.: 956972
SAMPLER(S): (SIGNATURE)
LAB USE ONLY: 10-2303

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____/____/____

SPECIAL INSTRUCTIONS
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
7	B-2A_4.1-5.5	S.I. Boat Launch	10/29/13	1020	Soil	1	X	X	X
8	B-2B_4.1-5.5	S.I. Boat Launch	10/29/13	1035	Soil	1	X	X	X
9	B-2B_6.1-7.5	S.I. Boat Launch	10/29/13	1045	Soil	1	X	X	X
10	B-2C_10.1-11.5	S.I. Boat Launch	10/29/13	1120	Soil	1	X	X	X
11	B-2C_12.1-13.5	S.I. Boat Launch	10/29/13	1125	Soil	1	X	X	X
12	B-2C_14.1-16.5	S.I. Boat Launch	10/29/13	1130	Soil	1	X	X	X
13	B-2C_16.1-17.5	S.I. Boat Launch	10/29/13	1135	Soil	1	X	X	X
14	B-2C_18.1-19.5	S.I. Boat Launch	10/29/13	1140	Soil	1	X	X	X
15	B-2C_20.1-22.5	S.I. Boat Launch	10/29/13	1150	Soil	1	X	X	X
16	B-2C_22.1-23.5	S.I. Boat Launch	10/29/13	1155	Soil	1	X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) CEL	Date: 10/30/13	Time: 1400
Relinquished by: (Signature)	Received by: (Signature) Dannyle CEL	Date: 10/30/13	Time: 19:15
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Return to Contents

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CHAIN OF CUSTODY RECORD

DATE: 10/30/13
PAGE: 3 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure
ADDRESS: 9210 Sky Park Ct. Ste 200
CITY: San Diego, California 92123
TEL: 858-300-4300 FAX: 858-300-4301 E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch
PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
SAMPLER(S): (SIGNATURE)
P.O. NO.: 5014090500.51
QUOTE NO.: 956972
LAB USE ONLY: 10-2303

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead
Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
17	B-3_4.1-5.5	S.I. Boat Launch	10/29/13	1315	Soil	1	X	X	X
18	B-3B_2.1-3.5	S.I. Boat Launch	10/29/13	1335	Soil	1	X	X	X
19	B-3B_7.1-8.5	S.I. Boat Launch	10/29/13	1340	Soil	1	X	X	X
20	B-3C_2.1-2.75	S.I. Boat Launch	10/29/13	1430	Soil	1	X	X	X
21	B-3C_2.75-3.5	S.I. Boat Launch	10/29/13	1430	Soil	1	X	X	X
22	B-3C_4.1-4.75	S.I. Boat Launch	10/29/13	1440	Soil	1	X	X	X
23	B-3C_4.75-5.5	S.I. Boat Launch	10/29/13	1440	Soil	1	X	X	X
24	B-3C_6.1-6.75	S.I. Boat Launch	10/29/13	1455	Soil	1	X	X	X
25	B-3C_6.75-7.5	S.I. Boat Launch	10/29/13	1455	Soil	1	X	X	X
26	B-3C_10.1-10.75	S.I. Boat Launch	10/29/13	1500	Soil	1	X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) CEL	Date: 10/30/13	Time: 1400
Relinquished by: (Signature)	Received by: (Signature) Dannyle CEL	Date: 10/30/13	Time: 19:15
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Return to Contents

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CHAIN OF CUSTODY RECORD

DATE: 10/30/13

PAGE: 4 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure
ADDRESS: 9210 Sky Park Ct. Ste 200
CITY: San Diego, California 92123
TEL: 858-300-4300 FAX: 858-300-4301 E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch
PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
SAMPLER(S): (SIGNATURE)

P.O. NO.: 5014090500.51
QUOTE NO.: 956972
LAB USE ONLY: 10-2303

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL __/__/__

SPECIAL INSTRUCTIONS
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead
Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
27	B-4 3.1-3.75	S.I. Boat Launch	10/29/13	1345	Soil	1	X	X	X
28	B-4 3.75-4.5	S.I. Boat Launch	10/29/13	1345	Soil	1	X	X	X
29	B-4 5.1-5.75	S.I. Boat Launch	10/29/13	1600	Soil	1	X	X	X
30	B-4 5.75-6.5	S.I. Boat Launch	10/29/13	1600	Soil	1	X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Return to Contents

Calscience Environmental Laboratories, Inc.

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CHAIN OF CUSTODY RECORD

DATE: 10/30/13

PAGE: 5 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure	CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch
ADDRESS: 9210 Sky Park Ct. Ste 200	P.O. NO.: 5014090500.51
CITY: San Diego, California 92123	PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
TEL: 858-300-4300	QUOTE NO.: 956972
FAX: 858-300-4301	SAMPLER(S): (SIGNATURE)
E-MAIL: kimbrie.gobbi@amec.com	LAB USE ONLY: 10-2303

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY): ☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS

Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc

__Please only analyze the following if one of the samples on pgs 1-4 does not have enough material.__ Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
31	B-5A_1.0-1.5	S.I. Boat Launch	10/30/13	1200	Soil	1	X	X	X
32	B-5B_1.0-1.5	S.I. Boat Launch	10/30/13	1210	Soil	1	X	X	X
33	B-5C_1.0-1.5	S.I. Boat Launch	10/30/13	1225	Soil	1	X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
	CEL	10/30/13	1400
	Dannigle CEL	10/30/13	19:15

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-10-2308

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Amec Environment & Infrastructure DATE: 10/30/13

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 2 . 6 °C - 0.2 °C (CF) = 2 . 4 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: ________).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter

Checked by: 820

CUSTODY SEALS INTACT:

☐ Cooler	☐ ________	☐ No (Not Intact)	☑ Not Present	☐ N/A	Checked by: 820
☐ Sample	☐ ________	☐ No (Not Intact)	☑ Not Present		Checked by: 895

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☐	☑	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
Aqueous samples received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfides ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☑16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐________

Aqueous: ☐VOA ☐VOAh ☐VOAna$_2$ ☐125AGB ☐125AGBh ☐125AGBp ☐1AGB ☐1AGBna$_2$ ☐1AGBs ☐500AGB ☐500AGJ ☐500AGJs ☐250AGB ☐250CGB ☐250CGBs ☐1PB ☐1PBna ☐500PB ☐250PB ☐250PBn ☐125PB ☐125PBznna ☐100PJ ☐100PJna$_2$ ☐________ ☐________ ☐________

Air: ☐Tedlar® ☐Canister **Other:** ☐________ **Trip Blank Lot#:**__________ **Labeled/Checked by:** 895

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** 854

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:**$Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** 854

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-10-2303

SAMPLE ANOMALY FORM

SAMPLES - CONTAINERS & LABELS:	Comments:
☐ Sample(s) NOT RECEIVED but listed on COC	
☐ Sample(s) received but NOT LISTED on COC	
☐ Holding time expired – list sample ID(s) and test	
☐ Insufficient quantities for analysis – list test	
☐ Improper container(s) used – list test	
☐ Improper preservative used – list test	
☐ No preservative noted on COC or label – list test & notify lab	
☐ Sample labels illegible – note test/container type	
☑ Sample label(s) do not match COC – Note in comments	Per label:
☑ Sample ID	(-12) B-26_14.1-15.5
☑ Date and/or Time Collected	
☐ Project Information	(-21) Collection time: 1438
☐ # of Container(s)	(-27) Collection time: 1545
☐ Analysis	(-28) Collection time: 1545
☐ Sample container(s) compromised – Note in comments	
☐ Water present in sample container	
☐ Broken	
☐ Sample container(s) not labeled	
☐ Air sample container(s) compromised – Note in comments	
☐ Flat	
☐ Very low in volume	
☐ Leaking (Not transferred - duplicate bag submitted)	
☐ Leaking (transferred into Calscience Tedlar® Bag*)	
☐ Leaking (transferred into Client's Tedlar® Bag*)	
☐ Other:	

HEADSPACE – Containers with Bubble > 6mm or ¼ inch:

Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Cont. received	Analysis

Comments:

*Transferred at Client's request.

Initial / Date: 300 10/30/13

SEDI□ENT C□E□ISTRY
STLC AND TCLP
ANALYTICAL RES□LTS

Calscience Environmental Laboratories, Inc.

Supplemental Report 3

Additional re□uested analyses are reported as a stand-alone report.

CALSCIENCE

□ OR□ ORDER N□□BER□□□□□□□□□□

The difference is service

AIR | S□IL | □A□ER | MARINE C□EMIS□R□

A□□□□□□□□R□□□□□□□

C□□□□□ AMEC En□ironment □ Infrastructure

C□□□□P□□□□□□N□□ □□ P□SD Shelter Island Boat Launch

A□□□□□□□□ Barry Snyder
9210 Sky Park Court□Suite 200
San Diego□CA 92123-4302

Appro□ed for release on 11□2□2013 □y□
Danielle □onsman
Project Manager

ResultLink

Email your PM

Calscience En□ironmental La□oratories□Inc. □Calscience□certifies that the test results pro□ided in this report meet all NELAC re□uirements for parameters for □hich accreditation is re□uired or a□aila□le. Any e□ceptions to NELAC re□uirements are noted in the case narrati□e. □he original report of su□contracted analyses□if any□ is attached to this report. □he results in this report are limited to the sample□s□tested and any reproduction thereof must □e made in its entirety. □he client or recipient of this report is specifically prohi□ited from making material changes to said report and□to the e□tent that such changes are made□Calscience is not responsi□le□legally or other□ise. □he client or recipient agrees to indemnify Calscience for any defense to any litigation □hich may arise.

Calscience Environmental Laboratories, Inc.

Contents

Client Project Name: PWSD Shelter Island Boat Launch
Work Order Number: 13-10-2303

7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Calscience Environmental Laboratories, Inc.

WORK ORDER NARRATIVE

Work Order: 13-10-2303 Page 1 of 1

Condition Upon Receipt

Samples were received under Chain of Custody (COC) on 10/30/13. They were assigned to Work Order 13-10-2303.

Unless otherwise noted on the Sample Receiving forms all samples were received in good condition and within the recommended EPA temperature criteria for the methods noted on the COC. The COC and Sample Receiving Documents are integral elements of the analytical report and are presented at the back of the report.

Holding Times

All samples were analyzed within prescribed holding times (HT) and/or in accordance with the Calscience Sample Acceptance Policy unless otherwise noted in the analytical report and/or comprehensive case narrative, if required.

Any parameter identified in 40CFR Part 136.3 Table II that is designated as "analyze immediately" with a holding time of <= 15 minutes (40CFR-136.3 Table II, footnote 4), is considered a "field" test and the reported results will be qualified as being received outside of the stated holding time unless received at the laboratory within 15 minutes of the collection time.

Quality Control

All quality control parameters (QC) were within established control limits except where noted in the QC summary forms or described further within this report.

Additional Comments

Air - Sorbent-extracted air methods (EPA TO-4A, EPA TO-10, EPA TO-13A, EPA TO-17): Analytical results are converted from mass/sample basis to mass/volume basis using client-supplied air volumes.

New York NELAP air certification does not certify for all reported methods and analytes, reference the accredited items here: http://www.calscience.com/PDF/NewYork.pdf

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are always reported on a wet weight basis.

Subcontracted Samples

Unless otherwise noted below (or on the subcontract form), no samples were subcontracted.

Calscience Environmental Laboratories, Inc.

S□□ □□□ S□□ □ □□□

Client□	AMEC En□ironment □ Infrastructure 9210 Sky Park Court□Suite 200 San Diego□CA 92123-4302	□ ork □rder□	13-10-2303
		Project Name□	P□SD Shelter Island Boat Launch
		P□ Num□er□	C013101641
		Date□□ime Recei□ed□	10□30□13 19□15
		Num□er of Containers□	35
Attn□	Barry Snyder		

S□□ □□□ I□□□□□□□□□□	L□□ N□□ □□□	C□□□□□□□ D□□ □□□ T□ □	N□□ □□□□□ C□□□□□□□□	□ □□□□
B-1□4.1-5.5	13-10-2303-1	10□29□13 09□05	1	Sediment
B-1□6.1-□.5	13-10-2303-2	10□29□13 09□10	1	Sediment
B-1□□.1-9.5	13-10-2303-3	10□29□13 09□15	1	Sediment
B-1□10.1-12.5	13-10-2303-4	10□29□13 09□20	1	Sediment
B-1□12.1-13.5	13-10-2303-5	10□29□13 09□25	1	Sediment
B-1□14.1-15.5	13-10-2303-6	10□29□13 09□35	1	Sediment
B-2A□4.1-5.5	13-10-2303-□	10□29□13 10□20	1	Sediment
B-2B□4.1-5.5	13-10-2303-□	10□29□13 10□35	1	Sediment
B-2B□6.1-□.5	13-10-2303-9	10□29□13 10□45	1	Sediment
B-2C□10.1-11.5	13-10-2303-10	10□29□13 11□20	1	Sediment
B-2C□12.1-13.5	13-10-2303-11	10□29□13 11□25	1	Sediment
B-2C□14.1-16.5	13-10-2303-12	10□29□13 11□30	1	Sediment
B-2C□16.1-1□.5	13-10-2303-13	10□29□13 11□35	1	Sediment
B-2C□1□.1-19.5	13-10-2303-14	10□29□13 11□40	1	Sediment
B-2C□20.1-22.5	13-10-2303-15	10□29□13 11□50	1	Sediment
B-2C□22.1-23.5	13-10-2303-16	10□29□13 11□55	1	Sediment
B-3□4.1-5.5	13-10-2303-1□	10□29□13 13□15	1	Sediment
B-3B□2.1-3.5	13-10-2303-1□	10□29□13 13□35	1	Sediment
B-3B□□.1-□.5	13-10-2303-19	10□29□13 13□40	1	Sediment
B-3C□2.1-2.□5	13-10-2303-20	10□29□13 14□30	1	Sediment
B-3C□2.□5-3.5	13-10-2303-21	10□29□13 14□30	1	Sediment
B-3C□4.1-4.□5	13-10-2303-22	10□29□13 14□40	1	Sediment
B-3C□4.□5-5.5	13-10-2303-23	10□29□13 14□40	1	Sediment
B-3C□6.1-6.□5	13-10-2303-24	10□29□13 14□55	1	Sediment
B-3C□6.□5-□.5	13-10-2303-25	10□29□13 14□55	1	Sediment
B-3C□10.1-10.□5	13-10-2303-26	10□29□13 15□00	1	Sediment
B-4□3.1-3.□5	13-10-2303-2□	10□29□13 13□45	1	Sediment
B-4□3.□5-4.5	13-10-2303-2□	10□29□13 13□45	1	Sediment
B-4□5.1-5.□5	13-10-2303-29	10□29□13 16□00	1	Sediment
B-4□5.□5-6.5	13-10-2303-30	10□29□13 16□00	1	Sediment
B-5A□1.0-1.5	13-10-2303-31	10□30□13 12□00	1	Sediment
B-5B□1.0-1.5	13-10-2303-32	10□30□13 12□10	1	Sediment
B-5C□1.0-1.5	13-10-2303-33	10□30□13 12□25	1	Sediment
B-3C□6.1-6.□5 □Re-analysis□	13-10-2303-34	10□29□13 14□55	1	Sediment
B-3C□6.1-6.□5 □2nd Re-analysis□	13-10-2303-35	10□29□13 14□55	1	Sediment

Calscience Environmental Laboratories, Inc.

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AMEC Environment □ Infrastructure		Date Received□	10□30□13
9210 Sky Park Court□Suite 200		Work Order□	13-10-2303
San Diego□CA 92123-4302		Preparation□	□22.11.5. All
		Method□	EPA 6010B
		Units□	mg□L
Project□P□SD Shelter Island Boat Launch			Page 1 of 4

Client Sample Number	Lab Sample Number	Date□Time Collected	Matrix	Instrument	Date Prepared	Date□Time Analyzed	□C Batch ID
B□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□ □□□□	S□□□ □□□	ICP □□□□	□□□□□□□	□□□□□□□ □□□□	□□□□□□LA□

Parameter	Result	RL	DF	Qualifiers
Lead	1.1□	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	0.521	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	0.405	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	0.569	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	0.□04	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	0.3□2	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	0.□□6	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	2.42	0.100	1	

Return to Contents

RL□Reporting Limit. DF□Dilution Factor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: [illegible]22.11.5. All
	Method: EPA 6010B
	Units: mg/L
Project: P[illegible]SD Shelter Island Boat Launch	Page 2 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP [illegible]	[illegible]	[illegible]	[illegible]LA[illegible]
Parameter		**Result**	**RL**	**DF**	**Qualifiers**		
Lead		0.60[illegible]	0.100	1			
Parameter		**Result**	**RL**	**DF**	**Qualifiers**		
Lead		ND	0.100	1			
Parameter		**Result**	**RL**	**DF**	**Qualifiers**		
Lead		0.546	0.100	1			
Parameter		**Result**	**RL**	**DF**	**Qualifiers**		
Lead		0.[illegible]09	0.100	1			
Parameter		**Result**	**RL**	**DF**	**Qualifiers**		
Lead		0.352	0.100	1			
Parameter		**Result**	**RL**	**DF**	**Qualifiers**		
Lead		0.5[illegible]0	0.100	1			
Parameter		**Result**	**RL**	**DF**	**Qualifiers**		
Lead		0.52[illegible]	0.100	1			
Parameter		**Result**	**RL**	**DF**	**Qualifiers**		
Lead		ND	0.100	1			

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

Analytical Report

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: [illegible]22.11.5. All
	Method: EPA 6010B
	Units: mg/L
Project: P[illegible]SD Shelter Island Boat Launch	Page 3 of 4

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
B[illegible]	[illegible]A	[illegible]	S[illegible]	ICP [illegible]	[illegible]	[illegible]	[illegible]LA[illegible]

Parameter	Result	RL	DF	Qualifiers
Lead	6.94	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	[illegible]	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	1.3[illegible]	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	15.2	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	2.24	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	2.90	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	4.[illegible]9	0.100	1	

Parameter	Result	RL	DF	Qualifiers
Lead	41.9	0.100	1	

RL: Reporting Limit. DF: Dilution Factor. MDL: Method Detection Limit.

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ □22.11.5. All
	Method□ EPA 6010B
	Units□ mg□L
Project□P□SD Shelter Island Boat Launch	Page 4 of 4

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□C□□□□□□□□	□□□□□□□□□□□□□A	□□□□□□□□ □□□□	S□□□ □□□	ICP □□□□	□□□□□□□□	□□□□□□□□ □□□□	□□□□□□LA□

Parameter	Result	RL	D□	□ualifiers
Lead	13.4	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	11.1	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	5.12	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	1.□□	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	5.20	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	0.□16	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

A□□□□□□□□R□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ EPA 1311
	Method□ EPA 6010B
	Units□ mg□L
Project□P□SD Shelter Island Boat Launch	Page 1 of 1

Client Sample Num□er	La□ Sample Num□er	Date□□ime Collected	Matri□	Instrument	Date Prepared	Date□□ime Analy□ed	□C Batch ID
B□□□□□□□□□□	□□□□□□□□□□□□A	□□□□□□□□ □□□□□	S□□□□ □□□	ICP □□□□	□□□□□□□□	□□□□□□□□ □□□□□	□□□□□□LA□

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	0.123	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Parameter	Result	RL	D□	□ualifiers
Lead	ND	0.100	1	

Return to Contents

RL□Reporting Limit. D□□Dilution □actor. MDL□Method Detection Limit.

Calscience Environmental Laboratories, Inc.

□ □□□□□ C□□□□□□□S□□□□S□□□□ D□□□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ □22.11.5. All
	Method□ EPA 6010B
Project□P□SD Shelter Island Boat Launch	Page 1 of 3

□uality Control Sample ID	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
B□□□□□□□□□□	S□□□ □□□	ICP □□□□	□□□□□□□	□□□□□□□ □□□□	□□□□□□SA□

Parameter	Sample Conc.	Spike Added	MS Conc.	MS □Rec.	MSD Conc.	MSD □Rec.	□Rec. CL	RPD	RPD CL	□ualifiers
Lead	0.□03□	5.000	5.□61	103	5.□55	103	□5-125	0	0-20	

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□□ C□□□□□□□S□□□□S□□□□ D□□□□□□□

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ □22.11.5. All
	Method□ EPA 6010B
Project□P□SD Shelter Island Boat Launch	Page 2 of 3

□uality Control Sample ID	Matri□	Instrument	Date Prepared	Date Analy□ed	MS□MSD Batch Num□er
□□□□□□□□□□□□	S□□□	ICP □□□□	□□□□□□□	□□□□□□□ □□□□	□□□□□□SA□

Parameter	Sample Conc.	Spike Added	MS Conc.	MS □Rec.	MSD Conc.	MSD □Rec.	□Rec. CL	RPD	RPD CL	□ualifiers
Lead	ND	5.000	4.□5□	9□	4.9□5	99	□5-125	2	0-20	

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

AMEC Environment & Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 1311
	Method: EPA 6010B
Project: PSD Shelter Island Boat Launch	Page 3 of 3

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
B[illegible]	S[illegible]	ICP [illegible]	[illegible]	[illegible]	[illegible]SA[illegible]

Parameter	Sample Conc.	Spike Added	MS Conc.	MS %Rec.	MSD Conc.	MSD %Rec.	%Rec. CL	RPD	RPD CL	Qualifiers
Lead	ND	5.000	5.335	10[illegible]	5.156	103	[illegible]4-120	3	0-[illegible]	

RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

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AMEC En□ironment □ Infrastructure	Date Recei□ed□	10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□	13-10-2303
San Diego□CA 92123-4302	Preparation□	□22.11.5. All
	Method□	EPA 6010B
Project□P□SD Shelter Island Boat Launch		Page 1 of 3

□uality Control Sample ID	Matri□	Instrument	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□□□	A□□□□□□	ICP □□□□	□□□□□□□ □□□□	□□□□□□LA□

Parameter	Spike Added	Conc. Reco□ered	LCS □Rec.	□Rec. CL	□ualifiers
Lead	5.000	5.293	106	□0-120	

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

□ □□□□□ C□□□□□□□LCS

AMEC En□ironment □ Infrastructure	Date Recei□ed□ 10□30□13
9210 Sky Park Court□Suite 200	□ork □rder□ 13-10-2303
San Diego□CA 92123-4302	Preparation□ □22.11.5. All
	Method□ EPA 6010B
Project□P□SD Shelter Island Boat Launch	Page 2 of 3

□uality Control Sample ID	Matri□	Instrument	Date Analy□ed	LCS Batch Num□er
□□□□□□□□□□□□□□	**A□□□□□□**	**ICP □□□□**	□□□□□□□ □□□□	□□□□□□**LA**□

Parameter	Spike Added	Conc. Reco□ered	LCS □Rec.	□Rec. CL	□ualifiers
Lead	5.000	5.139	103	□0-120	

Return to Contents

RPD□Relati□e Percent Difference. CL□Control Limits

Calscience Environmental Laboratories, Inc.

C LCS

AMEC Environment Infrastructure	Date Received: 10/30/13
9210 Sky Park Court, Suite 200	Work Order: 13-10-2303
San Diego, CA 92123-4302	Preparation: EPA 1311
	Method: EPA 6010B
Project: P SD Shelter Island Boat Launch	Page 3 of 3

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	LCS Batch Number
	A	ICP		LA

Parameter	Spike Added	Conc. Recovered	LCS %Rec.	%Rec. CL	Qualifiers
Lead	5.000	5.31	106	80-120	

RPD: Relative Percent Difference. CL: Control Limits

Calscience Environmental Laboratories, Inc.

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□ ork □rder□13-10-2303

□□□□□□□□	D□□□□□□□
□	See applica□le analysis comment.
□	Less than the indicated □alue.
□	□reater than the indicated □alue.
1	Surrogate compound reco□ery □as out of control due to a re□uired sample dilution. □herefore□the sample data □as reported □ithout further clarification.
2	Surrogate compound reco□ery □as out of control due to matri□interference. □he associated method □lank surrogate spike compound □as in control and□therefore□the sample data □as reported □ithout further clarification.
3	Reco□ery of the Matri□Spike □MS□or Matri□Spike Duplicate □MSD□compound □as out of control due to suspected matri□interference. □he associated LCS reco□ery □as in control.
4	□he MS□MSD RPD □as out of control due to suspected matri□interference.
5	□he PDS□PDSD or PES□PESD associated □ith this □atch of samples □as out of control due to suspected matri□interference.
6	Surrogate reco□ery □elo□ the acceptance limit.
□	Surrogate reco□ery a□o□e the acceptance limit.
B	Analyte □as present in the associated method □lank.
BU	Sample analy□ed after holding time e□pired.
B□	Sample recei□ed after holding time e□pired.
E	Concentration e□ceeds the cali□ration range.
E□	Sample □as e□tracted past end of recommended ma□. holding time.
□D	□he chromatographic pattern □as inconsistent □ith the profile of the reference fuel standard.
□D□	□he sample chromatographic pattern for □P□ matches the chromatographic pattern of the specified standard □ut hea□ier hydrocar□ons □ere also present □or detected□.
□DL	□he sample chromatographic pattern for □P□ matches the chromatographic pattern of the specified standard □ut lighter hydrocar□ons □ere also present □or detected□.
J	Analyte □as detected at a concentration □elo□ the reporting limit and a□o□e the la□oratory method detection limit. Reported □alue is estimated.
JA	Analyte positi□ely identified □ut □uantitation is an estimate.
ME	LCS Reco□ery Percentage is □ithin Marginal E□ceedance □ME□Control Limit range □□- 4 SD from the mean□.
ND	Parameter not detected at the indicated reporting limit.
□	Spike reco□ery and RPD control limits do not apply resulting from the parameter concentration in the sample e□ceeding the spike concentration □y a factor of four or greater.
S□	□he sample e□tract □as su□jected to Silica □el treatment prior to analysis.
□	□ Reco□ery and□or RPD out-of-range.
□	Analyte presence □as not confirmed □y second column or □C□MS analysis.
	Solid - Unless other□ise indicated□solid sample data is reported on a □et □eight □asis□not corrected for □ moisture. All □C results are reported on a □et □eight □asis.
	Any parameter identified in 40C□R Part 136.3 □a□le II that is designated as □analy□e immediately□□ith a holding time of □□ 15 minutes □40C□R-136.3 □a□le II□footnote 4□□is considered a □field□test and the reported results □ill □e □ualified as □eing recei□ed outside of the stated holding time unless recei□ed at the la□oratory □ithin 15 minutes of the collection time.
	A calculated total result □E□ample□□otal Pesticides□is the summation of each component concentration and□or□if □J□flags are reported□estimated concentration. Component concentrations sho□ing not detected □ND□are summed into the calculated total result as □ero concentrations.

Return to Contents

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE: 10/30/13

PAGE: 1 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure
ADDRESS: 9210 Sky Park Ct. Ste 200
CITY: San Diego, California 92123
TEL: 858-300-4300 FAX: 858-300-4301 E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch
P.O. NO.: 5014090500.51
PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
QUOTE NO.: 956972
SAMPLER(S): (SIGNATURE)
LAB USE ONLY: 13-10-2303

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
1	B-1_4.1-5.5	S.I. Boat Launch	10/29/13	905	Soil	1	X	X	X
2	B-1_6.1-7.5	S.I. Boat Launch	10/29/13	910	Soil	1	X	X	X
3	B-1_8.1-9.5	S.I. Boat Launch	10/29/13	915	Soil	1	X	X	X
4	B-1_10.1-12.5	S.I. Boat Launch	10/29/13	920	Soil	1	X	X	X
5	B-1_12.1-13.5	S.I. Boat Launch	10/29/13	925	Soil	1	X	X	X
6	B-1_14.1-15.5	S.I. Boat Launch	10/29/13	935	Soil	1	X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature) CEL	10/30/13	1400
Relinquished by: (Signature)	Received by: (Signature) Dannyle CEL	10/30/13	19:15
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Return to Contents

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CHAIN OF CUSTODY RECORD

DATE: 10/30/13

PAGE: 2 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure
ADDRESS: 9210 Sky Park Ct. Ste 200
CITY: San Diego, California 92123
TEL: 858-300-4300 FAX: 858-300-4301 E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch
P.O. NO.: 5014090500.51
PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
QUOTE NO.: 956972
SAMPLER(S): (SIGNATURE)
LAB USE ONLY: 10-2303

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
7	B-2A_4.1-5.5	S.I. Boat Launch	10/29/13	1020	Soil	1	X	X	X
8	B-2B_4.1-5.5	S.I. Boat Launch	10/29/13	1035	Soil	1	X	X	X
9	B-2B_6.1-7.5	S.I. Boat Launch	10/29/13	1045	Soil	1	X	X	X
10	B-2C_10.1-11.5	S.I. Boat Launch	10/29/13	1120	Soil	1	X	X	X
11	B-2C_12.1-13.5	S.I. Boat Launch	10/29/13	1125	Soil	1	X	X	X
12	B-2C_14.1-16.5	S.I. Boat Launch	10/29/13	1130	Soil	1	X	X	X
13	B-2C_16.1-17.5	S.I. Boat Launch	10/29/13	1135	Soil	1	X	X	X
14	B-2C_18.1-19.5	S.I. Boat Launch	10/29/13	1140	Soil	1	X	X	X
15	B-2C_20.1-22.5	S.I. Boat Launch	10/29/13	1150	Soil	1	X	X	X
16	B-2C_22.1-23.5	S.I. Boat Launch	10/29/13	1155	Soil	1	X	X	X

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Relinquished by: (Signature)	Received by: (Signature) CEL	Date: 10/30/13	Time: 1400
Relinquished by: (Signature)	Received by: (Signature) Dannyle CEL	Date: 10/30/13	Time: 19:15
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Return to Contents

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CHAIN OF CUSTODY RECORD

DATE: 10/30/13
PAGE: 3 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure
ADDRESS: 9210 Sky Park Ct. Ste 200
CITY: San Diego, California 92123
TEL: 858-300-4300 FAX: 858-300-4301 E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch
P.O. NO.: 5014090500.51
PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
QUOTE NO.: 956972
SAMPLER(S): (SIGNATURE)
LAB USE ONLY: 10-23203

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead
Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
17	B-3_4.1-5.5	S.I. Boat Launch	10/29/13	1315	Soil	1	X	X	X
18	B-3B_2.1-3.5	S.I. Boat Launch	10/29/13	1335	Soil	1	X	X	X
19	B-3B_7.1-8.5	S.I. Boat Launch	10/29/13	1340	Soil	1	X	X	X
20	B-3C_2.1-2.75	S.I. Boat Launch	10/29/13	1430	Soil	1	X	X	X
21	B-3C_2.75-3.5	S.I. Boat Launch	10/29/13	1430	Soil	1	X	X	X
22	B-3C_4.1-4.75	S.I. Boat Launch	10/29/13	1440	Soil	1	X	X	X
23	B-3C_4.75-5.5	S.I. Boat Launch	10/29/13	1440	Soil	1	X	X	X
24	B-3C_6.1-6.75	S.I. Boat Launch	10/29/13	1455	Soil	1	X	X	X
25	B-3C_6.75-7.5	S.I. Boat Launch	10/29/13	1455	Soil	1	X	X	X
26	B-3C_10.1-10.75	S.I. Boat Launch	10/29/13	1500	Soil	1	X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) CEL	Date: 10/30/13	Time: 1400
Relinquished by: (Signature)	Received by: (Signature) Dannyle CEL	Date: 10/30/13	Time: 19:15
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Return to Contents

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CHAIN OF CUSTODY RECORD

DATE: 10/30/13

PAGE: 4 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure
ADDRESS: 9210 Sky Park Ct. Ste 200
CITY: San Diego, California 92123
TEL: 858-300-4300 FAX: 858-300-4301 E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch
PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder
SAMPLER(S): (SIGNATURE)

P.O. NO.: 5014090500.51
QUOTE NO.: 956972
LAB USE ONLY: 10-23-03

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY): ☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL __/__/__

SPECIAL INSTRUCTIONS:
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead
Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc

Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
27	B-4_3.1-3.75	S.I. Boat Launch	10/29/13	1345	Soil	1	X	X	X
28	B-4_3.75-4.5	S.I. Boat Launch	10/29/13	1345	Soil	1	X	X	X
29	B-4_5.1-5.75	S.I. Boat Launch	10/29/13	1600	Soil	1	X	X	X
30	B-4_5.75-6.5	S.I. Boat Launch	10/29/13	1600	Soil	1	X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

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7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE: 10/30/13

PAGE: 5 OF 5

LABORATORY CLIENT: AMEC Environment & Infrastructure

ADDRESS: 9210 Sky Park Ct. Ste 200

CITY: San Diego, California 92123

TEL: 858-300-4300 | FAX: 858-300-4301 | E-MAIL: kimbrie.gobbi@amec.com

CLIENT PROJECT NAME / NUMBER: POSD Shelter Island Boat Launch

P.O. NO.: 5014090500.51

PROJECT CONTACT: Kimbrie Gobbi/Barry Snyder

QUOTE NO.: 956972

SAMPLER(S): (SIGNATURE)

LAB USE ONLY: 10-2303

TURNAROUND TIME: ☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY): ☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS:
Metals: Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead Mercury, Molybdenum, Nickel, Selenium, Silver, Thallium, Vanadium, Zinc
Please only analyze the following if one of the samples on pgs 1-4 does not have enough material. Danielle Gonsman is PM.

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	CAM 17/Title 22 Metals	Extended Range TPH (C4-C40)	Percent Solids
31	B-5A_1.0-1.5	S.I. Boat Launch	10/30/13	1200	Soil	1	X	X	X
32	B-5B_1.0-1.5	S.I. Boat Launch	10/30/13	1210	Soil	1	X	X	X
33	B-5C_1.0-1.5	S.I. Boat Launch	10/30/13	1225	Soil	1	X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) CEL	10/30/13	1400
Relinquished by: (Signature)	Received by: (Signature) Dannugle CEL	10/30/13	19:15
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-10-2308

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Amec Environment & Infrastructure DATE: 10/30/13

TEMPERATURE: Thermometer ID: SC2 (Criteria: 0.0 °C – 6.0 °C, not frozen except sediment/tissue)

Temperature 2.6 °C - 0.2 °C (CF) = 2.4 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: ________).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Checked by: 820

CUSTODY SEALS INTACT:

☐ Cooler ☐ ________ ☐ No (Not Intact) ☑ Not Present ☐ N/A Checked by: 820

☐ Sample ☐ ________ ☐ No (Not Intact) ☑ Not Present Checked by: 895

SAMPLE CONDITION:	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples	☑	☐	☐
COC document(s) received complete	☑	☐	☐
☐ Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
☐ No analysis requested. ☐ Not relinquished. ☐ No date/time relinquished.			
Sampler's name indicated on COC	☑	☐	☐
Sample container label(s) consistent with COC	☐	☑	☐
Sample container(s) intact and good condition	☑	☐	☐
Proper containers and sufficient volume for analyses requested	☑	☐	☐
Analyses received within holding time	☑	☐	☐
Aqueous samples received within 15-minute holding time			
☐ pH ☐ Residual Chlorine ☐ Dissolved Sulfides ☐ Dissolved Oxygen	☐	☐	☑
Proper preservation noted on COC or sample container	☐	☐	☑
☐ Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace	☐	☐	☑
Tedlar bag(s) free of condensation	☐	☐	☑

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☑16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐________

Aqueous: ☐VOA ☐VOAh ☐VOAna$_2$ ☐125AGB ☐125AGBh ☐125AGBp ☐1AGB ☐1AGBna$_2$ ☐1AGBs ☐500AGB ☐500AGJ ☐500AGJs ☐250AGB ☐250CGB ☐250CGBs ☐1PB ☐1PBna ☐500PB ☐250PB ☐250PBn ☐125PB ☐125PBznna ☐100PJ ☐100PJna$_2$ ☐________ ☐________ ☐________

Air: ☐Tedlar® ☐Canister **Other:** ☐________ **Trip Blank Lot#:**__________ **Labeled/Checked by:** 895

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** 854

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:** $Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **u:** Ultra-pure **znna:** $ZnAc_2$+NaOH **f:** Filtered **Scanned by:** 854

SOP T100_090 (07/31/13)

Return to Contents

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 13-10-2303

SAMPLE ANOMALY FORM

SAMPLES - CONTAINERS & LABELS:

- ☐ **Sample(s) NOT RECEIVED but listed on COC**
- ☐ **Sample(s) received but NOT LISTED on COC**
- ☐ **Holding time expired** – list sample ID(s) and test
- ☐ **Insufficient quantities for analysis** – list test
- ☐ **Improper container(s) used** – list test
- ☐ **Improper preservative used** – list test
- ☐ **No preservative noted on COC or label** – list test & notify lab
- ☐ **Sample labels illegible** – note test/container type
- ☑ **Sample label(s) do not match COC** – Note in comments
  - ☑ **Sample ID**
  - ☑ **Date and/or Time Collected**
  - ☐ **Project Information**
  - ☐ **# of Container(s)**
  - ☐ **Analysis**
- ☐ **Sample container(s) compromised** – Note in comments
  - ☐ **Water present in sample container**
  - ☐ **Broken**
- ☐ **Sample container(s) not labeled**
- ☐ **Air sample container(s) compromised** – Note in comments
  - ☐ **Flat**
  - ☐ **Very low in volume**
  - ☐ **Leaking (Not transferred - duplicate bag submitted)**
  - ☐ **Leaking (transferred into Calscience Tedlar® Bag*)**
  - ☐ **Leaking (transferred into Client's Tedlar® Bag*)**
- ☐ **Other:**

Comments:

Per label:
(-12) B-26_14.1-15.5
(-21) Collection time: 1438
(-27) Collection time: 1545
(-28) Collection time: 1545

HEADSPACE – Containers with Bubble > 6mm or ¼ inch:

Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Cont. received	Analysis

Comments:

*Transferred at Client's request.

Initial / Date: 300 10/30/13

Danielle Gonsman

From: Snyder, Barry [barry.snyder@amec.com]
Sent: Thursday, November 21, 2013 4:24 PM
To: Danielle Gonsman
Cc: Gobbi, Kimbrie
Subject: Port of San Diego -Shelter Island Boat Launch Samples

Danielle-

Please go ahead and run STLC analyses for lead only on the 16 Shelter Island Boat Launch soil samples that were not analyzed in the first round of STLC tests. No TCLP analyses are necessary.

This is in addition to the confirmation TTLC test that you are running on Sample B-3C_6.1-6.75.

Please contact myself or Kimbrie Gobbi with any questions.

Thank you.

Barry

Barry J. Snyder
Aquatic Scientist
AMEC Environment & Infrastructure, Inc.
9210 Sky Park Court, Suite 200
San Diego, CA 92123
858-300-4320 office
858-300-4301 fax
858-354-8340 cell
barry.snyder@amec.com

APPENDIX D

STATISTICAL ANALYSIS □ OR□S□EETS

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STATISTICAL ANALYSIS

[illegible] N[illegible]	Port of San Diego	C[illegible]	C□-C40 □otal □□LC□
S[illegible] A[illegible] P[illegible] A[illegible]	2210 Shelter Island Dri□e		
C[illegible] S[illegible]	San Diego□CA		
E[illegible]	□000 cu□ic yards		
[illegible] S[illegible]	30		

[illegible]	□4□133.6966
[illegible]	920.39□661□
N[illegible] S[illegible]	30
R[illegible] T[illegible] E[illegible]	[illegible]
[illegible]	412.60
CO□P□TE [illegible]	-15.39□42944
□t□ □alue from ta□le	[illegible]
degrees of freedom	[illegible]
std error of mean	[illegible]
CON□IDENCE INTER□AL	[illegible]
DEL□A	[illegible]
ES□ □ SAMPLES	[illegible]
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C[illegible] A□EC E[illegible] I[illegible]
D[illegible]

	□AL□ES	SA□PLE I□D□ NO□S
1	110	B-1□4.1-5.5
2	5.0	B-1□6.1-□.5
3	5.0	B-1□□.1-9.5
4	5.0	B-1□10.1-12.5
5	5.0	B-1□12.1-13.5
6	5.0	B-1□14.1-15.5
□	52	B-2A□4.1-5.5
□	310	B-2B□4.1-5.5
9	56	B-2B□6.1-□.5
10	5.0	B-2C□10.1-11.5
11	5.0	B-2C□12.1-13.5
12	5.0	B-2C□14.1-16.5
13	5.0	B-2C□16.1-1□.5
14	5.0	B-2C□1□.1-19.5
15	5.0	B-2C□20.1-22.5
16	5.0	B-2C□22.1-23.5
1□	9□0	B-3□4.1-5.5
1□	4600	B-3B□2.1-3.5
19	1□0	B-3B□□.1-□.5
20	620	B-3C□2.1-2.□5
21	3□0	B-3C□2.□5-3.5
22	1600	B-3C□4.1-4.□5
23	240	B-3C□4.□5-5.5
24	160	B-3C□6.1-6.□5
25	120	B-3C□6.□5-□.5
26	2□0	B-3C□10.1-10.□5
2□	160	B-4□3.1-3.□5
2□	1□0	B-4□3.□5-4.5
29	290	B-4□5.1-5.□5
30	2000	B-4□5.□5-6.5

TAB□LATED □AL□ES

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[illegible]	[illegible]

STATISTICAL ANALYSIS

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S□□ A□□□□□□ P□□□□□□A□□□□□	2210 Shelter Island Dri□e		
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4	6.93	B-1□10.1-12.5
5	146	B-1□12.1-13.5
6	21.6	B-1□14.1-15.5
□	23.5	B-2A□4.1-5.5
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9	14.1	B-2B□6.1-□.5
10	13.0	B-2C□10.1-11.5
11	10.9	B-2C□12.1-13.5
12	6.92	B-2C□14.1-16.5
13	□6□	B-2C□16.1-1□.5
14	5.21	B-2C□1□.1-19.5
15	10.1	B-2C□20.1-22.5
16	□.49	B-2C□22.1-23.5
1□	115	B-3□4.1-5.5
1□	5□.0	B-3B□2.1-3.5
19	103	B-3B□□.1-□.5
20	1□4	B-3C□2.1-2.□5
21	9□.4	B-3C□2.□5-3.5
22	66.9	B-3C□4.1-4.□5
23	10□	B-3C□4.□5-5.5
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25	49.□	B-3C□6.□5-□.5
26	□6.0	B-3C□10.1-10.□5
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2□	26.6	B-4□3.□5-4.5
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1	1.1□	B-1□4.1-5.5
2	0.521	B-1□6.1-□.5
3	0.405	B-1□□.1-9.5
4	0.569	B-1□10.1-12.5
5	0.□04	B-1□12.1-13.5
6	0.3□2	B-1□14.1-15.5
□	0.□□6	B-2A□4.1-5.5
□	2.42	B-2B□4.1-5.5
9	0.60□	B-2B□6.1-□.5
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1□	6.94	B-3□4.1-5.5
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19	1.3□	B-3B□□.1-□.5
20	15.2	B-3C□2.1-2.□5
21	2.24	B-3C□2.□5-3.5
22	2.90	B-3C□4.1-4.□5
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24	41.9	B-3C□6.1-6.□5
25	13.4	B-3C□6.□5-□.5
26	11.1	B-3C□10.1-10.□5
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4	0.123	B-3C[illegible]2.1-2.[illegible]5
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APPENDIX C

GEOTECHNICAL REPORT

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TerraCosta
Consulting Group

GEOTECHNICAL INVESTIGATION
SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS
SAN DIEGO, CALIFORNIA

Prepared for
TRANSYSTEMS CORPORATION
Long Beach, California

Prepared by
TERRACOSTA CONSULTING GROUP, INC.
San Diego, California

Project No. 2766
April 27, 2012
Revised: May 3, 2012

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TerraCosta Consulting Group

Geotechnical Engineering
Coastal Engineering
Maritime Engineering

Project No. 2766
April 27, 2012
Revised: May 3, 2012

TRANSYSTEMS CORPORATION
6700 East Pacific Coast Highway, Suite 210
Long Beach, California 90803

Attn: Mr. Bill Wood, Assistant Vice President

GEOTECHNICAL INVESTIGATION
SHELTER ISLAND BOAT LAUNCH
FACILITY IMPROVEMENTS
SAN DIEGO, CALIFORNIA

Gentlemen:

In accordance with the subcontract agreement between TranSystems Corporation and TerraCosta Consulting Group, Inc., we have completed a geotechnical investigation for the replacement and associated improvements for the Shelter Island Boat Launch facility, located on the southeasterly side of Shelter Island in San Diego Harbor, San Diego, California.

The accompanying report presents the results of our field investigation, laboratory testing, and engineering analysis of the subsurface conditions at the site, and presents our conclusions and recommendations pertaining to the geotechnical aspects of the site development. We have provided foundation design criteria for a new sheet-pile bulkhead, approach piers, and guide piles that will restrain new floating docks, as well as pavement design for the new replacement boat ramp and maneuvering area.

We appreciate the opportunity to work with you on this project, and trust this information meets your present needs. If you have any questions or require further information, please give us a call.

Very truly yours,

TERRACOSTA CONSULTING GROUP, INC.

Matthew W. Eckert, PhD, Dir. of Engineering
R.C.E. 45171, R.G.E. 2316

Braven R. Smillie, Principal Geologist
P.G. 402, C.E.G. 207

MWE/BRS/jg
Attachments

3890 Murphy Canyon Road, Suite 200 ▲ San Diego, California 92123-4450 ▲ (858) 573-6900 *voice* ▲ (858) 573-8900 *fax*
www.terracosta.com

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TABLE OF CONTENTS

GEOTECHNICAL INVESTIGATION
SHELTER ISLAND BOAT LAUNCH
FACILITY IMPROVEMENTS
SAN DIEGO, CALIFORNIA

1 INTRODUCTION

1.1 Introduction

TerraCosta Consulting Group, Inc. (TCG) is pleased to present the results of our geotechnical investigation for the Shelter Island Boat Launch facility improvements. The site is generally located at the northerly end of San Diego Bay on Shelter Island, at 32.7156 north latitude and 117.2234 west longitude (Figure 1).

Our geotechnical investigation was performed in support of TranSystems Corporation's (TranSystems) efforts for the subject project. This report presents the results of our field investigation, laboratory testing, and engineering analysis, and states our conclusions and recommendations regarding the geotechnical aspects of the project.

1.2 Background Information and Project Description

The Port of San Diego (Port) owns and maintains the Shelter Island Boat Launch in San Diego Harbor. This boat ramp has been one of the most popular boat launch facilities in the San Diego area since its opening in 1956. In 1976, the ramp was rehabilitated. The existing ramp and basin are currently in need of repair. In addition, current boat traffic congestion warrants improvement to the operational capacity of the facilities. As such, the Port has retained TranSystems to develop plans and specifications for improvements to the Shelter Island Boat Launch.

As we understand, the proposed project includes expanding the boat basin area by removal of the existing rock/soil breakwaters and replacement with concrete sheet-pile walls or bulkheads. In addition, we understand that the proposed improvements will include new ADA-compliant approach piers and gangways, along with new floating docks.

2 SCOPE OF WORK

The purpose of our investigation is to provide geotechnical and geologic information to assist the Port and their design consultants in their evaluation and design of the proposed improvements, which include a new larger protected basin, dock facilities, ramp, and pavements. A preliminary plan showing the proposed improvements is presented in Figure 2a. Figure 2b shows the available bathymetry, and Figure 2c shows the limits of the existing rock revetments and breakwater.

Relevant geotechnical issues associated with the project include input for the design of piles and pile-supported structures, lateral load capacity and allowable bearing capacity of the bay floor sediments, active earth pressures and passive earth pressures for the design of sheet-pile walls and bulkheads, sliding coefficient, seismic site acceleration, liquefaction potential, pile driving recommendations, and pavement design.

In particular, our investigation was designed to address the geotechnical aspects of the site, both onshore and offshore, and provide design criteria for construction of the access piers, guide piles restraining the floating docks, new sheet-pile bulkhead, new launch ramp, and maneuvering area pavements. To this end, our scope of work consisted of the following:

- Literature research and geologic reconnaissance of the proposed area of development;
- Geotechnical field investigation consisting of drilling, sampling, and logging four onshore and four offshore test borings;
- Laboratory testing and characterization of the subsurface soil and geologic conditions;
- Geotechnical engineering analysis of data and development of design criteria for foundations and bulkheads; and
- Providing design wave conditions.

3 INVESTIGATION

3.1 Document Review

As part of our investigation, we reviewed available published and unpublished maps and reports pertinent to the project site and surrounding area. A list of documents reviewed is provided in the References section at the end of this report.

Our review of geotechnical reports and historical documents indicates that the project site area soils generally consist of a combination of hydraulically and mechanically placed fills, interbedded estuarine and bay deposits, and soils of the Bay Point Formation.

3.2 Field Investigation

Our field investigation and testing program were conducted between February 21 and 24, 2012, and included advancing eight test borings ranging in depth from 9.5 to 36 feet below the existing ground surface/mud line. Test boring locations are shown on Figures 2a and 2b.

The offshore test borings were advanced using a limited-access track-mounted drill rig with a 7-inch continuous-flight hollow-stem auger operated by Pacific Drilling Company of San Diego, California. The San Diego Mooring Company's crane barge, the Tracey Ann, was used as the support platform for the offshore drilling operations. During the drilling operations, once the desired depth was reached, a 2-inch outside diameter, standard penetration test (SPT) sampler was driven below the bottom of the auger to obtain a sample and to aid in assessing the relative soil density and consistency. The samplers were driven using a 140-pound hammer with a 30-inch drop, and borings were generally sampled at 4-foot intervals. Blow counts were recorded at 6-inch intervals.

Field logs were prepared based on a visual examination of the materials encountered and the action of the drilling and sampling equipment. A Key to Excavation Logs is presented in Appendix A as Figure A-1. Final logs of the test borings are presented as Figures A-2 through A-9. Descriptions on the logs are based on the field logs and sample inspection.

3.3 Laboratory Testing

Laboratory testing was performed on selected soil samples. Tests performed included grain-size distribution analysis and R-value. Results of the laboratory testing are presented in Appendix B.

4 GEOLOGIC AND SITE CONDITIONS

Up until the late 1930s, the northwesterly margin of San Diego Bay essentially paralleled Scott Street, with shoal waters extending out to the then-natural channel, roughly coincident with the contemporary main channel of the bay. Figure 3 shows the current limits of the development superimposed over the conditions of the bay in 1857. As shown in Figure 3, a relatively narrow sand bar, locally a few feet above sea level, has existed at least since the mid 1850s generally along the present-day alignment of Shelter Island. This natural sand bar and the near-surface soils supporting it were likely deposited primarily by stream flow from the San Diego River during a period when the river discharged alternately into San Diego Bay and Mission Bay. Comparisons between the current bay conditions (see Figure 1) and conditions in the mid 1800s (see Figure 3) suggest that the descending bayward slope at the breakwater corresponds roughly with the natural bank shown on Figure 3.

Figure 1 shows that harbor improvements since the early 1940s reclaimed all of the low-lying lands southerly and easterly of Loma Portal, including what is today the San Diego International Airport and Marine Corps Recruit Depot, the old U.S. Naval Training Center, Harbor Island, Shelter Island, the remaining tidelands surrounding the America's Cup Harbor, and the small artificially filled peninsula that today supports the Southwestern Yacht Club. Most of this reclamation was accomplished by placing man-placed fills of hydraulic origin and, as such, these fill soils are comprised of relatively clean sands. Due to the fairly high tidal current velocities within this relatively constricted part of San Diego Bay, most of the compressible near-surface bay floor deposits that exist elsewhere in more quiescent areas of San Diego Bay are not present in great abundance in the general project site area. As such, these fills have been generally placed over relatively granular natural embayment and fluvial sand deposits.

All of these near-surface overburden soils are underlain at relatively shallow depths by relatively competent Pleistocene-age terrace deposits of the Bay Point Formation, which were encountered near elevation -10 feet, Mean Lower Low Water (MLLW) at Scott Street (located several hundred feet northwesterly from the boat ramp site) and at approximate elevation -30 feet MLLW at Boring B-4 (see Figure 2a) on the descending submerged slope located along the southerly bayward edge of Shelter Island. Within the basin, the Bay Point Formation was encountered near elevation -21 to -24 feet MLLW in the vicinity of the Shelter Island Boat Launch within the basin, and at -24 to -30 MLLW feet bayward of the basin.

Figures 1 and 4, respectively, place the site in local and regional geologic context.

Subsurface conditions at the site consist of pavements, fill soils, rock revetments, recent bay deposits, bay deposits, and the Bay Point Formation. Two generalized geologic cross sections have been developed to illustrate the underlying subsurface conditions of the site (see Figures 5 and 6). The soils and materials encountered are described below:

> <u>Pavements</u>: Pavements in the area consist of 4 inches of asphalt concrete over 12 inches of Class II base on the ramp approach and maneuvering area, and 8 inches of reinforced portland cement concrete over 12 inches of Class II base for the boat ramp.
>
> <u>Fill Soils</u>: Hydraulically and mechanically placed fill soils in the area consist of loose to medium dense, olive-gray to brown, silty fine sands, with occasional shell fragments. Fill soils at the site are generally found above elevation -2 feet MLLW.
>
> <u>Rock Revetments</u>: The rock for the revetments is estimated to consist of 4- to 8-ton rock riprap. The revetments that serve as slope protection are estimated to be on the order of 3- to 4-feet thick. Details of the construction of the rock revetment breakwater were not available for review. As such, the dimensions and construction of the breakwater are unknown. Surface probing suggests that the rock breakwater extends to an elevation of -7 feet MLLW along the interior of the basin, and to elevation -10± feet along the bayward edge of the breakwater. On the basis of our Boring B-4, it appears that the outer edge of the breakwater is supported on an underlying "buttress" of gravels and smaller rock similar to riprap backing material (see Figures 2c and 5). The presence of an underlying buttress of material, given the

fairly weak condition of the underlying bay deposit soils, is consistent with the need to strengthen the foundation soils underlying the breakwater revetment along the bayward edge of the breakwater. As such, we anticipate that a buttress of smaller rock and gravel underlies the bayward edge of the breakwater along the full extent of the bayward limits of the breakwater. Our best estimate of the limits of the buttress is shown on Figures 2c and 5.

Recent Bay Deposits: Recent bay deposits, where encountered at the site, consist of a relatively thin layer of colloidal flock underlain by very loose and soft, gray, very fine- to medium-grained sands and silts.

Bay Deposits: Bay deposits generally consist of unconsolidated paralic estuarine and fluvial deposits comprised mostly of interbedded fine-grained sands, silts, and clays. Locally, most of these soils were deposited by the San Diego River.

Bay Point Formation: The Bay Point Formation was generally encountered below elevation -21 to -24 feet MLLW within the basin, and at -24 to -30 feet MLLW bayward of the basin. The upper 5± feet of the Bay Point Formation is typically weathered, becoming denser and more competent below elevation -30± feet MLLW. The Bay Point Formation generally consists of paralic deposits of late to middle Pleistocene age, and is mostly poorly sorted, interfingered beach, estuarine, and colluvial deposits comprised of silts and sands, and occasional clays.

4.1 Faulting and Seismicity

4.1.1 *Regional Geology and Seismicity*

Movement between the North American and Pacific Plates makes Southern California one of the more seismically active regions in the United States. Strain, caused by movement between the North American Plate and the Pacific Plate, is spread across a 150+ mile wide zone between the San Andreas fault zone, approximately 100 miles east of San Diego, out to and beyond the San Clemente fault zone located approximately 50 miles west of San Diego.

Nearing the end of the Miocene, approximately 5.5 million years ago, the boundary between the North American and Pacific Plates moved eastward to its present-day position in the Gulf of California (Abbott, 1999). The resultant extension and stretching of the North American continental crust formed a rift between the two plates, creating the Gulf of California, which continues opening through the present day. The San Andreas, San Jacinto, Elsinore, Rose Canyon/Newport-Inglewood, and San Clemente fault zones are just a few of the resultant strain features (faults) created by this tectonic movement (Figure 7). Today, there is an estimated 55 to 60 centimeters per year of relative plate motion between the North American and Pacific Plates, spread across the faults within this 150+ mile wide zone, of which the Rose Canyon fault zone is estimated to contribute 1.5 mm/year (±0.5mm).

4.1.2 *Local Tectonics*

The topography for most of the San Diego coastal metropolitan area is relatively simple, consisting of uplifted ancient sea floors and shore platforms that have become the present-day westerly sloping coastal terraces (Figures 1 and 4). These terraces are in turn dissected by westerly-flowing streams and rivers, which have incised significant canyons as they flow to the coast (Abbott, 1999).

Of the major active fault systems in Southern California, the Rose Canyon/Newport-Inglewood fault zone has impacted the local San Diego region the most. In addition, the La Nacion fault zone east of the project, and the Descanso Fault offshore to the west have contributed to the local tectonic state of the project site. Together with other offshore fault zones, these faults have contributed to the formation of San Diego Bay. South of La Jolla, the Rose Canyon fault zone changes its orientation from a northwest/southeast trend to a more north/south trend, creating a left bend in the fault zone. This left bend locally creates a locking mechanism within the predominantly right-lateral Rose Canyon fault zone. The compressional forces within this zone have caused folding, uplift, and tilting of the overlying sedimentary rocks, thus creating Mount Soledad and the downdropped Mission Bay area. To the south, in San Diego Bay, the Rose Canyon fault zone separates into a “horsetail splay,” spreading movement across the Silver Strand, Coronado, and Spanish Bight Faults (as well as several smaller faults) as it trends offshore toward the Descanso Fault. The Descanso Fault lies offshore from Point Loma, where it extends southerly toward the Agua Blanca fault zone in northern Baja (Legg and Kennedy, 1991). This right step between the Descanso and Rose Canyon fault zones creates a releasing bend, causing the rocks to be stretched and downdropped. In response, the rocks have not deformed elastically, but instead have responded with brittle fault failure (Abbott, 1999). The easterly boundary of this releasing bend is formed by the La Nacion fault zone, which generally consists of normal faults that step down to the west.

4.1.3 *Local Faults*

The site is located at the westerly margin of San Diego Bay and west of the active Rose Canyon fault zone. Local faulting near the site is illustrated on Figures 1, 4, and 8.

As described above, when the Rose Canyon fault zone is followed southerly, it appears to die out in San Diego Bay. From there, the fault movement appears to be transferred to the northerly trending Silver Strand, Coronado, and Spanish Bight Faults that continue offshore toward the Descanso Fault. Based on a review of the State of California Earthquake Fault Zone Map for the Point Loma Quadrangle, the earthquake fault zone boundary for the Spanish Bight Fault (the closest active fault to the site) is located approximately 1.8 miles (3 km) to the east/southeast (Figure 9). Based on our review of the California Geological Survey Bulletin 200 and Kennedy and Welday (1980), there are also numerous faults traversing the Point Loma Peninsula, with most of the faults located south/southwest of the site. While none of these faults are considered active, some of them have experienced dip-slip (downdropping) to the east during the early Pleistocene, making these faults potentially active.

4.1.4 *Historical Seismicity*

The historical seismicity of the site can be illustrated from searches of both the California Geological Survey (CGS) database of historical earthquakes and the earthquake database contained in the computer program EQSEARCH. The CGS database contains historical earthquake events from 1800 to 1999 above a minimum magnitude of 5.5, and permits searches for historical earthquakes within a 50 kilometer radius of the subject site. The database within EQSEARCH contains historical earthquake events between 1800 and 2010 for earthquake magnitudes above 4 for a user-defined search radius (typically on the order of 100 miles from the site). In addition, EQSEARCH permits an estimation of peak ground acceleration (PGA) using common attenuation relationships to help characterize the relative importance that a given historical event may have at the site. For our purposes, we employed a search radius of 100 miles and used Boore, et al., 1997, attenuation relationships for a NEHRP Soil Type D (Vs30m of approximately 250 m/s).

From our search of the CGS database, four historical earthquakes were identified:

- May 25, 1803, event located at Latitude 32.8 degrees north and Longitude 117.1 degrees west. This earthquake had a reported magnitude of 5.5 and was located approximately 19.2 miles (31 km) from the site.

- May 27, 1862, event located at Latitude 32.55 degrees north and Longitude 117.15 degrees west. This earthquake had a reported magnitude of 6.2 and was located approximately 12.2 miles (19.7 km) from the site.

- June 25, 1863, event located at Latitude 32.4 degrees north and Longitude 117.1 degrees west. This earthquake had a reported magnitude of 5.8 and was located approximately 23.0 miles (37.1 km) from the site.

- October 23, 1984, event located at Latitude 32.8 degrees north and Longitude 116.8 degrees west. This earthquake had a reported magnitude of 6.1 and was located approximately 25.2 miles (40.6 km) from the site.

Results from EQSEARCH are presented in Appendix C. In general, the results of the search are similar to those from the CGS. However, several of the reported distances of the faults to the site depend on the database searched. The EQSEARCH database has the May 27, 1862, earthquake occurring closer to the site than the CGS database. This results in a higher estimation of PGA. This is especially true with the event that corresponds to a PGA of 0.37g, which, according to the CGS database, is located approximately 12.2 miles (19.7 km) from the site versus the 1.7 miles (2.8 km) in the EQSEARCH database. Regardless of distance measures, the site has likely experienced historic ground accelerations greater than 0.1g within its lifetime.

5 GEOLOGIC HAZARDS

5.1 Introduction

In general, a project may be exposed to risks associated with various geologic hazards. Many of those hazards are related to the actions of earthquakes and faulting. In addition to geologic hazards associated with earthquakes and faulting, there are other potential geologic hazards that may impact the proposed project, including collapsible soils, corrosive soils, and high or perched groundwater. A brief description of the various geologic hazards and their impact on the project site is presented below.

5.2 Geologic Hazards Associated with Earthquakes

5.2.1 *General*

Geologic hazards generally associated with earthquakes include ground rupture, ground shaking, tsunamis, seiches, seismic-induced flooding, liquefaction, seismic-induced ground settlement, and seismic-induced slope instability. With respect to these hazards, we have the following comments.

5.2.2 *Ground Rupture*

Our review of the California Geological Survey (CGS) Earthquake Fault Zones Map for the Point Loma Quadrangle, the Fault Activity Map of California and Adjacent Areas, Bulletin 200, and Geologic Map of the San Diego 30-Minute by 60-Minute Quadrangle did not indicate that any active faults trend toward, or traverse, the site. The nearest named fault to the site is the late Quaternary-age Point Loma Fault, mapped approximately 100 feet (30 m) to the east of the site (see Figure 4). The CGS considers the Point Loma Fault to be potentially active. The nearest active fault is the Spanish Bight segment of the Rose Canyon Fault, located approximately 1.8 miles (3 km) to the east of the site (see Figures 5 and 6). Thus, based on our review of these maps, it is our opinion that ground rupture due to faulting is not a hazard for this project.

5.2.3 *Ground Shaking*

Ground shaking is considered to be a very high risk to the project site. Review of the historical record indicates that the site has likely experienced peak ground accelerations (PGA) in excess of 0.1g. Peak design ground acceleration at the site using CBC criteria is estimated to be 0.38g. However, the level of risk associated with the CBC criteria is greater than the level of risk commonly associated with port and harbor facilities, as well as marine oil terminals. Using terminology borrowed from the design of marine oil terminals

(MOTEMS, Chapter 31F of the CBC), it is common to use two levels (Level 1 and Level 2) of seismic performance as a criteria. The two more common levels of earthquake risk considered for design are the 72-year earthquake event (commonly referred to as the Level 1 event) and the 474-year earthquake (commonly refereed to as the Level 2 event). Our site-specific hazard study indicates that the PGA for the 72-year earthquake (Level 1 event) is on the order of 0.1g, and on the order of 0.3g for the 474-year earthquake (Level 2 event).

5.2.4 *Tsunamis and Seiches*

Tsunamis and seiches are considered likely hazards at the subject project site. A review of the State of California Tsunami Inundation Map for Emergency Planning (2009) indicates that the site is located within the tsunami inundation area for San Diego Bay (see Figure 10). This inundation area considers potential tsunamis caused by both local and distant sources.

Recently, tsunamis generated by distant sources (the 2010 Chilean earthquake and the 2011 Honshu, Japan, earthquake) have caused damage within San Diego Bay, created by rapid changes in water surface elevations as the tsunami waves passed into and out of the bay.

As such, the site should be considered at risk for tsunami-related flooding due to distant and local fault rupturing and/or subaqueous landsliding offshore of Southern California and/or other distant sources.

5.2.5 *Liquefaction*

Three key ingredients are required for liquefaction to occur: liquefaction-susceptible soils, sufficiently high groundwater, and strong shaking. Liquefaction is the phenomenon associated with ground shaking that results in the increase of pore pressures within the soil. As the pore pressure increases, the shear strength of the soil is reduced. If the pore pressure is sufficiently increased, the soil takes on a “liquid like” behavior. Consequences commonly associated with soil liquefaction include ground settlements, surface manifestations (sand boils), loss of strength, and possible lateral ground movement typically referred to as lateral spreading, ground oscillations and lurching, and possible ground failure.

Soils considered to be susceptible to liquefaction generally consist of loose to medium dense sands and non-plastic silt deposits below the groundwater table. The bay deposit soils that underlie the site down to the more competent Bay Point Formation are typical of soils that are susceptible to liquefaction.

As described above, potential impacts associated with liquefaction include seismic-induced ground settlement, ground lurching, surface manifestations such as sand boils and surface cracking, and lateral spreading. Liquefaction-induced ground settlements are estimated to be on the order of 6 to 18 inches, with an average settlement of 12 inches for the 474-year earthquake event; and on the order of 1 to 2 inches for the 72-year earthquake event. In addition, we anticipate a high probability of ground surface damage, including surface manifestations, during the 474-year event. However, for the 72-year design event, we do not anticipate liquefaction-induced surface manifestations and ground surface damage. For impacts associated with lateral spreading, the reader is directed to Section 5.2.6.

5.2.6 *Lateral Spreading and Flow Failure*

Lateral spreading is a phenomenon related to liquefaction that is characterized by accumulated incremental lateral or horizontal displacements that occur during earthquake shaking. During liquefaction, the strength of the soil decreases primarily due to the increase in pore pressures to a residual undrained strength of the soil. The residual undrained strength is oftentimes related to the Standard Penetration Test resistance of the soil, and is generally expressed as either an undrained strength or the ratio of undrained strength to initial effective overburden pressure prior to liquefaction. Lateral spreading is oftentimes distinguished from flow failures on the basis of a comparison of the shear stress acting on the soil during static conditions to the cyclic-induced shear stress on the soils generated during an earthquake.

When the static-induced shear stress exceeds the residual undrained strength of the liquefied soil, flow of the soil mass occurs in a phenomenon commonly referred to as a flow failure. However, when the static shear stress is less than the shear strength of the liquefied soil, ground failure is related a phenomenon known as cyclic mobility, which results from the development of incremental deformations that are driven by both cyclic and static shear stresses. The magnitude of lateral spreading displacements is related to the number and magnitude of stress impulses that exceed the soil strength. The magnitude of lateral movement varies between negligible to significant. These types of deformations are commonly referred to as lateral spreading and can occur on very gentle to virtually flat ground near or adjacent to a free face.

Estimates of movements suggest lateral movement on the order of 5 to 30+ feet immediately adjacent to the shoreline slope due to flow failure of the slope.

5.2.7 *Seismic-Induced Slope Instability*

The slopes at the site are underlain by or comprised of potentially liquefiable soils. As such, the slopes are considered unstable during a Level 1 (474-year) earthquake event.

5.3 Landslides

A review of Bulletin 200 and the geology map of the Point Loma Quadrangle (Figures 1 and 4), as well as review of reports by others, indicates that a relatively large ancient landslides exist on or near the site. Additionally, no landslides were encountered at the site during our investigation. As such, it is our opinion that the risk associated with landslides at the site is negligible.

5.4 Collapsible Soils

No collapsible soils were reported in the literature reviewed or encountered during our site investigation. As such, it is our opinion that the potential for collapsible soils is low.

5.5 Corrosive Soils

In general, marine environments are very corrosive by nature. Soils (and conditions) should be considered moderately to severely corrosive.

5.6 Groundwater

Groundwater was encountered in the onshore borings at a depth of approximately 7 feet (elevation +2 feet MLLW) at the time of our investigation. The depth to groundwater is likely directly related to the level of water within the bay and, as such, is expected to vary with tides. Discounting perching horizons and contributions from rainfall and irrigation, we estimate that the groundwater table will vary between a maximum groundwater elevation corresponding to the highest tide elevation at +7.8 feet MLLW, and a minimum groundwater elevation corresponding to the lowest tide at -2.2 feet MLLW.

6 DISCUSSION AND EVALUATION OF GEOTECHNICAL ISSUES

6.1 Proposed Improvements

As we understand, the proposed improvements for the Shelter Island Boat Launch basin consist of the removal of portions of the rock revetment slopes along the eastern and western boundaries of the project, partial removal and lowering of the rock revetment breakwater, lowering grades within the basin limits to elevation -6 feet MLLW, installation of a perimeter concrete sheet-pile bulkhead that is restrained and anchored for a portion of the alignment by driven pre-cast concrete piles, construction of two perimeter floating docks with guide piles and ADA compliant access ramps, replacement of the existing boat ramp with a new concrete boat ramp, and various site improvements, including new pavement for parking and access.

We understand that it is anticipated that the concrete sheet-pile panels will be approximately 12-inches thick and that the pre-cast concrete piles will be 12-inch square piles. Review of preliminary plans indicates that the batter piles used to provide lateral support to the proposed bulkhead are spaced approximately 12 feet apart. Lastly, we understand that the top elevation of the proposed perimeter bulkhead is elevation +11 feet MLLW.

In general, the geotechnical issues associated with the proposed improvements include:

- General site stability during earthquake conditions;
- Earthwork operations, including excavations associated with the removal of the rock revetments, the lowering of grades within the basin, and general site grading within the boat ramp area and landward site improvements;
- Lateral earth pressures loading the proposed sheet-pile bulkhead for both static and seismic conditions;
- Passive earth pressures acting on the proposed sheet-pile bulkhead;
- Ultimate and allowable skin friction and end bearing capacity of the proposed driven pre-cast concrete piles;

- Input parameters for the characterization of lateral load behavior for the guide piles supporting the proposed floating dock finger piers and access ramps;

- Wave loading on the proposed sheet-pile bulkhead;

- Minimum embedment depths for the proposed sheet-pile bulkhead;

- Guidance on the selection of pile driving hammer and pile installation requirements for the proposed concrete sheet-pile bulkhead segments and the pre-cast concrete piles;

- Constructability constraints relating to the proposed improvements;

- Design input for the new boat ramp;

- Pavement section and subgrade recommendations; and

- Shallow foundation recommendations for landside improvements, including bearing capacity and coefficient of sliding.

6.2 Seismic Concerns

The proposed project site is located within a seismically active area. As discussed above in Section 5.2, the subsurface soils at the site are liquefiable under the CBC level design earthquake and the MOTEMS Level 2 (474-year) design earthquake. In addition, due to the thickness of loose to medium dense bay deposits and the submerged descending bayward slopes along the southerly edge of Shelter Island in general, and the project site specifically, the site is prone to lateral displacements associated with lateral spreading and seismic slope instability. As such, improvements founded through the bay deposits and into the underlying stable Bay Point Formation will be subjected to lateral loads if the site soils move laterally. As such, the proposed concrete sheet-pile bulkhead will be subject to large seismic-induced lateral loads, which might render the design of this bulkhead for such conditions uneconomical.

Potential alternatives for design of the bulkhead for seismic loading include:

- Option 1 - Modification of in-situ soils to mitigate their liquefaction, lateral spreading, and seismic slope instability potential could include the use of stone columns, soil mixing, and jet grouting. Given the location and likely extent of such a ground modification program, the costs and environmental impacts associated with ground improvement are likely cost prohibitive.

- Option 2 - As an alternative, the design of the bulkhead sheet-pile wall can be restricted to non-seismic events or lesser seismic design events, such as the Level 1 earthquake (72-year) event, with the recognition that seismic events greater than the design assumptions could likely result in damage to the facilities.

It is important to note that the level of seismic risk at the site is considered the same for the entire bayward edge of Shelter Island. As such, during extreme seismic events on the order of the design CBC event or the Level 2 event, large segments of Shelter Island are most likely going to experience distress due to liquefaction, lateral spreading, and the lack of slope stability of the submerged bayward slope. As such, it could be argued that, given the nature of the proposed improvements, they should be designed in accordance with the same level of risk to damage that Shelter Island currently faces.

6.3 Wave Forces

6.3.1 *Existing Coastal Processes Environment*

Tides are caused by the gravitational pull of astronomical bodies; primarily the moon, sun, and planets. Tides along the San Diego coast have a semi-diurnal inequality. On an annual average basis, the lowest tide is about -1.6 feet MLLW and the highest tide is about 7.1 feet MLLW.

The National Oceanic and Atmospheric Administration (NOAA) collected 18 years of measurements at La Jolla in establishing tidal datums of the 1960 to 1978 tidal epoch (NOAA, 1978). Tidal characteristics at the La Jolla Tidal Station are shown in the following table. The highest recorded sea level at the La Jolla Pier Gauge was 7.81 feet MLLW, on August 8, 1983.

San Diego Tidal Characteristics at La Jolla
(elevation in feet referenced to mean lower low water, MLLW)

Highest observed water level (Aug. 8, 1983)	7.81
Mean Higher High Water (MHHW)	5.37
Mean High Water (MHW)	4.62
Mean Sea Level (MSL)	2.75
Mean Tide Level (MTL)	2.77
National Geodetic Datum - 1929 (NGVD)	2.56
Mean Low Water (MLW)	0.93
NAVD88	0.43
Mean Lower Low Water (MLLW)	0.00
Lowest observed water level (Dec. 17, 1933)	-2.6

El Niño Events

Large-scale, Pacific Ocean-wide warming periods occur episodically and are related to the El Niño phenomenon. These meteorological anomalies are characterized by low atmospheric pressures and persistent onshore winds. During these events, average sea levels in southern California can rise up to 0.5 foot above normal. Tidal data indicates that six episodes (1914, 1930 through 1931, 1941, 1957 through 1959, and 1982 through 1983, and 1997 through 1998 - mild El Niño-type conditions were also reported in 1988 and 1992) have occurred since 1905. Further analysis suggests that these events have an average return period of 14 years, with 0.2-foot tidal departures lasting for two to three years.

The added probability of experiencing more severe winter storms during El Niño periods increases the likelihood of coincident storm waves and higher storm surge. The record water level of 8.35 feet MLLW, observed in San Diego Bay in January 1983, includes an estimated 0.8 foot of surge and seasonal level rise (Flick and Cayan, 1984), which set the stage for the wave-induced flooding and erosion that marked that winter season.

Sea Level Rise

Continuous sea level records exist from a tide gauge in San Diego Bay beginning in 1906, and from a tide gauge in La Jolla beginning in 1924. Figure 11 shows a plot of yearly mean sea level for the tide gauge in San Diego Bay based on data published by the National Ocean

Service (NOS). The straight line represents a least-squares fit of the data and indicates a mean rate of sea-level rise of 0.69 foot per century. The shaded areas above the trend line correspond to above-average sea level episodes corresponding to major El Niño events (Quinn, et al., 1978). The highest sea levels in La Jolla were observed on January 29, 1983 (7.71 feet MLLW), and August 8, 1983 (7.81 feet MLLW). These episodes were part of a run of El Niño and storm-influenced extreme events that occurred during the 1982-1983 storm season. The 8.35-foot extreme tidal level recorded in San Diego Bay during this same period is due to the tidal amplification that occurs within the sheltered bay location. Assuming sea level continues to rise at its current rate, within the next century, extreme tidal levels within the site vicinity could be expected to reach elevation 9.0 feet MLLW.

6.3.2 *Wind and Waves*

The winds are primarily from the west, with wind velocities averaging 5 to 10 mph throughout the year. Statistically, extreme sustained wind speeds approaching 50 knots are expected off the Southern California coast below 35 degrees latitude once in one hundred years (NOAA, 1980). These winds may originate from the northern and northeastern quadrants as Santa Anas during the winter months, and as tropical storms out of the south.

The Shelter Island Boat Launch is exposed to wind-driven waves from the south through the main harbor entrance and from the east from the Embarcadero between North Island and Harbor Island. The longest unobstructed fetch is about 15,000 feet from the east (see Figure 12). Storms from the south are confined to a relatively narrow corridor of approach from about 195 to 210 degrees originating from ballast point, with the maximum fetch being approximately 11,000 feet.

Storms originating from the south primarily result from tropical storms. Pacific Weather Analysis (PWA) conducted an extreme wave hindcast study of tropical storm sea and swell [seas are generated from winds within the local area, while swell is generated from winds outside of the local area] for the San Diego region to assess the design wave environment affecting south-facing beaches (1983). In their 25-year data set, from 1958 through 1983, significant El Niño storms in 1980 and again in 1981 approached the San Diego region from azimuth of 195 and 210 degrees, which would likely have generated some of the highest wind-driven waves reaching the boat basin during the study period.

The 25-year hindcast data set used by PWA for tropical storm swell is reproduced in Table 1 (USACE, 1991). As part of the U.S. Army Corps of Engineers Coast of California Storm and Tidal Waves Study - State of the Coast Report for the San Diego Region (1991), the predicted extreme wave climate for the San Diego region from 1990 through 2040, specifically addressing storms from the south that could enter into San Diego Harbor, produced a design wave height of 12 feet with a period of 10 seconds. Storm duration will be about one day, accompanied by 40 to 50 knot onshore winds. This condition is expected to occur twice in a 50-year period (USACE, 1991). Using this same design tropical storm within the bay, from an azimuth of 195 to 210 degrees across an average 40-foot channel depth, results in an equivalent shallow water wave height of 4.0 feet propagating toward the boat basin having a period on the order of 4 seconds.

Waves from easterly Santa Ana winds having a maximum 15,000 foot fetch and maximum 50 knot sustained winds will develop maximum wave heights of about 4½ feet with wave periods on the order of 4½ seconds.

Boat wakes must also be considered in the design of any nearshore facilities. Boat-induced waves represent a steeper solitary or translational wave, unlike the simple sinusoidal waves created by wind shear on the water surface. Boat or ship-induced waves generated by displacement vessels are a function of both the vessel characteristics and the vessel speed. Ship wave heights increase as the square of the vessel speed, with the divergent wave train propagating outward from the vessel track on an angle of about 30 degrees, as shown on the following figure by Van Dorn (1974). The wave train propagates outward at a velocity of approximately 0.87 V_S, with a wave length of 0.42 V_S^2.

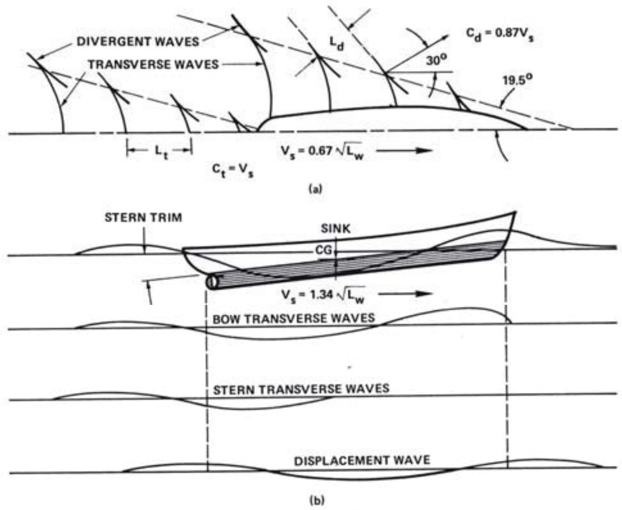

FIGURE 106 (a) Plan view of ship–wave pattern at $V_s = 0.67\sqrt{L_w}$
(b) Total wave pattern along hull (*top*) consists of superimposition of transverse bow and stern waves, and a permanent displacement wave. Pattern shown is for speed $V_s/\sqrt{L_w} = 1.34$, where troughs of bow and stern waves coincide, producing maximum sink and stern trim.

Within San Diego Bay, the Navy's sea tractor tug likely generates the normal worst-case ship-induced wave, with measured waves approaching 3 feet in height. If we assume that these tugs steam at 10 to 11 knots, this would result in a 3-foot translatory wave, with a wave length approaching 50 feet.

Wind waves are considered to be oscillatory waves, with the water particles moving forward and backward as the waves pass by. Although simple linear theory describes purely oscillatory waves, more rigorous methods demonstrate some degree of mass transport in the direction of wave advance, although water particles continue to move back and forth with the passage of each wave. When the water particles move only in the direction of wave advance, such as with tsunamis, the wave is called a wave of translation or a solitary wave. Ship waves are also waves of translation, and although not purely solitary, they move across the water surface as a cnoidal wave, with a steeper and amplified wave peak compared to the equivalent sinusoidal, progressive oscillatory wave. Typical wave shapes are shown on the following figure from Wiegel (1964).

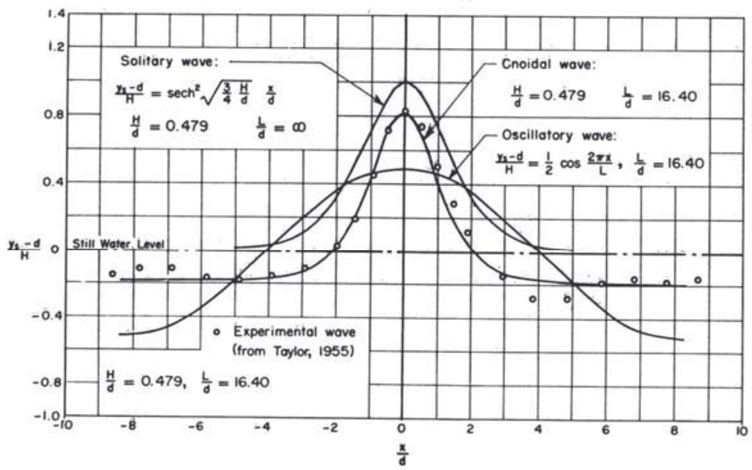

Fig. 2.27. Comparison of measured and theoretical wave profiles (from Wiegel, 1960)

Assuming a 3-foot ship-induced wave height with a 50-foot wave length, the equivalent cnoidal wave has been plotted superimposed upon a simple sinusoidal 3-foot wind wave that would develop from wind shear on the water surface as Figure 13. As can be seen from the attached figure, a 3-foot wind wave oscillates about the mean still water level, with its wave height 1½ feet above the still water level, whereas the cnoidal wave developed from a ship wake would move across the still water level with its wave crest approximately 2.1 feet above the still water level, with a significantly steeper wave form.

6.4 Sheet-Pile Bulkhead

6.4.1 *Design*

As stated above, a major component of the proposed improvements is the enlargement of the current boat basin by removal of the existing breakwater and construction of a new perimeter concrete sheet-pile bulkhead. Current plans show that the bulkhead will be laterally buttressed by driven pre-cast concrete piles that are battered at an inclination of approximately 3 units horizontal to 1 unit vertical.

The interior grades within the bulkhead are planned at elevation -6 feet MLLW. Given the current alignment of the bulkhead, as shown on Figure 2a, grades will generally be higher outside of the basin along the easterly and westerly edges of the boat basin, with grades being generally lower than the boat basin along the bayward edge of the basin. In addition, portions of the bulkhead along the westerly edge of the boat basin will be within, or at, the toe of an ascending slope.

The sheet pile will be subjected to the following loading conditions:

- Static lateral earth pressure loading;
- Wave loading in combination with static earth pressures; and
- Seismic earth pressures.

One key complication in the development of passive pressure resistance for the design of the walls is the fairly steep descending slope along the bayward edge of the bulkhead, which significantly reduces the available passive resistance of the soils fronting the bulkhead. The soils within the outer portion of the slope encountered along this edge of the bulkhead are currently thought to be comprised of a gravel and small rock buttress that was placed to strengthen the foundation soils for the bulkhead. It may be necessary to remove portions of this buttress in order to install the bulkhead, which will result in lowering the strength of these foundation soils. However, it is possible that the excavated soils could be reconstructed with rock salvaged from the demolition of the breakwater to strengthen the toe area of the bulkhead and thus increase the passive resistance of the slope soils. Given the uncertainty of what these slope soils will be after construction, we have provided recommendations for weak soil conditions.

Recommendations concerning the design lateral earth pressures for both passive and active conditions are presented in Section 7.2.

6.4.2 *Construction*

Construction of the proposed sheet-pile bulkhead will require driving the sheet piles and the pre-cast concrete piles through loose near-surface sandy bay deposits into the underlying competent Bay Point Formation. Typical methods for sheet-pile installation include jetting and driving, either with a vibratory hammer or impact hammer. Given the nearness to existing slopes that are underlain by loose sandy soils, the use of a vibratory hammer could liquefy portions of the underlying soils and might impact the stability of the nearby slopes. The use of an impact hammer should lessen the potential for liquefaction. To further mitigate the potential for vibration-induced liquefaction and lateral ground movement, jetting of the sheet piles to the top of the Bay Point Formation, with final penetration being achieved by driving, should be considered. In any case, some risk remains, as pile driving will still transmit energy into the soils, which produces ground vibration, which could raise pore water pressures, which could liquefy and produce ground movement, both vertical and lateral. As such, consideration for monitoring both pore pressure rise and ground vibrations may be warranted in areas adjacent to nearby slopes. Pore pressures could be monitored by the installation of piezocone sensors at selected locations. In addition, the use of both survey points and ground inclinometers may be useful to monitor ground settlement and the lateral movement of nearby slopes during and after installation of a given sheet-pile panel in critical areas.

In addition to the potential impacts to adjacent slopes and property due to pile driving, portions of the proposed alignment of the sheet-pile bulkhead are located within current rock revetment areas (see Figure 2a and 2c). The presence of rock potentially creates a barrier that could affect pile driving. As such, removal of portions of the rock revetments may be required to permit installation of the sheet piles, as well as other driven piles. In addition, along the bayward side of the existing breakwater, the alignment of the bulkhead is within an area where we suspect an underlying gravel and small rock buttress exists, as evidenced by approximately 10 feet of gravels and small rock encountered in Boring B-4. While we were able to advance our boring through the buttress, it is likely that the rock could pose difficulties for the installation of both sheet-pile panels and pre-cast concrete piles. As such, removal of portions of the buttress may be warranted. However, excavation of the buttress rock will need to be evaluated, as it provides support to the existing rock revetment breakwater.

6.5 Finger Piers and Guide Piles

6.5.1 *Design*

As we understand, two floating dock finger piers with guide piles are planned as part of the proposed improvements. Access to the piers is to be provided by pile-supported ADA ramps. We anticipate that the piles will consist of 12- to 18-inch square pre-cast concrete driven piles. In addition, we anticipate that the proposed piles will be driven through the loose sandy bay deposits and into the underlying competent Bay Point Formation. The bay deposits are potentially liquefiable and as such, during seismic events, the lateral load response of the piles will be greatly reduced, as will the axial capacity associated with the skin friction resistance within the bay deposits.

Recommendations for the design of the piles are provided in Section 7.3 of this report. Design input for the piles includes lateral load characteristics of the supporting soils, as well as skin friction and end bearing for axial loads. We have provided recommendations for both axial and lateral loads. Specifically, we have provided skin friction and end bearing capacities for the determination of the pile's axial capacity and input for the evaluation of lateral load behavior using the computer program LPILE.

6.5.2 *Construction*

Construction issues associated with the installation of the guide piles for the piers, as well as piles supporting the access ramps, are similar to the issues associated with the installation of the sheet-pile bulkhead and its piles. Refer to Section 6.4.2 for comments concerning construction issues associated with the installation of piles at this site.

6.6 **Boat Ramp**

As we understand, a new boat ramp is to be constructed to replace the existing one. This will require demolition of the existing ramp, regrading of the area of the new ramp, preparation of the subgrade, and construction of the new ramp. We understand that the new boat ramp will be constructed using pre-cast panels to eliminate the need for the use of a cofferdam to provide a dry working area.

From a design perspective, the proposed concrete boat ramp will act like a slab-on-ground or mat foundation. As such, we have provided recommendations for both bearing capacity and modulus of subgrade reaction.

Recommendations for the design of the boat ramp are presented in Section 7.4.

6.7 Pavements

6.7.1 *Design*

As we understand, new pavements will be used to provide both parking and access to the boat ramp. The design life of a pavement is a function of the number and types of wheel and/or axle loads. As such, knowledge of the traffic mix, design life, and subgrade soils is generally necessary for the design of a pavement section. In San Diego, parking lots are typically designed using Caltrans methods employing a minimum Traffic Index, typically selected as 5. However, while we anticipate that the loading will be restricted to light trucks, automobiles, and trailers hauling small to medium boats, we have been provided no specific traffic information. As such, we have developed a range of pavement sections using Caltrans methods for traffic indices of 5, 6, and 7. In addition, while the result of our R-value test was 72, we have used a design R-value of 40. We selected a lower design R-value primarily because minor fluctuations in fines content can result in large changes in R-value and, as the subgrade soils are comprised primarily of fill soils of unknown origin, it is likely that fines content will vary locally.

7 RECOMMENDATIONS

7.1 Wave Forces

We recommend using a maximum design still water elevation of +8.5 feet MLLW assuming no sea level rise, and a design still water elevation of +9.5 feet MLLW assuming 1 foot of sea level rise. In addition, other design still water elevations, such as Mean Sea Level, should be checked to determine if there are other wave load combinations that may be of importance.

We recommend using Table 1 to compute the wave force and water pressure distribution action on the sheet pile for both wave crest and wave trough conditions. We recommend that various combinations of wave crest, wave trough, and still water level be considered when evaluating the net force and movements acting at a given sheet-pile location. An example of wave force determination is presented in Appendix D.

7.2 Sheet-Pile Bulkhead

7.2.1 *Lateral Earth Pressures*

As we understand, the sheet-pile bulkheads will be designed using the computer program SPW911. As such, for the design of the proposed concrete sheet-pile bulkhead, we recommend that the designer use the geotechnical parameters presented in Table 2 to determine lateral earth pressures. The information provided in Table 2 includes total unit weight of soil, saturated unit weight of soil, submerged unit weight of soil, angle of friction between soil and wall, friction angle of soil, cohesion of soil, and corresponding equivalent active and passive pressure coefficient.

In addition, we recommend assuming that the Bay Point Formation starts at elevation -26 feet MLLW at the landward edge of the beginning and end of the sheet-pile bulkhead, and at an elevation of -31 feet MLLW along that portion of the bulkhead that parallels the existing bayward edge of the breakwater. Between these two elevations, we recommend that the Bay Point Formation be linearly interpolated. The soils above the Bay Point Formation are comprised of fill, bay deposits, and beach deposits. These soils are treated the same. As such, only one set of parameters is provided for these soils in Table 2.

For seismic loading, we recommend the following additional lateral loading:

<u>*Active Pressures*</u>

- Under seismic loading corresponding to a Level 1 (72-year) earthquake event and for the condition corresponding to **flat or horizontal backfill** conditions, we recommend including an additional lateral earth pressure increment expressed in terms of an equivalent fluid pressure of 9 pcf. This pressure should be distributed as an inverted triangle.

- Under seismic loading corresponding to a Level 1 (72-year) earthquake event and for the condition corresponding to the retention of **an ascending 2 to 1 (horizontal to vertical) inclined slope**, we recommend including an additional lateral earth pressure increment expressed in terms of an equivalent fluid pressure of 20 pcf. This pressure should be distributed as an inverted triangle.

- For seismic conditions corresponding to a Level 2 (474-year) earthquake event, site soils will liquefy. As such, active loading against the sheet-pile bulkhead will be similar to that of retaining a heavy fluid. For such conditions, we recommend using an equivalent fluid pressure of the retained soils equal to 111 pcf. This does not include hydrostatic water pressures, which, when included, would result in an equivalent fluid unit weight equal to 175 pcf. The equivalent fluid pressure includes inertial effects associated with the earthquake and movement of the liquefied retained soils.

For passive pressures, we have the following comments:

- Under seismic loading corresponding to a Level 1 (72-year) earthquake event and for the condition corresponding to **flat or horizontal ground** below the water table in either on-site fill soils or bay deposits, we recommend a passive pressure expressed as an equivalent fluid pressure of 188 pcf.

- Under seismic loading corresponding to a Level 1 (72-year) earthquake event and for the condition corresponding to a **descending 2 to 1 (horizontal to vertical) inclined slope** below the water table, and being resisted by fill and/or bay deposits, we recommend a passive earth pressure expressed as an equivalent fluid pressure of 0 pcf. In other words, that portion of the bulkhead pushing against non-Bay Point Formation soils provides no resistance during a seismic event. As such, only that portion of the bulkhead penetrating into Bay Point Formation provides passive resistance. Lastly, as the toe condition along the bulkhead parallel to the existing southerly edge of the existing revetment is comprised of a descending slope, the effective overburden pressure of the wedge of soils of the descending slope above the Bay Point Formation should not be modeled as flat ground. As such, the depth of soil used to compute the effective overburden pressures is NOT equal to the depth of soil above the Bay Point Formation as measured at the wall location. Instead, the modeling of the passive earth pressures due to the Bay Point Formation is to be based on an equivalent depth of 3.5 feet in order to account for the descending slope geometry. Assuming a buoyant unit weight of soil equal to 56 pcf, a passive earth pressure coefficient of 3.26, and an effective soil cohesion of 100 psf, the resulting passive pressure within the Bay Point Formation would be equal to 1,000 psf plus 183 psf per foot of embedment into the Bay Point Formation.

- For those bulkheads fronted by liquefiable soils, we recommend that the lateral resistance provided by the liquefied soils be taken as the pressures associated with a heavy fluid having an equivalent fluid pressure of 120 pcf.

7.2.2 *Pile Design*

For design of the pre-cast driven battered piles for static and non-liquefied conditions, we recommend an ultimate unit skin friction of 300 psf for those portions of the pile located within the bay deposits, and 1,000 psf for those portions of the pile located within the Bay Point Formation. In addition, we recommend an ultimate end bearing resistance of 20 ksf, which may be increased by 0.6 ksf per foot of embedment into the underlying Bay Point Formation. Lastly, the ultimate end bearing resistance is to be limited to 60 ksf.

For the axial design of piles in liquefiable soils, we recommend ignoring the contribution of skin friction obtained by that portion of the pile embedded into the bay deposits.

For the axial design of the proposed batter piles, we recommend assuming that the Bay Point Formation begins at elevation -30 feet MLLW.

7.2.3 *Minimum Depths of Embedment*

We recommend that for static conditions, the proposed sheet-pile bulkhead have a minimum tip elevation of -36 feet MLLW. In addition, for that portion of the sheet-pile bulkhead located parallel to the bayward edge of the existing breakwater and along its proposed alignment, we recommend that if the sheet pile is designed to resist liquefied site conditions, a minimum tip elevation of -43 feet MLLW be used.

The above minimum tip elevations are based on geotechnical considerations. If the required embedment based on structural design requirements is deeper, the deepest minimum tip elevation should be selected.

7.2.4 *Sheet-Pile and Pile Installation*

We recommend that the proposed pre-cast concrete sheet-pile panels and piles be installed using an impact pile driving hammer having a minimum pile driving energy of 45,000 lb-ft.

The pile driving energy is based on piles less than 14 inches square and sheet-pile panel widths less than or equal to 2.5 feet. In addition, we recommend that the contractor be permitted to modify the hammer selection provided that a pile driving analysis and report are submitted for review and concurrence with the proposed alternative hammer. We recommend that vibratory pile driving hammers not be used to install piles or sheet-pile panels. In addition, piles and sheet piles may be jetted to a maximum penetration of 1 foot into the underlying Bay Point Formation, and a minimum of 5 feet of pile or sheet pile may be driven to the specified minimum tip elevation. Also, we recommend that jet pipes be internally cast within the pile or sheet-pile panel and that no jetting be permitted with exterior jet piles.

We recommend that a pile driving monitoring program be developed to monitor the response of existing slopes and ground due to vibration-induced movements. We recommend that this program include methods to monitor the performance of ground displacements, as well as the potential development of vibration-induced pore pressures within the underlying bay deposits, especially near adjacent slopes, such as along the easterly limits of the project. Such monitoring measures could include the installation of electrical piezocones for pore pressure measurements and the use of survey monuments and inclinometers.

We recommend that preliminary pile driving criteria be developed by the project geotechnical engineer-of-record once final design has been completed, and that during the initial installation of piles, the pile driving criteria be evaluated and modified as needed after the installation of several sheet-pile panels and driven concrete panels.

To facilitate and assess the installation of the production piles and sheet-pile panels, we recommend that an indicator test pile program be considered, where several sheet-pile panels and piles are driven to confirm drivability and to confirm the design intent of the pile and sheet piles.

We recommend that the project geotechnical engineer-of-record observe and record the installation of the sheet-pile bulkhead and piles in order to confirm the design intent of the sheet piles and piles.

Lastly, we recommend that the project geotechnical engineer-of-record review the pile driving specifications for the project prior to completion of the final design of the project.

7.3 Finger Piers and Guide Piles

7.3.1 *Axial Design of Piles*

For the design of the pre-cast driven battered piles for static and non-liquefied conditions, we recommend an ultimate unit skin friction of 300 psf for those portions of the pile located within the bay deposits, and 1,000 psf for those portions of the pile located within the Bay Point Formation. In addition, we recommend an ultimate end bearing resistance of 20 ksf, which may be increased by 0.6 ksf per foot of embedment into the underlying Bay Point Formation. Lastly, the ultimate end bearing resistance is to be limited to 60 ksf.

For the axial design of piles in liquefied soils, we recommend ignoring the contribution of skin friction obtained by that portion of the pile embedded into the bay deposits.

For the axial design of the proposed batter piles, we recommend assuming that the Bay Point Formation begins at elevation -30 feet MLLW.

7.3.2 *Input for the Evaluation of Lateral Loads on Piles*

For evaluation of the lateral load behavior of piles using LPILE, we recommend the soil parameter input and soil model presented in Table 3.

7.4 Boat Ramp

7.4.1 *Design of Boat Ramp*

For design of the new boat ramp, we recommend that the boat ramp be supported on a minimum of 18 inches of crushed rock or gravel in order to provide a firm subgrade. In addition, we recommend an allowable bearing pressure of 1,500 psf and an allowable coefficient of sliding of 0.25. Lastly, we recommend a coefficient of subgrade reaction of 45 pci for mat design of the boat ramp.

7.5 Pavements

For traffic indices of 5, 6, and 7, we recommend the following pavement sections:

- For a Traffic Index of 5, an asphalt concrete pavement section of 2½ inches overlying 5 inches of crushed aggregate base.
- For a Traffic Index of 6, an asphalt concrete pavement section of 3½ inches overlying 5½ inches of crushed aggregate base.
- For a Traffic Index of 7, an asphalt concrete pavement section of 4 inches overlying 7 inches of crushed aggregate base.

In addition, we recommend that the subgrade soils be overexcavated, moisturized as needed, and recompacted to a minimum compaction of 95 percent of the maximum dry density, as determined by ASTM Test Method D 1557-91. Moisture content should be maintained between the optimum moisture content and 2 percent above optimum, and subgrade soils should not be pumping.

Lastly, we recommend that the crushed aggregate base comply with Section 200-2.2 of the Standard Specifications for Public Works Construction, commonly referred to as the "Greenbook".

7.6 Foundations for Landward Ancillary Structures

For design and construction of the landward ancillary structures, we recommend the following:

- That a zone of soil extending a minimum of 3 feet below the bottom of the foundation for the pad, and extending a minimum of 2 feet laterally from the outside edge of foundation, be excavated and recompacted to a minimum relative compaction of 90 percent of the maximum dry density, as determined by ASTM 1557. In addition, we recommend that the relative compaction of the upper foot of this compacted zone be compacted to a relative compaction of 95 percent.

- An allowable net bearing capacity of 1,500 psf and an ultimate bearing pressure of 3,000 psf for the design of footings. In addition, we recommend that footings extend a minimum of 18 inches below the lowest adjacent grade and have a minimum footing width of 12 inches. For foundations subjected to a net bearing pressure of 1,500 psf, we estimate that total settlements will be on the order of 0.6 inch or less, with differential settlements being on the order of 0.3 inch or less. Settlements for net bearing pressures different than 1,500 pcf may be estimated in proportion to their bearing pressure relative to the bearing pressure of 1,500 psf.

- To provide resistance for design lateral loads of footings and shear keys poured neat against vertical excavations, we recommend using an equivalent fluid pressure of 300 psf for properly compacted fill. This value is a nominal value and has not been factored. In addition, these values assume a horizontal surface for the soil mass extending at least 10 feet from the face of the footing or three times the height of the surface generating the passive pressure, whichever is greater. The upper 12 inches of soil in areas not protected by floor slabs or pavements should not be included in design for passive resistance to lateral loads. If friction is to be used to resist lateral loads, we recommend an ultimate coefficient of friction of 0.35 and an allowable coefficient of friction of 0.18 between soil and concrete for compacted fill or native soils. If it is desired to combine friction and passive resistance in design, we recommend reducing the friction coefficient by 25 percent.

- For the design of slabs, we recommend using a coefficient of subgrade reaction of 40 pci.

- Subgrade soils underlying the proposed slabs and footings should be excavated a minimum of 18 inches below grade and recompacted to a relative compaction of 95 percent of the maximum dry density, as determined by ASTM Test Method 1557.

8 LIMITATIONS

This report is intended to serve as input to a design package for the solicitation of a design-build contract. As such, this report provides information and recommendations for parameters that will be used in the engineering evaluation and design of the subject project.

Professional judgments presented herein are based partly on our evaluation of the technical information gathered, partly on our understanding of the proposed construction, and partly on our general experience in the geotechnical field. We have observed only a small portion of the pertinent soil and subsurface conditions at the proposed project site. The recommendations made herein are based on the assumption that soil conditions do not deviate appreciably from those found during our field investigation. If the plans for site development are changed, or if variations or undesirable geotechnical conditions are encountered during construction, the geotechnical engineer should be consulted for further recommendations.

This firm does not practice or consult in the field of safety engineering. We do not direct the contractor's operations, and we cannot be responsible for the safety of other than our own personnel on the site. Therefore, the safety of others is the responsibility of the contractor. The contractor should notify the owner if he considers any of the recommended actions presented herein to be unsafe.

Our investigation and evaluations were performed using generally accepted engineering approaches and principles available at this time and the degree of care and skill ordinarily exercised under similar circumstances by reputable geotechnical engineers practicing in this area. No other representation, either expressed or implied, is included or intended in our report.

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TABLE 1

WAVE FORCES AND PRESSURES ACTING ON SHEET-PILE WALL

d(1)	F_C(2) lb/ft	F_T(3) lb/ft	M_C(4) lb-ft/FT	M_T(5) lb-ft/FT	Y_C(6) ft	Y_T(7) ft	γ^C_{weq}(8) pcf	γ^T_{weq}(9) pcf
6	3,230	510	13,130	720	12.2	4.2	43.4	57.8
9	5,700	1,300	28,930	2,800	15.2	6.5	49.3	61.5
15.5	11,070	4,920	76,260	19,070	20.7	11.6	51.7	73.1
18	13,690	7,260	104,510	33,590	22.9	13.9	52.2	75.2
24.5	22,670	15,370	225,890	112,940	29.9	22.0	50.7	63.5

NOTES:

(1) Depth of water above sea floor to design still water level.

(2) Total force on wall for wave at crest.

(3) Total force on wall for trough condition of wave.

(4) Total moment generated by the water force only acting on wall for wave at crest.

(5) Total moment generated by the water force only acting on wall for wave at trough.

(6) Height of water surface at wall for wave at crest.

(7) Height of water surface at wall for wave at trough.

(8) Equivalent unit weight of water for wave at crest. This unit weight can be used to construct a water pressure distribution along the side of the wall of interest.

(9) Equivalent unit weight of water for wave at trough. This unit weight can be used to construct a water pressure distribution along the side of the wall of interest.

(10) Linearly interpolate for water depths not listed.

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TABLE 2

GEOTECHNICAL PARAMETERS FOR COMPUTATION OF LATERAL EARTH PRESSURES

	FILL, BEACH, AND[(1)] BAY DEPOSITS	BAY POINT[(2)] FORMATION
Total Unit Weight of Soil (pcf)	115	115
Total Saturated Unit Weight of Soil (pcf)	120	120
Buoyant Unit Weight of Soil (pcf)	56	56
Effective Friction Angle (deg)	30	33
Effective Cohesion (psf)	N/A	100
Angle of Wall Friction (deg)	17	17
KA[(3)] (flat ground)	0.30	0.28
KA[(3)] (2 to 1 sloping backfill)	0.52	N/A
KP[(4)] (flat ground	3.00	3.26

NOTES:

(1) Fill, beach, and bay deposits are located above the Bay Point Formation.

(2) The Bay Point Formation is found near elevation -26 feet (MLLW) at the shoreline of the boat ramp and near elevation -31 feet (MLLW) under the southerly edge of the revetment. See Section 7.2.1 for additional recommendations for modeling lateral earth pressures.

(3) Based on Coulomb theory.

(4) Based on Coulomb theory with no wall friction. Passive pressure should include effects of cohesion. See Section 7.2.1 for further recommendations concerning passive pressures, especially for the portion of the new sheet-pile bulkhead that runs parallel to the descending slope located along the southerly edge of the existing rock revetment.

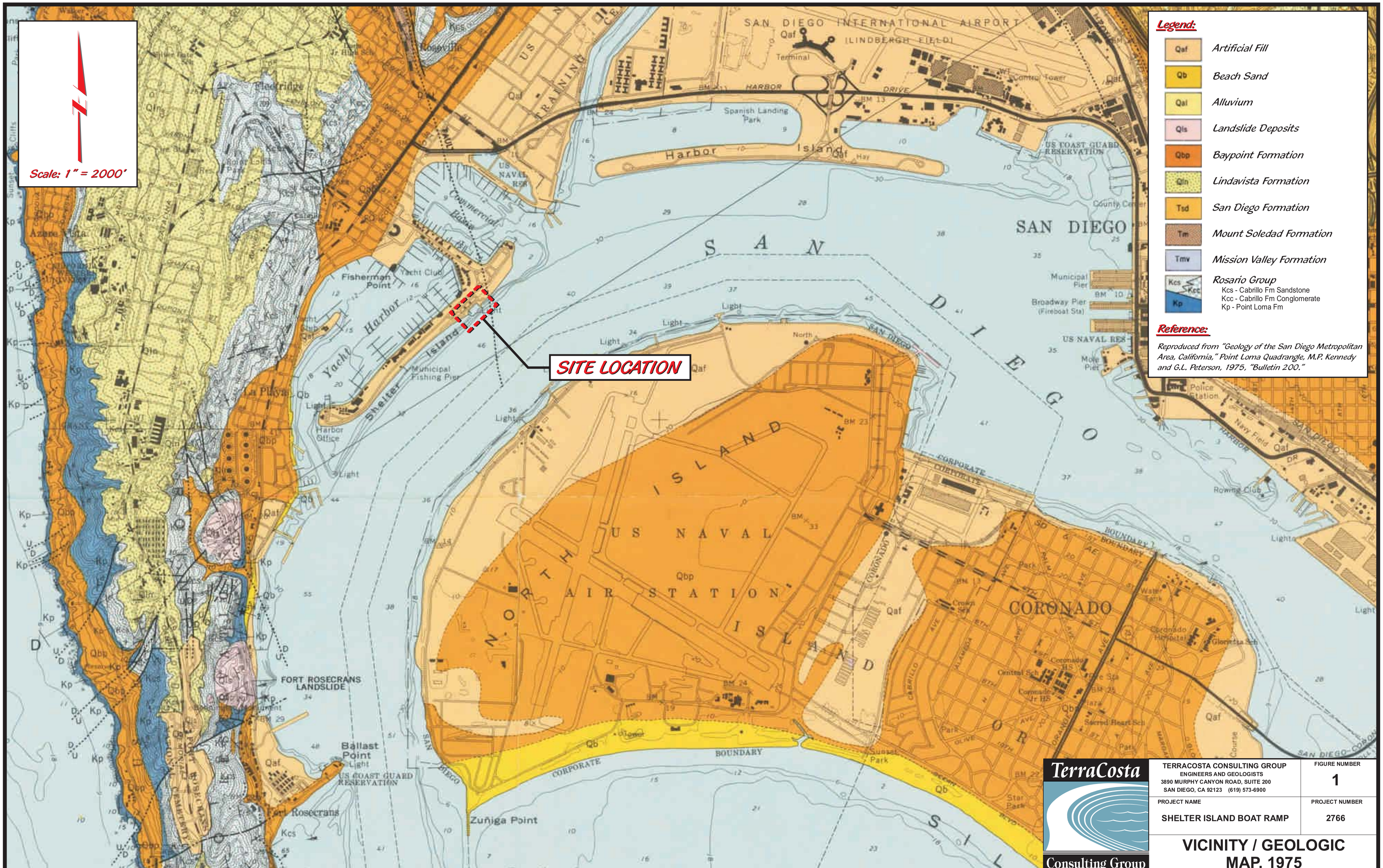
TABLE 3

LPILE INPUT
STATIC AND DYNAMIC UNMODIFIED FOR LIQUEFACTION

Soil Layer	Soil Model[3]	Yt[4] pci	Yb[5] pci	phi[6] degrees	k[7] pci	su[8] psi	E50[9]
1[1]	Sand (Reese)	0.067	0.03	30	44/60[10]	N/A	N/A
2[2]	Sand (Reese)	0.067	0.030	36	100	N/A	N/A

NOTES:

1. Soil Layer 1 corresponds to the bay deposits and soils, and is assumed to extend from elevation -6 feet MLLW or final grade to the top of the Bay Point Formation, taken to be elevation -31 feet MLLW.
2. Soil Layer 2 corresponds to the Bay Point Formation, which is taken to begin at elevation -31 feet MLLW.
3. LPILE soil model to be used to compute p-y curves.
4. Total unit weight of soil for use above water.
5. Buoyant unit weight of soil for use below water.
6. Soil friction angle for input with given soil model.
7. Subgrade modulus for input with given soil model. For Soil Layer 1, the first number corresponds to the modulus below water, and the second number corresponds to the subgrade modulus above water. For Soil Layer 2, the subgrade corresponds to the subgrade modulus below water.
8. Undrained shear strength of soil for input with given soil model.
9. Strain at 50 percent failure for input with given soil model.
10. The higher value is to be used with soils above the water table.


Scale: 1" = 2000'
Legend:
Qaf Artificial Fill
Qb Beach Sand
Qal Alluvium
Qls Landslide Deposits
Qbp Baypoint Formation
Qln Lindavista Formation
Tsd San Diego Formation
Tm Mount Soledad Formation
Tmv Mission Valley Formation
Rosario Group
Kcs - Cabrillo Fm Sandstone
Kcc - Cabrillo Fm Conglomerate
Kp - Point Loma Fm
Reference:
Reproduced from "Geology of the San Diego Metropolitan Area, California," Point Loma Quadrangle, M.P. Kennedy and G.L. Peterson, 1975, "Bulletin 200."
SITE LOCATION
SAN DIEGO INTERNATIONAL AIRPORT
SAN DIEGO
CORONADO
US NAVAL AIR STATION
NORTH ISLAND
Shelter Island
Harbor Island
Fort Rosecrans Landslide
Ballast Point
Zuñiga Point
TerraCosta Consulting Group
TERRACOSTA CONSULTING GROUP
ENGINEERS AND GEOLOGISTS
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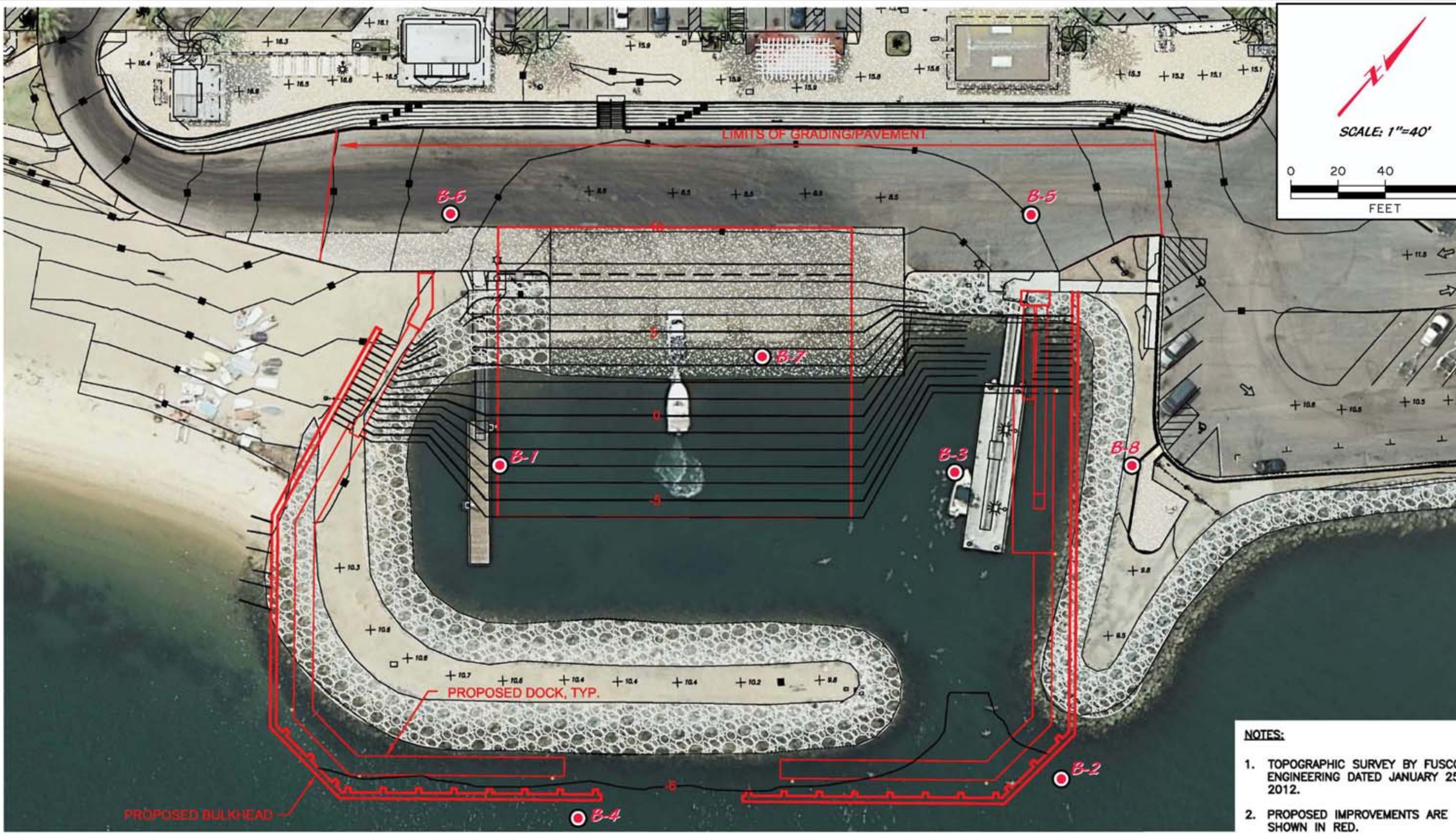
SAN DIEGO, CA 92123 (619) 573-6900
FIGURE NUMBER
1
PROJECT NAME
SHELTER ISLAND BOAT RAMP
PROJECT NUMBER
2766
VICINITY / GEOLOGIC MAP, 1975



NOTES:

1. TOPOGRAPHIC SURVEY BY FUSCOE ENGINEERING DATED JANUARY 25, 2012.
2. PROPOSED IMPROVEMENTS ARE SHOWN IN RED.

LEGEND

B-7 APPROXIMATE LOCATION OF SOIL BORING

Base Map Reproduced from: "Preliminary Improvements Plan B, Shelter Island Boat Launch Facility" by Trans Systems, dated February 23, 2012.

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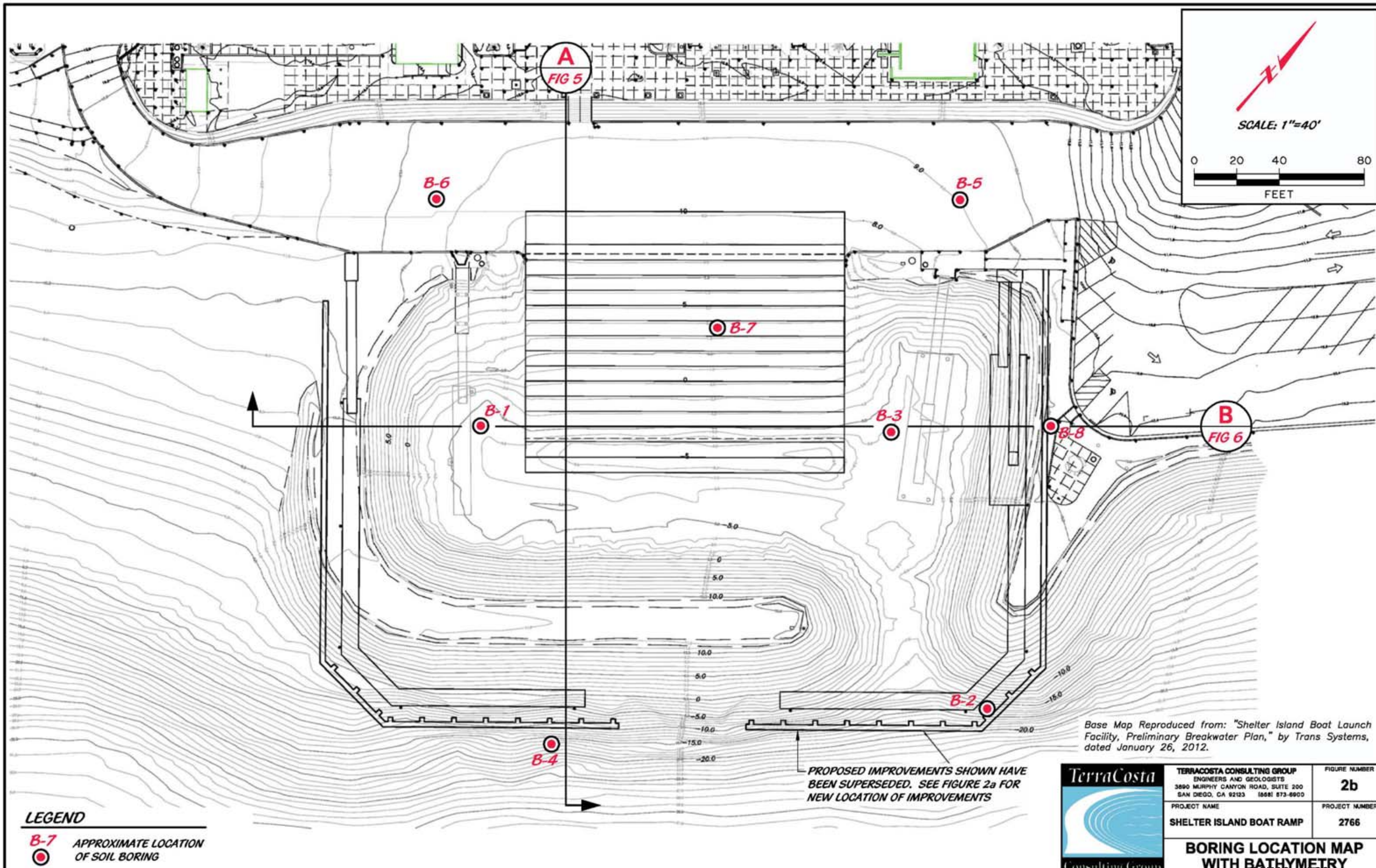
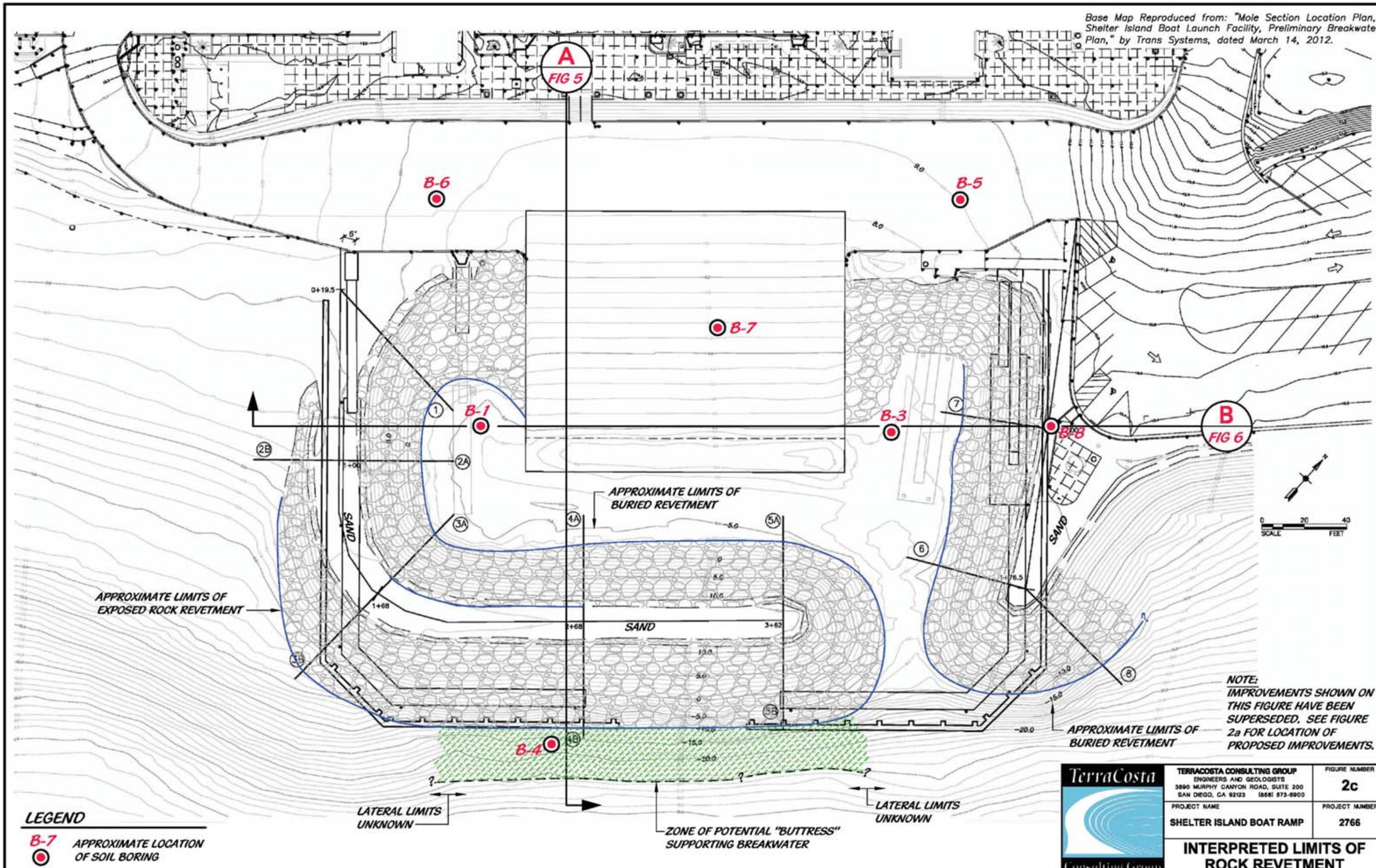
	PROJECT NAME SHELTER ISLAND BOAT RAMP	PROJECT NUMBER 2766
	BORING LOCATION MAP	



Base Map Reproduced from: "Shelter Island Boat Launch Facility, Preliminary Breakwater Plan," by Trans Systems, dated January 26, 2012.

TerraCosta Consulting Group	TERRACOSTA CONSULTING GROUP ENGINEERS AND GEOLOGISTS 3890 MURPHY CANYON ROAD, SUITE 200 SAN DIEGO, CA 92123 (858) 573-6900	FIGURE NUMBER 2b
	PROJECT NAME SHELTER ISLAND BOAT RAMP	PROJECT NUMBER 2766
	BORING LOCATION MAP WITH BATHYMETRY	

63789 860



NOTE:
IMPROVEMENTS SHOWN ON THIS FIGURE HAVE BEEN SUPERSEDED. SEE FIGURE 2a FOR LOCATION OF PROPOSED IMPROVEMENTS.

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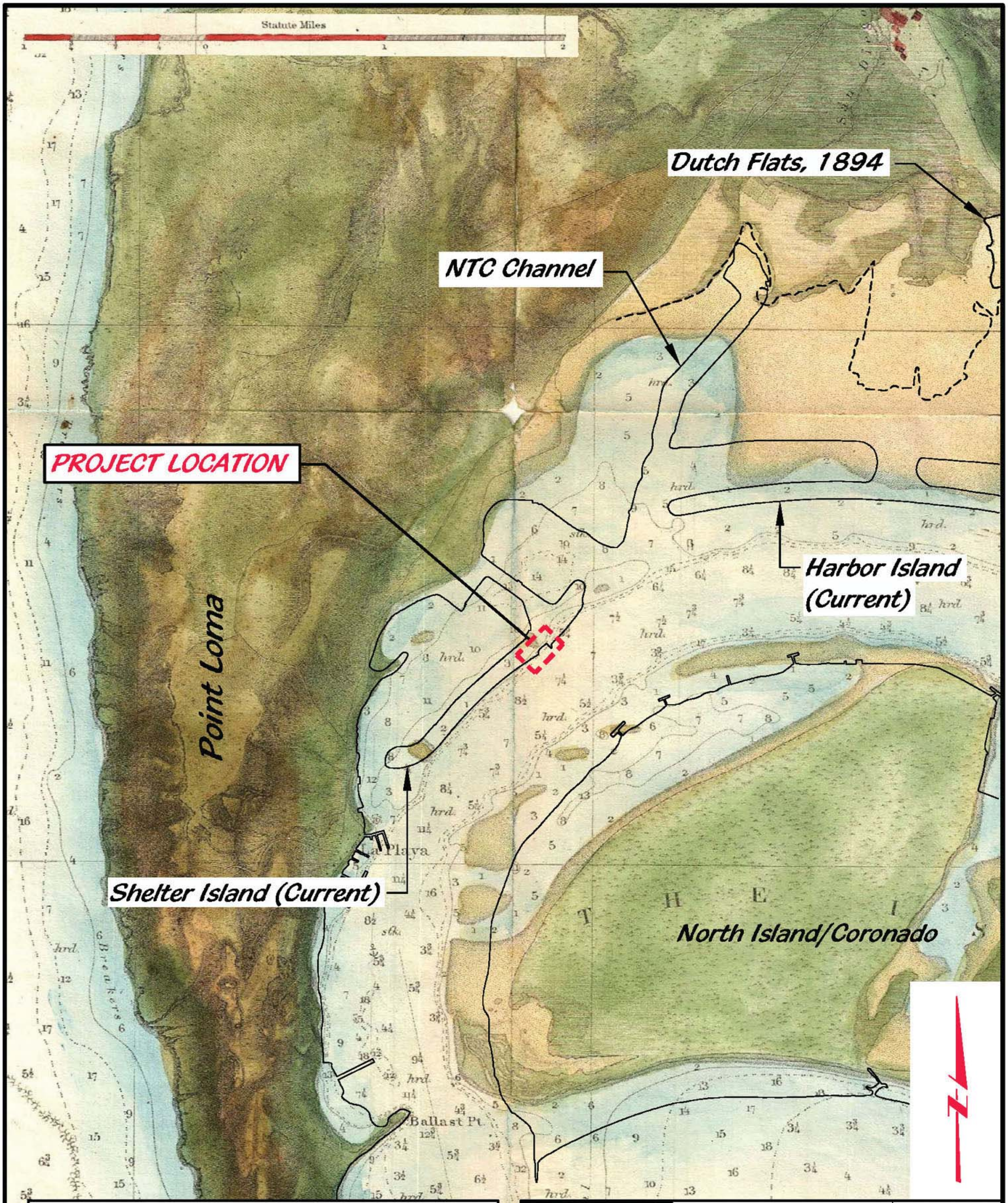
	PROJECT NAME SHELTER ISLAND BOAT RAMP	PROJECT NUMBER 2766
	INTERPRETED LIMITS OF ROCK REVETMENT	



This chart was prepared under the supervision of A. D. Bache for inclusion in the 1857 edition of the *Report of the Superintendent of the United States Coast Survey*. The triangulation for this chart was accomplished by R. D. Cutts, the topography by A. M. Harrison, and the hydrography by a party under the command of James Alden. Obtained online from the Geographicus Antique Map Archive at http://www.geographicus.com

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PROJECT NAME SHELTER ISLAND BOAT RAMP	PROJECT NUMBER 2769

SAN DIEGO BAY, 1857

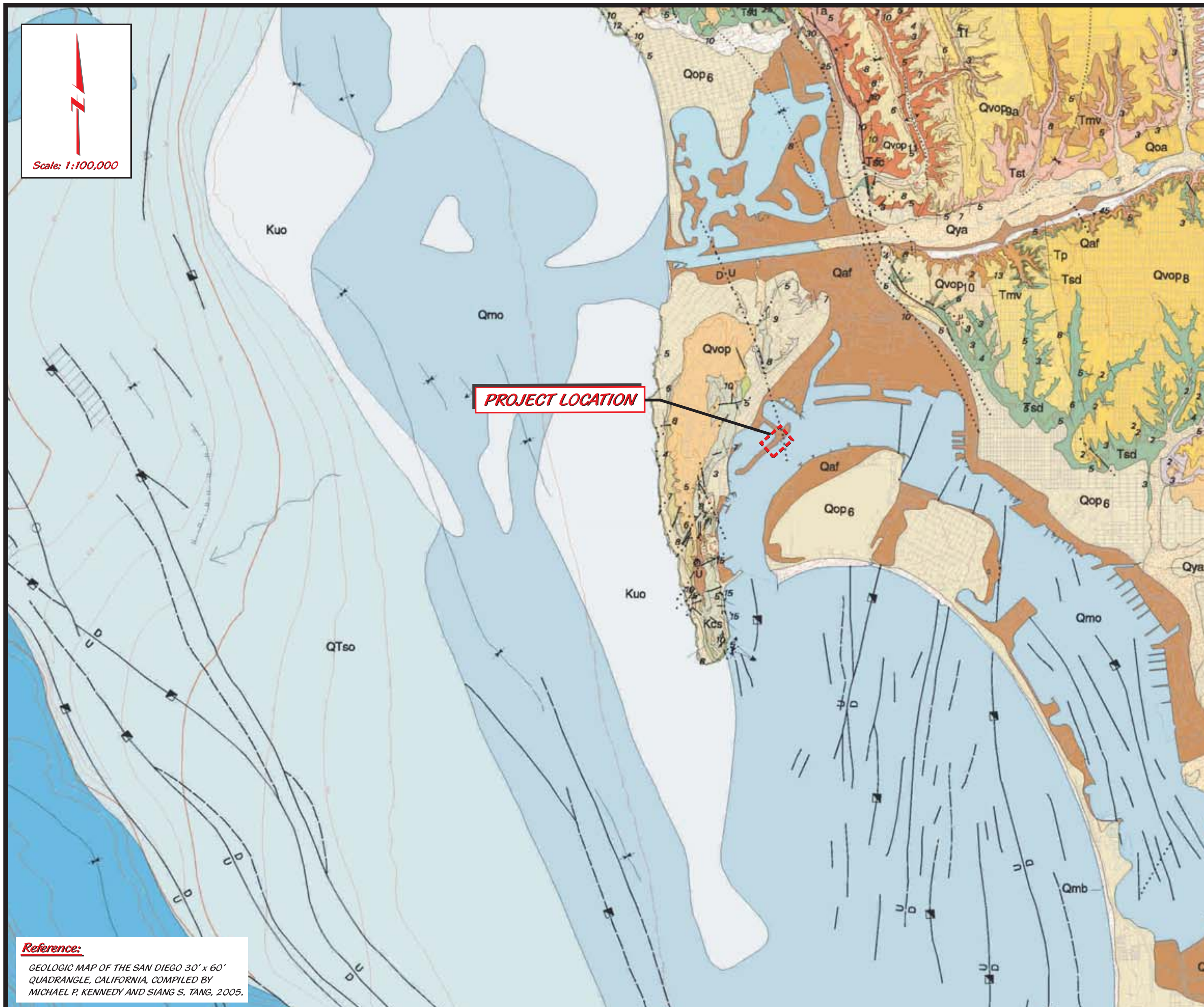

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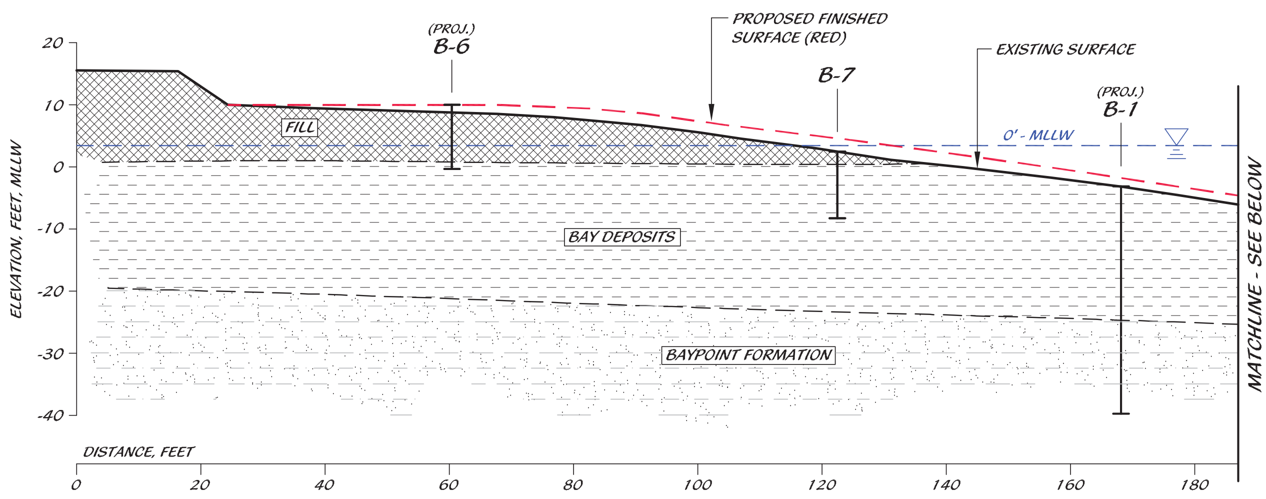
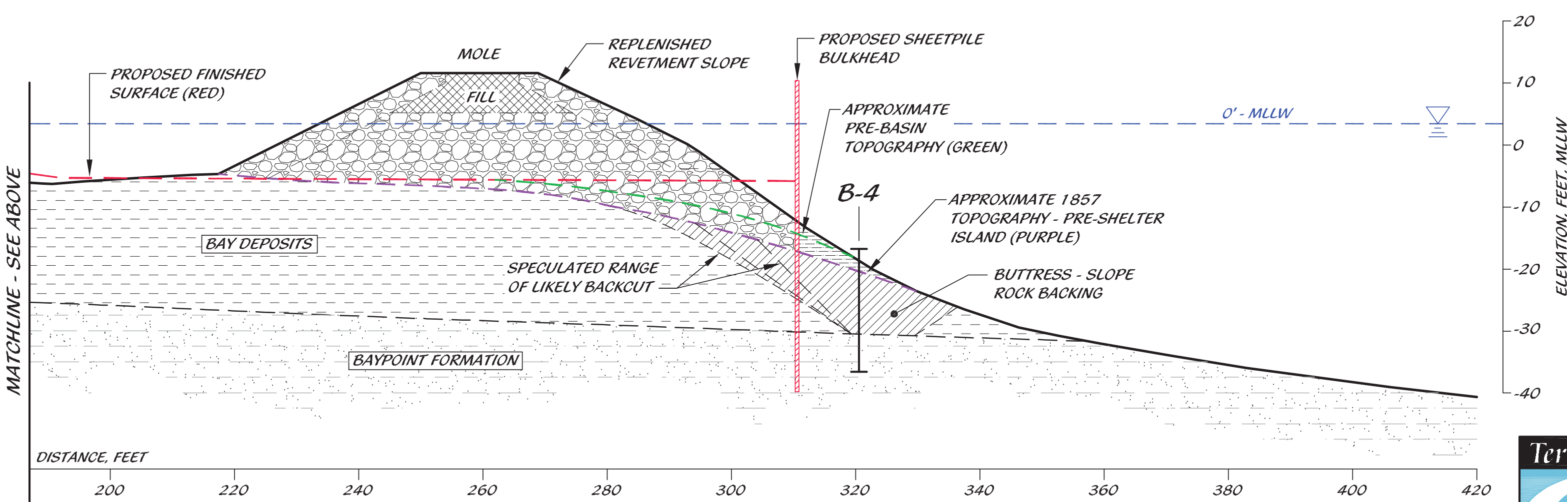
FIGURE NUMBER	4
PROJECT NAME	SHELTER ISLAND BOAT RAMP
PROJECT NUMBER	2766

GEOLOGIC MAP



CROSS SECTION A
SCALE: 1"=20' (HORIZ. & VERT.)



CROSS SECTION (CONT'D) A
SCALE: 1"=20' (HORIZ. & VERT.)

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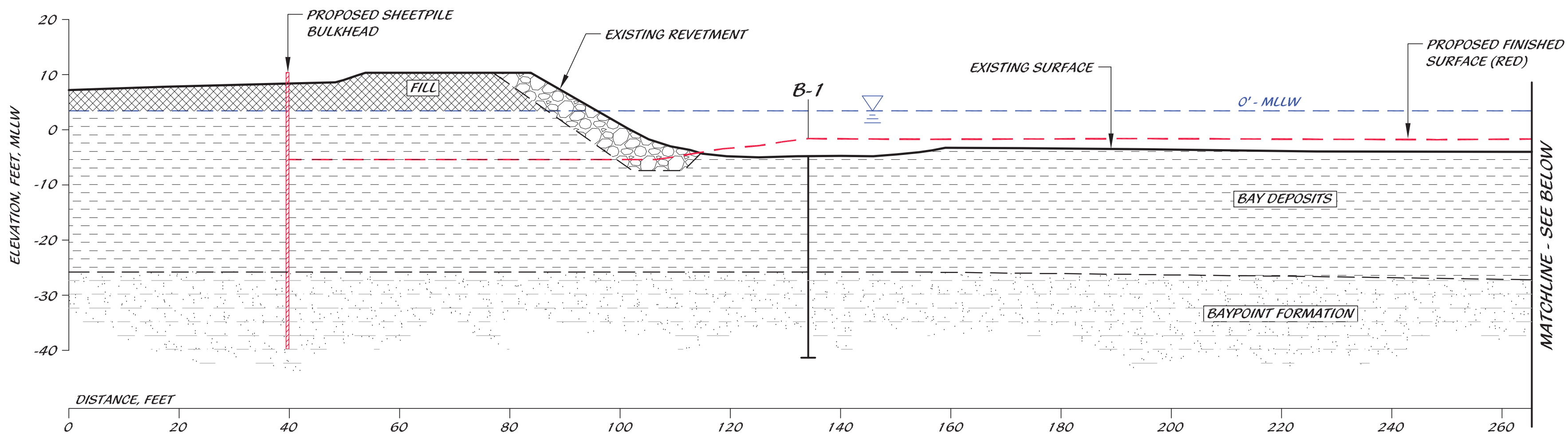
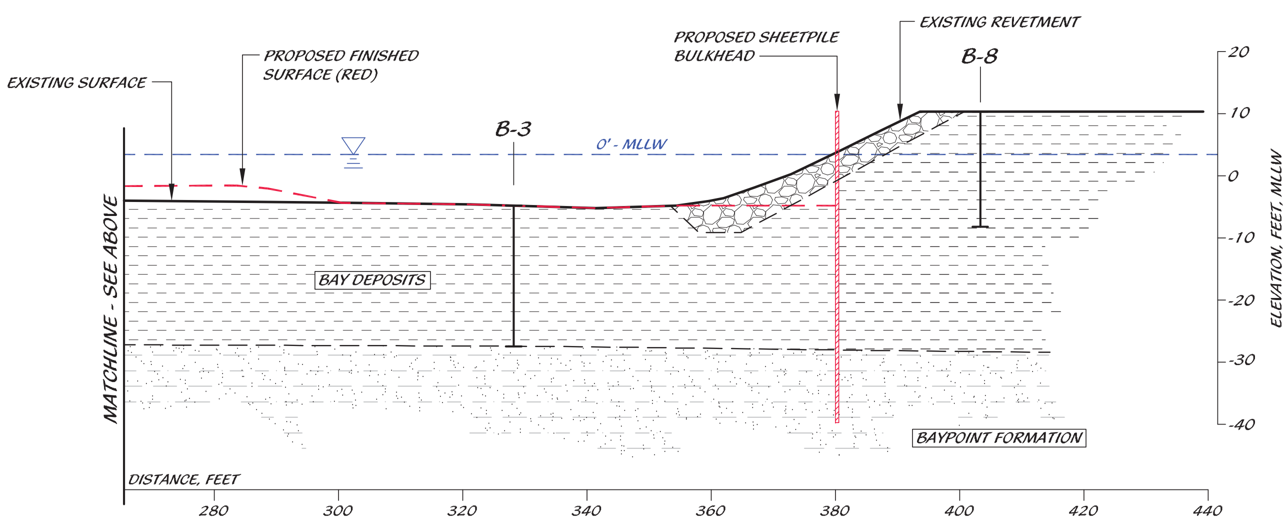
FIGURE NUMBER	PROJECT NAME	PROJECT NUMBER
5	SHELTER ISLAND BOAT RAMP	2766

CROSS SECTION 'A'



CROSS SECTION B
SCALE: 1"=20' (HORIZ. & VERT.)



CROSS SECTION (CONT'D) B
SCALE: 1"=20' (HORIZ. & VERT.)

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	PROJECT NAME SHELTER ISLAND BOAT RAMP	PROJECT NUMBER 2766
	CROSS SECTION 'B'	

SCALE

0 30,000 60,000

(Approx. Scale: Feet)

REFERENCE:

"FAULT ACTIVITY MAP OF CALIFORNIA AND ADJACENT AREAS,"DIVISION OF MINES & GEOLOGY, COMPILED BY CHARLES W. JENNINGS, 1994.

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TERRACOSTA CONSULTING GROUP ENGINEERS AND GEOLOGISTS 3890 MURPHY CANYON ROAD, SUITE 200 SAN DIEGO, CA 92123 (619) 573-6900	FIGURE NUMBER 7
PROJECT NAME SHELTER ISLAND BOAT RAMP	PROJECT NUMBER 2766

REGIONAL FAULT MAP

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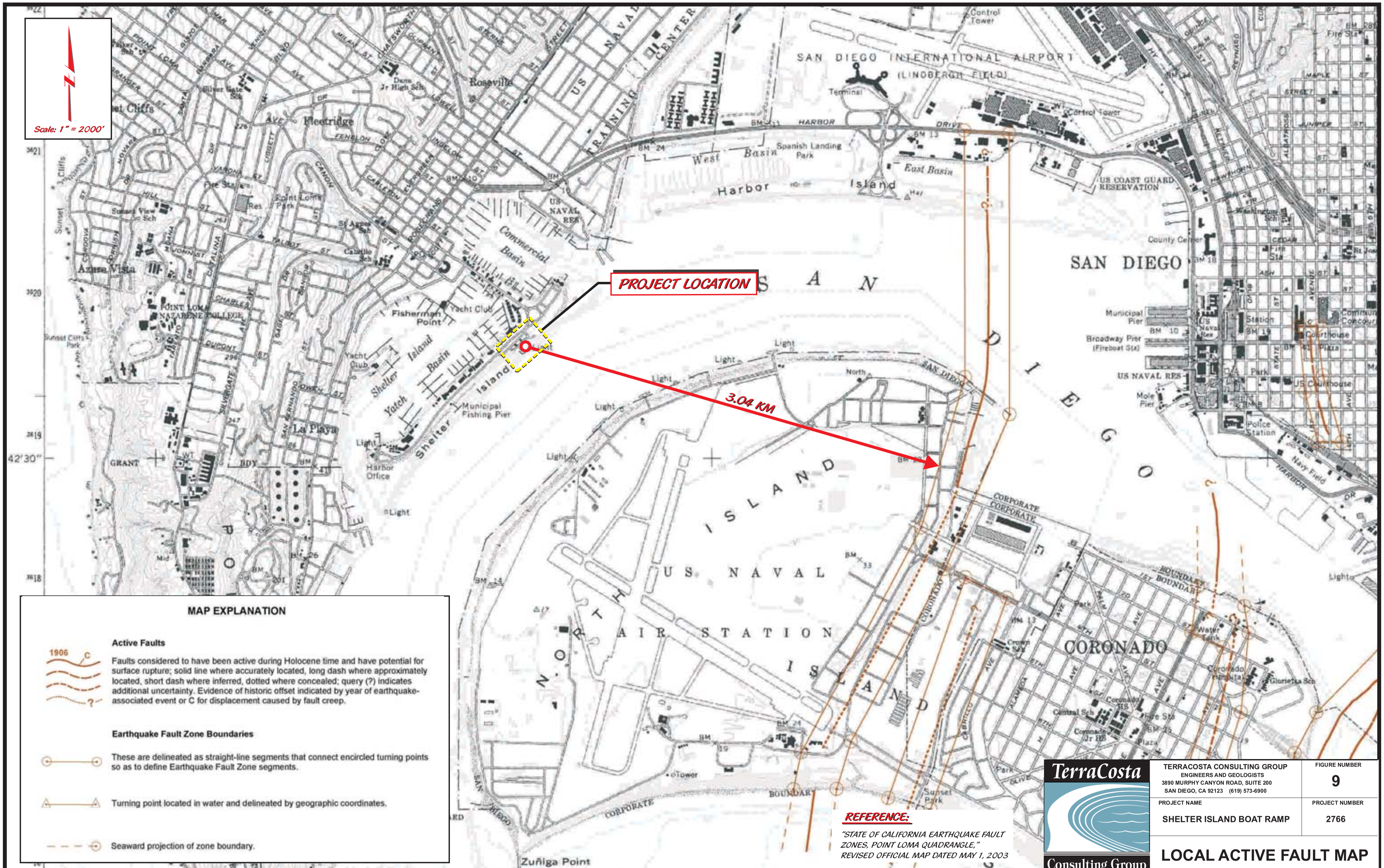
	PROJECT NAME SHELTER ISLAND BOAT RAMP	PROJECT NUMBER 2766
	OFFSHORE FAULT MAP	



MAP EXPLANATION

Active Faults

1906 C

Faults considered to have been active during Holocene time and have potential for surface rupture; solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed; query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by fault creep.

Earthquake Fault Zone Boundaries

These are delineated as straight-line segments that connect encircled turning points so as to define Earthquake Fault Zone segments.

Turning point located in water and delineated by geographic coordinates.

Seaward projection of zone boundary.

REFERENCE:

"STATE OF CALIFORNIA EARTHQUAKE FAULT ZONES, POINT LOMA QUADRANGLE," REVISED OFFICIAL MAP DATED MAY 1, 2003

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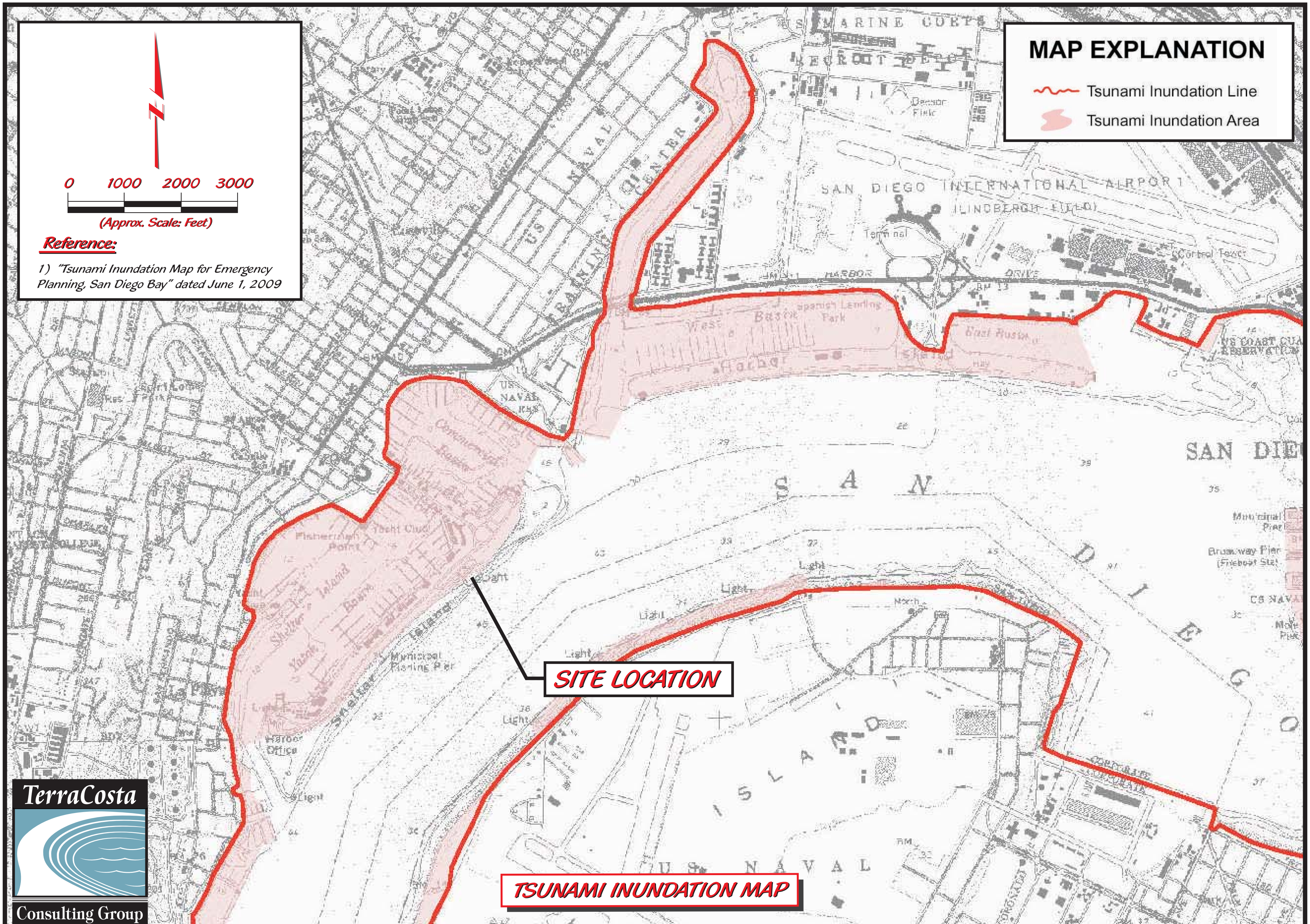
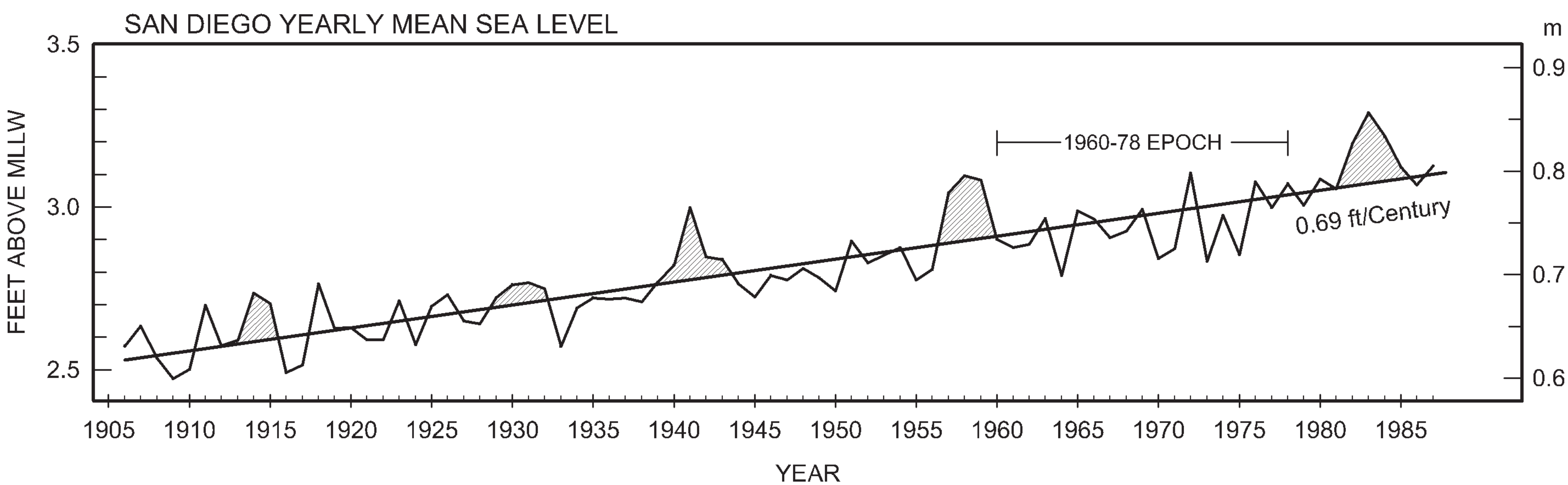
FIGURE NUMBER	PROJECT NAME	PROJECT NUMBER
9	SHELTER ISLAND BOAT RAMP	2766

LOCAL ACTIVE FAULT MAP



Project: Shelter Island Boat Ramp Project No. 2766 Figure 10



Yearly mean sea level measured in San Diego, 1906-1987. Linear trend indicates increase at the rate of about 0.7 ft./century. Shaded episodes indicate periods of moderate to severe El Niño events that raise sea level up to 0.3 ft. above normal for a year or two. Data at La Jolla starting in 1925 are very similar.

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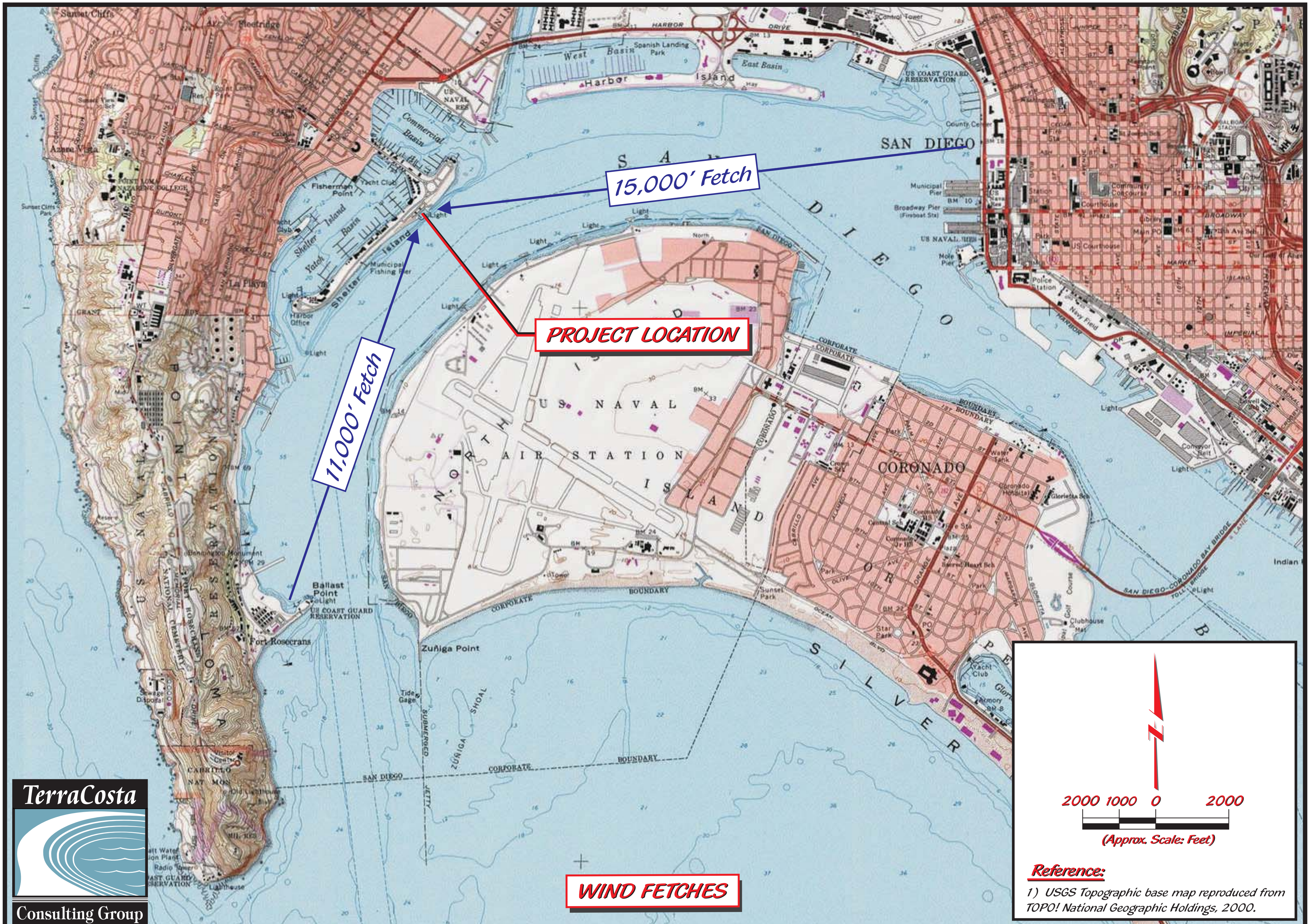
	PROJECT NAME **SHELTER ISLAND BOAT RAMP**	PROJECT NUMBER **2766**
	PLOT OF YEARLY MEAN SEA LEVEL FOR SAN DIEGO BAY TIDE GAUGE	

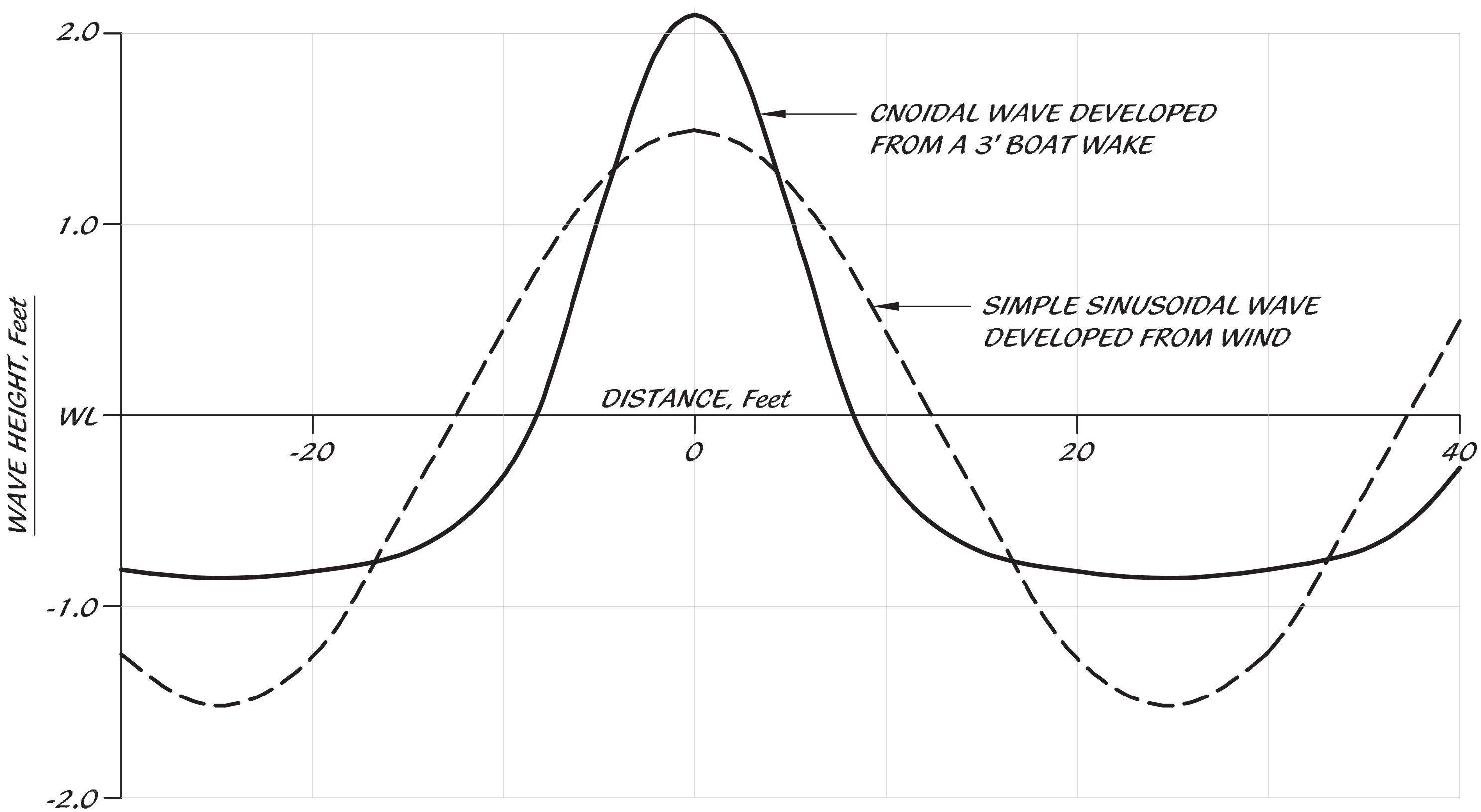


Project: Shelter Island Boat Ramp

Project No. 2766

Figure 12

WAVE CONDITION
SIMPLE SINUSOIDAL WAVE k=0
CNOIDAL WAVE k=1.0 USE k=0.99
ASSUME H=3' & L=50' FOR EXAMPLE



Ref: 1984 SPM FIG. 2.9

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FIGURE NUMBER **13**

PROJECT NAME **SHELTER ISLAND BOAT RAMP**

PROJECT NUMBER **2766**

WAVE CONDITION

APPENDIX A

LOGS OF EXPLORATORY EXCAVATIONS

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LOG OF TEST BORING	PROJECT NAME: SHELTER ISLAND BOAT RAMP	PROJECT NUMBER: 2766	BORING: LEGEND
SITE LOCATION: Shelter Island, San Diego	START: 2/21/2012	FINISH: 2/24/2012	SHEET NO.: 1 of 1
DRILLING COMPANY: Pacific Drilling	DRILLING METHOD: Hollow Stem Auger	LOGGED BY: G. Spaulding	CHECKED BY:
DRILLING EQUIPMENT: Mole	BORING DIA. (In): 7	TOTAL DEPTH (ft): 20	GROUND ELEV (ft): / DEPTH/*ELEV.* GROUND WATER (ft): n/a_
SAMPLING METHOD: SPT	NOTES:		

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
5									
		S	1						
10									
15									

KEY TO EXCAVATION LOGS

WATER TABLE MEASURED AT TIME OF DRILLING

OTHER TESTS

RV R-Value
SA Sieve Analysis

PENETRATION RESISTANCE (BLOWS/ft)

Number of blows required to advance the sampler 1 foot.

SAMPLE TYPE

S ("SPT") - a.k.a. Standard Penetration Test, an 18-inch-long, 2-inch O.D., 1-3/8-inch I.D. drive sampler.

NOTES ON FIELD INVESTIGATION

Borings were advanced using a track-mounted drill rig with a 7-inch hollow-stem auger.

Standard Penetration Tests (SPT) Samplers were used to obtain soil samples. The SPT Samplers were driven into the soil at the bottom of the borings with a 140-pound hammer falling 30 inches. When the samplers were withdrawn from the boring, the samples were removed, visually classified, sealed in plastic containers, and taken to the laboratory for detailed inspection.

Free groundwater was encountered in the borings as shown on the logs.

Classifications are based upon the Unified Soil Classification System and include color, moisture, and consistency. Field descriptions have been modified to reflect results of laboratory inspection where deemed appropriate.

TCG_METRIC_LOG(3) 2766.GPJ GDCLOGMT.GDT 3/7/12

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THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-1

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-1

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/21/2012	2/21/2012	1 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	36.5	-5.5	▼ n/a

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									MUD LINE 5.5'
									RECENT BAY DEPOSITS **Silty Fine Sand (SM)**, very soft, gray, wet
		S	1	PUSH			SA		
									BAY DEPOSITS Interbedded **Silty SAND (SM) and SILT (ML)**, loose to medium dense, gray, wet, with shell fragments
	-10								
5		S	2	10			SA		
	-15	S	3	7			SA		
10									
		S	4	11					
	-20								
15									
		S	5	13					
	-25								

TCG_METRIC_LOG(3) 2766.GPJ GDCLOGMT.GDT 3/7/12

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-1

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/21/2012	2/21/2012	2 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (In)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	36.5	-5.5	⊻ n/a

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		S	6	19					BAY POINT FORMATION **Clayey Fine SAND to Sandy CLAY (SC/CL)**, medium dense, mottled olive-brown to olive-gray, moist
25	-30	S	7	8					**Fine Sandy CLAY (CL)**, medium stiff to stiff, olive-brown to olive-gray, moist
									Interbedded **Silty SAND (SM) to Fine Sandy CLAY (CL)**, medium dense to dense, gray to olive-gray, moist to wet, with occasional calcium carbonate cemented stringers
30	-35	S	8	26					
35	-40	S	9	30					
									Boring terminated at depth of 36.5 feet
	-45								

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FIGURE A-2 b

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-2

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/21/2012	2/21/2012	1 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (In)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	26.5	-15.5	▼ n/a

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									MUD LINE -15.5' RECENT BAY DEPOSITS **Fine Sandy SILT (ML)**, very loose to loose, gray, wet, with shell fragments and occasional gravel
		S	1	6					
		S	2	5					
	-20								
5									- Rock from 5 to 7 feet
		S	3	3					
									BAY POINT FORMATION Interbedded **Silty to Clayey SAND (SC/SM)**, medium dense, mottled gray / olive-brown / brown, wet
	-25								
10									
		S	4	12					
	-30								
15									
		S	5	26					
	-35								

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FIGURE A-3 a

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-2

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/21/2012	2/21/2012	2 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (In)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	26.5	-15.5	⊻ n/a_

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		S	6	40					- Becomes brown in color
25	-40								
		S	7	42					
									Boring terminated at depth of 26.5 feet.
30	-45								
35	-50								
	-55								

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FIGURE A-3 b

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-3

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/22/2012	2/22/2012	1 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (In)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	22	-6.5	▼ n/a_

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									MUD LINE -6.5'
									RECENT BAY DEPOSITS
									Clayey SILT (ML), very soft, gray, wet
									OLDER BAY DEPOSITS
		S	1	10					Interbedded **Silty SAND (SM)**, loose to medium dense, gray, wet, with occasional shell fragments
	-10								
		S	2	9					
5									
	-15	S	3	7					
10									
		S	4	7					
	-20								
15									
		S	5	8					
									- Harder drilling
									BAY POINT FORMATION
	-25								**Silty SAND (SM)**, dense, dark olive-gray to gray, wet

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FIGURE A-4 a

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	**B-3**

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/22/2012	2/22/2012	2 of 2

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (In)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	22	-6.5	⊻ n/a_

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
		S	6	28					
									Boring terminated at depth of 22 feet.
	-30								
25									
	-35								
30									
	-40								
35									
	-45								

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THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-4 b

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-4

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/22/2012	2/22/2012	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (In)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	18.5	-16.9	⊻ n/a_

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									MUD LINE -16.9'
									RECENT BAY DEPOSITS **Fine Sandy SILT (ML)**, very soft, dark gray, wet, with shell fragments and gravel
		S	1	5					
	-20								**Rocks / Gravel**
5									
	-25								
10									
	-30								RECENT BAY DEPOSITS **Silty to Clayey SAND (SM/SC)**, very loose, dark gray, wet
		S	2	2					
									BAY POINT FORMATION Interbedded **Silty to Clayey SAND (SC/SM)**, loose to medium desne, gray to brown, wet
15									
	-35	S	3	31					
									Boring terminated at depth of 18.5 feet

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FIGURE A-5

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-5

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/23/2012	2/23/2012	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (In)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	17.5	9	⊻ 7.0 / *2.0*

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									4" A.C.
									12" CLASS II BASE
									FILL **Fine Sandy CLAY (CL)**, olive-gray, moist
		S	1	9					HYDRAULIC FILL **Silty Fine SAND (SM-ML)**, loose to medium dense, olive-gray to olive-brown, damp to moist, with occasional shell fragments
		B	*				RV SA		
	5								* Bulk sample recovered from 1 to 6 feet
5		S	2	7					
		B	*						- Becomes moist, mottled red / brown color
								⊻	
	0	S	3	7					RECENT BAY DEPOSITS **Silty Fine SAND (SP-SM)**, loose to medium dense, gray, wet, with occasional shell fragments
10									
		S	4	8					
	-5								
15									
		S	5	13					
									Boring terminated at depth of 17.5 feet. *Groundwater level encountered at depth of 7 feet at time of excavation.*
	-10								

TCG_METRIC_LOG(3) 2766.GPJ GDCLOGMT.GDT 3/7/12

TerraCosta Consulting Group, Inc.
4455 Murphy Canyon Road, Suite 100
San Diego, California 92123

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-6

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-6

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/23/2012	2/23/2012	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	9.5	10	▼ 7.0 / *3.0*

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									4" A.C.
		PB	1	Grab					FILL (CLASS II BASE?) **Clayey SAND (SC)**, brown, damp to moist, with gravel to 1/2" approximately 30%
		S	2	26					HYDRAULIC FILL **Silty Fine SAND (SM)**, medium dense, gray-brown, damp to moist
		B	*				SA		* Bulk sample recovered from 1.25 to 6 feet
5	5	S	3	7					- Becomes loose with occasional shell and clay lense
		B	*						
		S	4	5					
									RECENT BAY DEPOSITS **Silty Fine SAND (SP-SM)**, loose, gray, wet
10	0								*Boring terminated at depth of 9.5 feet.* *Groundwater level encountered at depth of 7 feet at time of excavation.*
15	-5								

TCG_METRIC_LOG(3) 2766.GPJ GDCLOGMT.GDT 3/7/12

TerraCosta Consulting Group, Inc.
4455 Murphy Canyon Road, Suite 100
San Diego, California 92123

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-7

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-7

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/23/2012	2/23/2012	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (in)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/*ELEV.* GROUND WATER (ft)
Mole	7	9.5	2	▼ 2.0 / *0.0*

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									8" Reinforced PCC
									12" Class II Base
	0	S	1	21				▼	RECENT BAY DEPOSITS **Silty Fine SAND (SM)**, medium dense, gray, moist to wet, with occasional shell fragments
		B	*				RV SA		* Bulk sample recovered from 1.25 to 6 feet
5		S	2	14					
		B	*						
	-5								
		S	3	3					- Becomes loose
10									*Boring terminated at depth of 9.5 feet.* *Groundwater encountered at depth of 2 feet at time of excavation.*
	-10								
15									
	-15								

TCG_METRIC_LOG(3) 2766.GPJ GDCLOGMT.GDT 3/7/12

TerraCosta Consulting Group, Inc.
4455 Murphy Canyon Road, Suite 100
San Diego, California 92123

FIGURE A-8

LOG OF TEST BORING

PROJECT NAME	PROJECT NUMBER	BORING
SHELTER ISLAND BOAT RAMP	2766	B-8

SITE LOCATION	START	FINISH	SHEET NO.
Shelter Island, San Diego	2/24/2012	2/24/2012	1 of 1

DRILLING COMPANY	DRILLING METHOD	LOGGED BY	CHECKED BY
Pacific Drilling	Hollow Stem Auger	G. Spaulding	

DRILLING EQUIPMENT	BORING DIA. (In)	TOTAL DEPTH (ft)	GROUND ELEV (ft)	DEPTH/ELEV. GROUND WATER (ft)
Mole	7	17.5	10	▼ 7.4 / 2.6

SAMPLING METHOD	NOTES
SPT	

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	PENETRATION RESISTANCE (BLOWS/ft)	DRY DENSITY (pcf)	MOISTURE (%)	OTHER TESTS	GRAPHIC LOG	DESCRIPTION AND CLASSIFICATION
									FILL **Silty Fine SAND (SM)**, olive-brown to gray-brown, damp, with occasional shell fragments and gravel
		S	1	16			SA		
		S	2	18			SA		
5	5								- Sampler on rock **Silty Fine SAND (SM)**, medium dense, gray-brown, damp to wet, with gravel to 1.5" at approximately 20%
								▼	
		S	3	31			SA		
10	0								
									RECENT BAY DEPOSITS **Silty SAND (SM-SW)**, loose to medium dense, gray to dark gray, wet, with occasional shell fragments
		S	4	6			SA		
15	-5								
		S	5	17			SA		
									Boring terminated at depth of 17.5 feet. *Groundwater encountered at 7 feet at time of excavation.*

TCG_METRIC_LOG(3) 2766.GPJ GDCLOGMT.GDT 3/7/12

TerraCosta Consulting Group, Inc.
4455 Murphy Canyon Road, Suite 100
San Diego, California 92123

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

FIGURE A-9

APPENDIX B

LABORATORY TEST RESULTS

TerraCosta
Consulting Group

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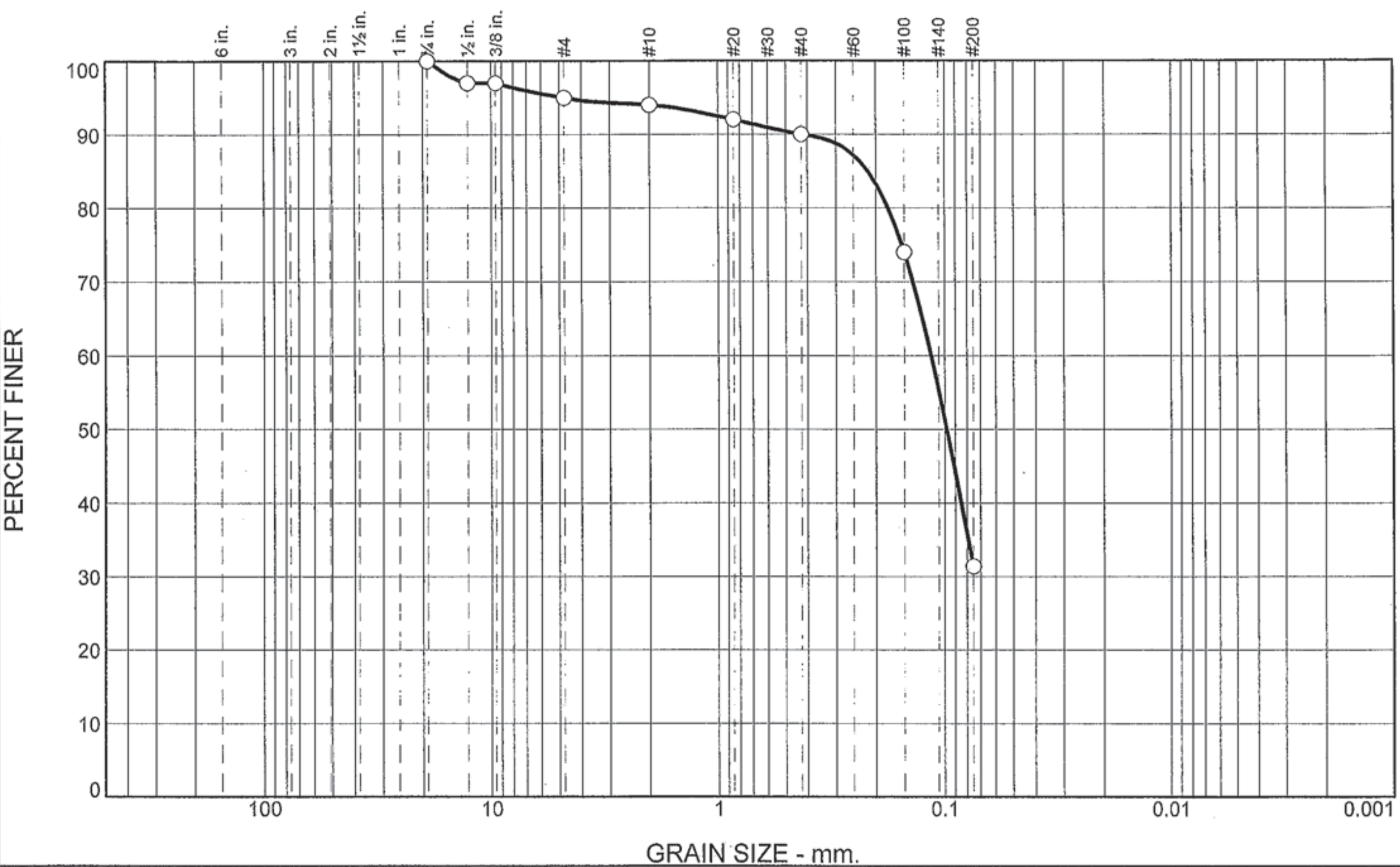
Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.0	1.0	4.0	58.6	31.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75"	100.0		
0.5"	97.0		
0.375"	97.0		
#4	95.0		
#10	94.0		
#20	92.0		
#40	90.0		
#100	74.0		
#200	31.4		

* (no specification provided)

Material Description

Silty Sand, SM (Lab #26715)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4250 D_{85}= 0.2170 D_{60}= 0.1147
D_{50}= 0.0981 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample Number: B1-1 **Depth:** 0'

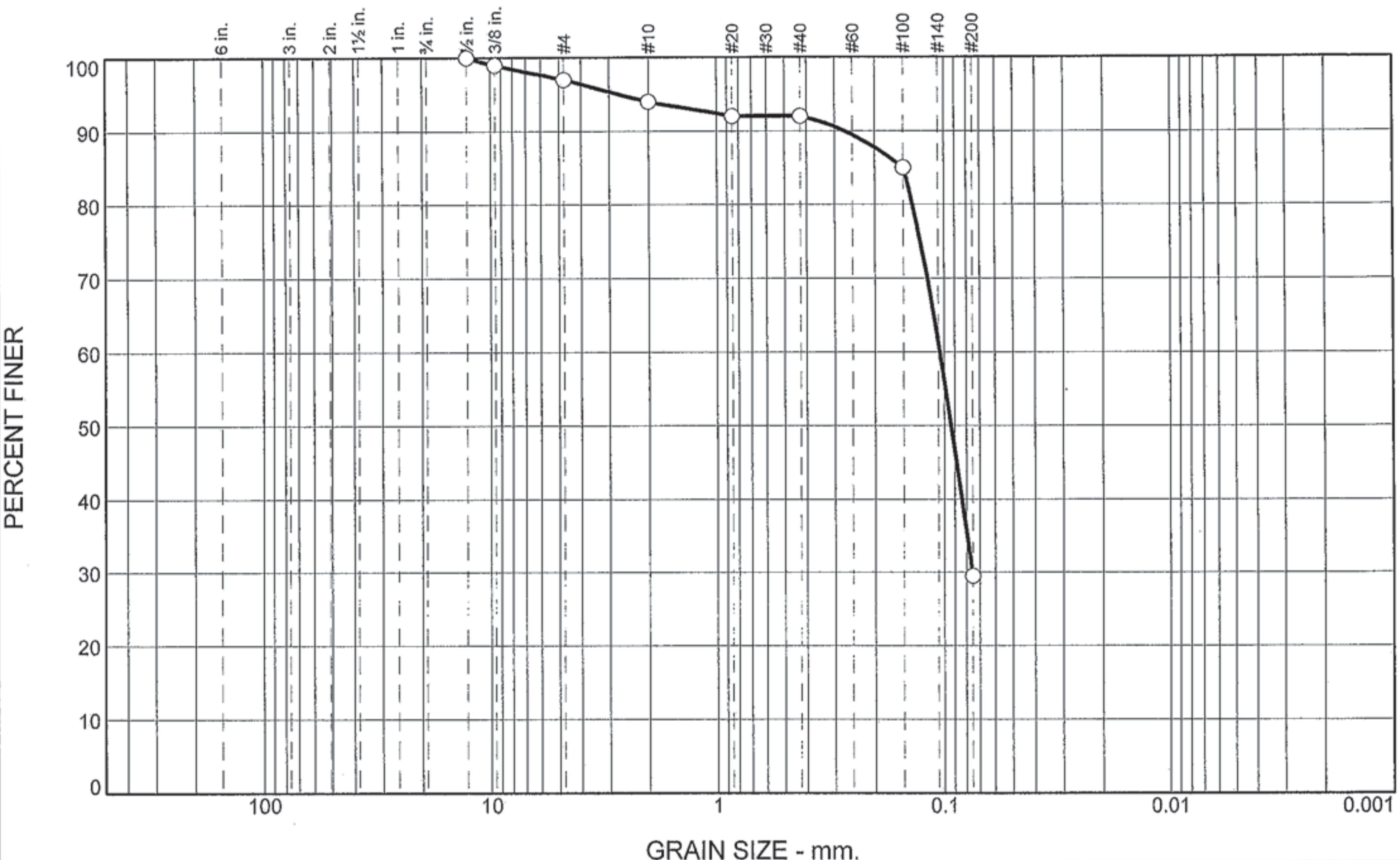
Date: 3/6/12

amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp
Project No: 5014-09-0006.30 **Figure** #26715

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.0	3.0	2.0	62.5	29.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5"	100.0		
0.375"	99.0		
#4	97.0		
#10	94.0		
#20	92.0		
#40	92.0		
#100	85.0		
#200	29.5		

* (no specification provided)

Material Description

Silty Sand, SM (Lab #26716)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2707 D_{85}= 0.1500 D_{60}= 0.1044
D_{50}= 0.0932 D_{30}= 0.0754 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample Number: B1-2 **Depth:** 4.5'

Date: 3/6/12

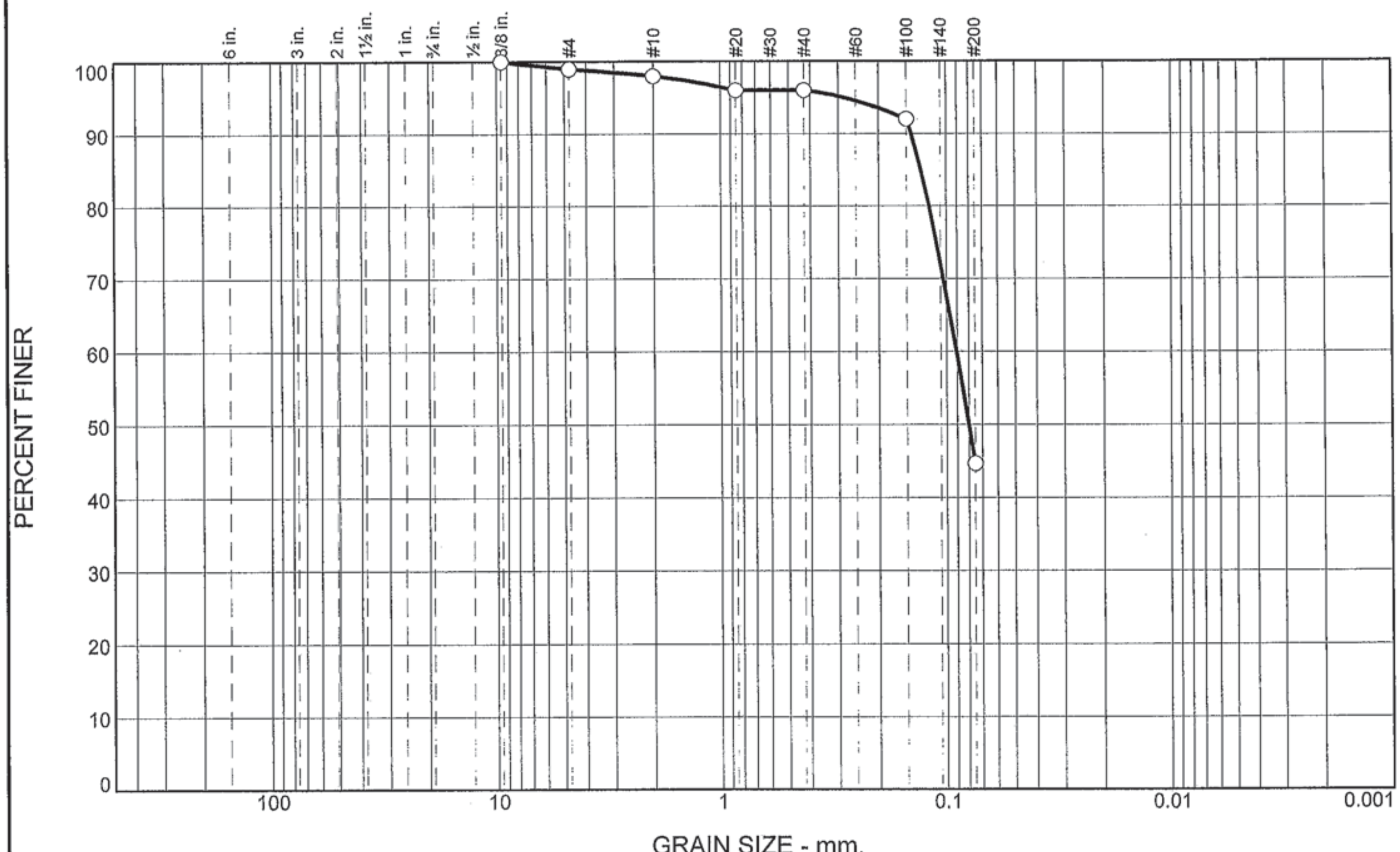
amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp

Project No: 5014-09-0006.30 **Figure** #26716

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.0	1.0	2.0	51.3	44.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375"	100.0		
#4	99.0		
#10	98.0		
#20	96.0		
#40	96.0		
#100	92.0		
#200	44.7		

* (no specification provided)

Material Description

Silty Sand, SM-ML (Lab #26717)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.1432 D_{85}= 0.1298 D_{60}= 0.0906
D_{50}= 0.0800 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM-ML AASHTO=

Remarks

Sample Number: B1-3 **Depth:** 8.5'

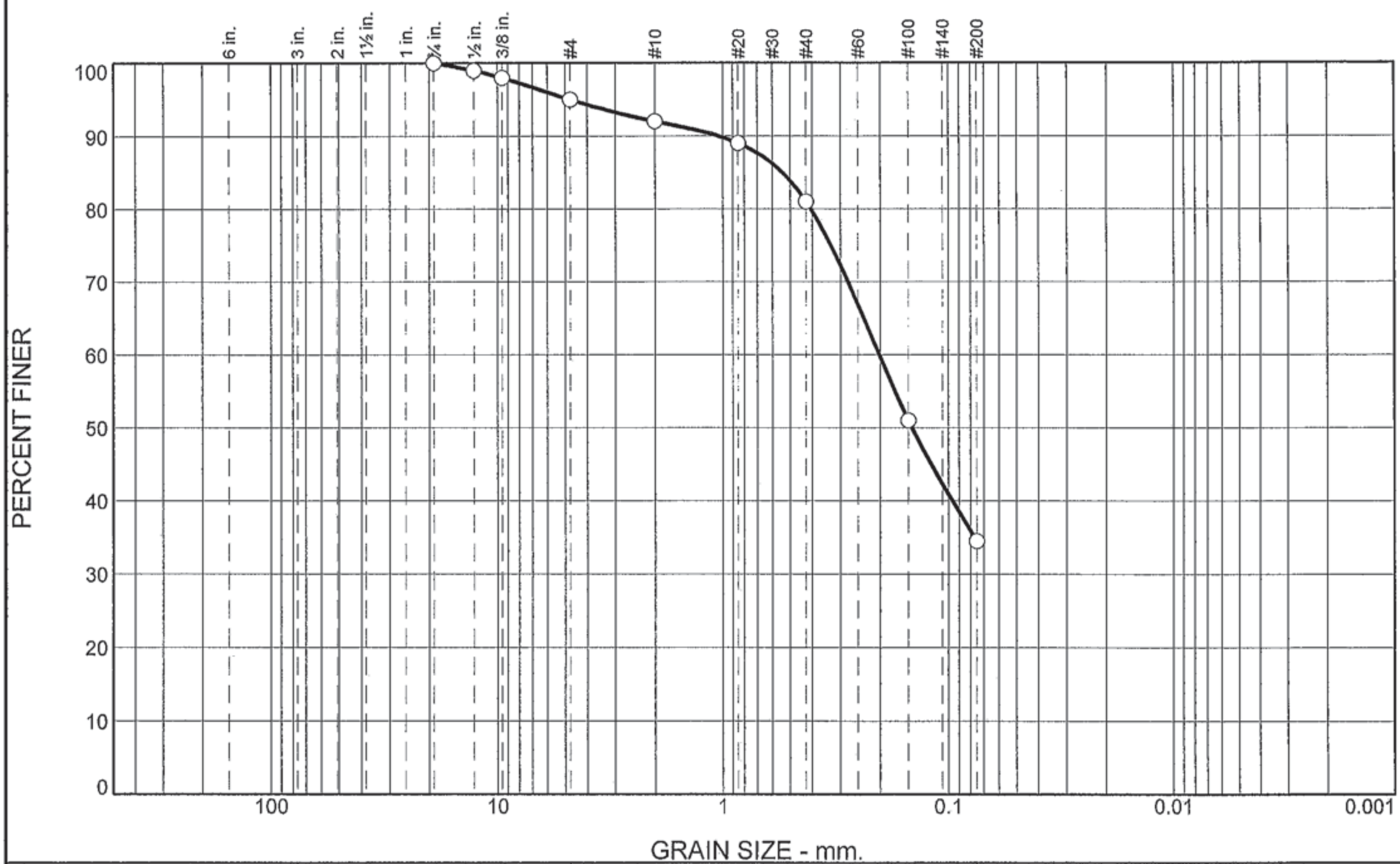
Date: 3/6/12

amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp
Project No: 5014-09-0006.30 **Figure** #26717

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	5.0	3.0	11.0	46.5	34.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.75"	100.0		
0.5"	99.0		
0.375"	98.0		
#4	95.0		
#10	92.0		
#20	89.0		
#40	81.0		
#100	51.0		
#200	34.5		

* (no specification provided)

Material Description

Silty Sand, SM-ML (Lab #26718)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 1.0421 D_{85}= 0.5407 D_{60}= 0.2021
D_{50}= 0.1447 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM-ML AASHTO=

Remarks

Sample Number: B5-1 **Depth:** 1'-6'

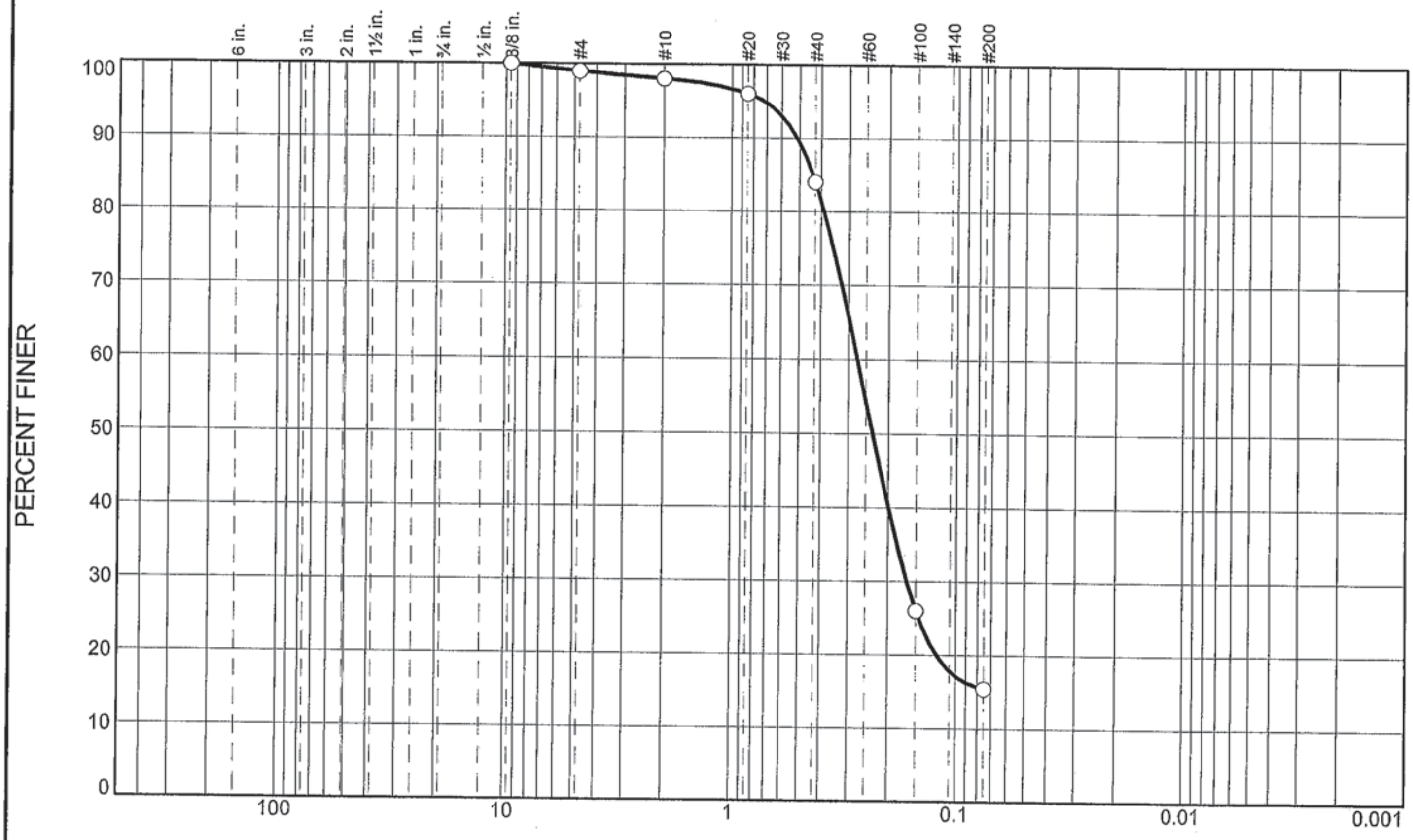
Date: 3/6/12

amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp
Project No: 5014-09-0006.30 **Figure** #26718

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	1.0	1.0	14.0	68.6	15.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.375"	100.0		
#4	99.0		
#10	98.0		
#20	96.0		
#40	84.0		
#100	26.0		
#200	15.4		

* (no specification provided)

Material Description

Silty Sand, SM (Lab #26719)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5131 D_{85}= 0.4361 D_{60}= 0.2742
D_{50}= 0.2344 D_{30}= 0.1649 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample Number: B6-1 **Depth:** 1'-6'

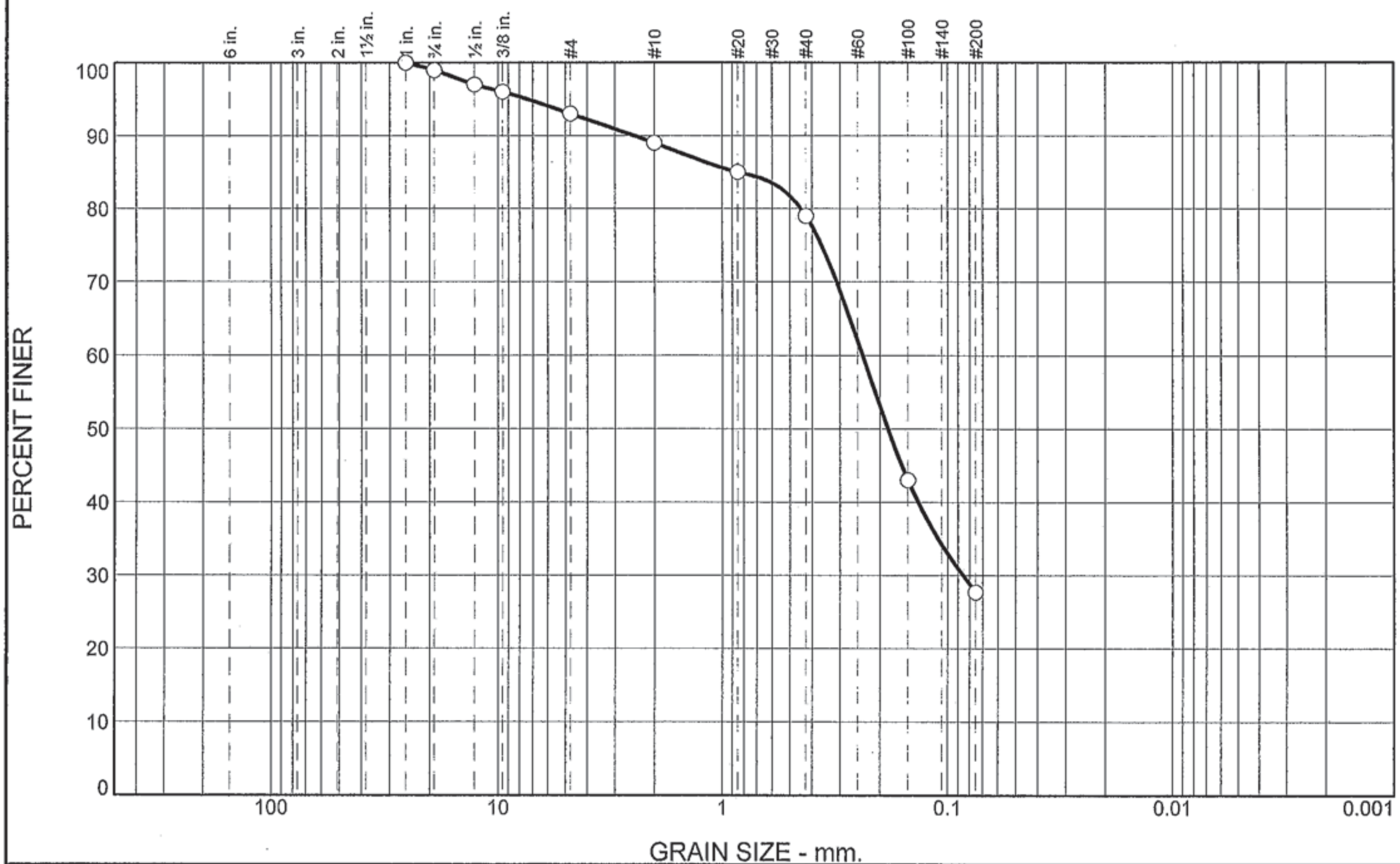
Date: 3/6/12

amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp
Project No: 5014-09-0006.30 **Figure** #26719

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	1.0	6.0	4.0	10.0	51.3	27.7	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
0.75"	99.0		
0.5"	97.0		
0.375"	96.0		
#4	93.0		
#10	89.0		
#20	85.0		
#40	79.0		
#100	43.0		
#200	27.7		

* (no specification provided)

Material Description

Silty Sand, SM (Lab #26720)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 2.4589 D_{85}= 0.8500 D_{60}= 0.2382
D_{50}= 0.1839 D_{30}= 0.0854 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample Number: B7-2 **Depth:** 2'-6'

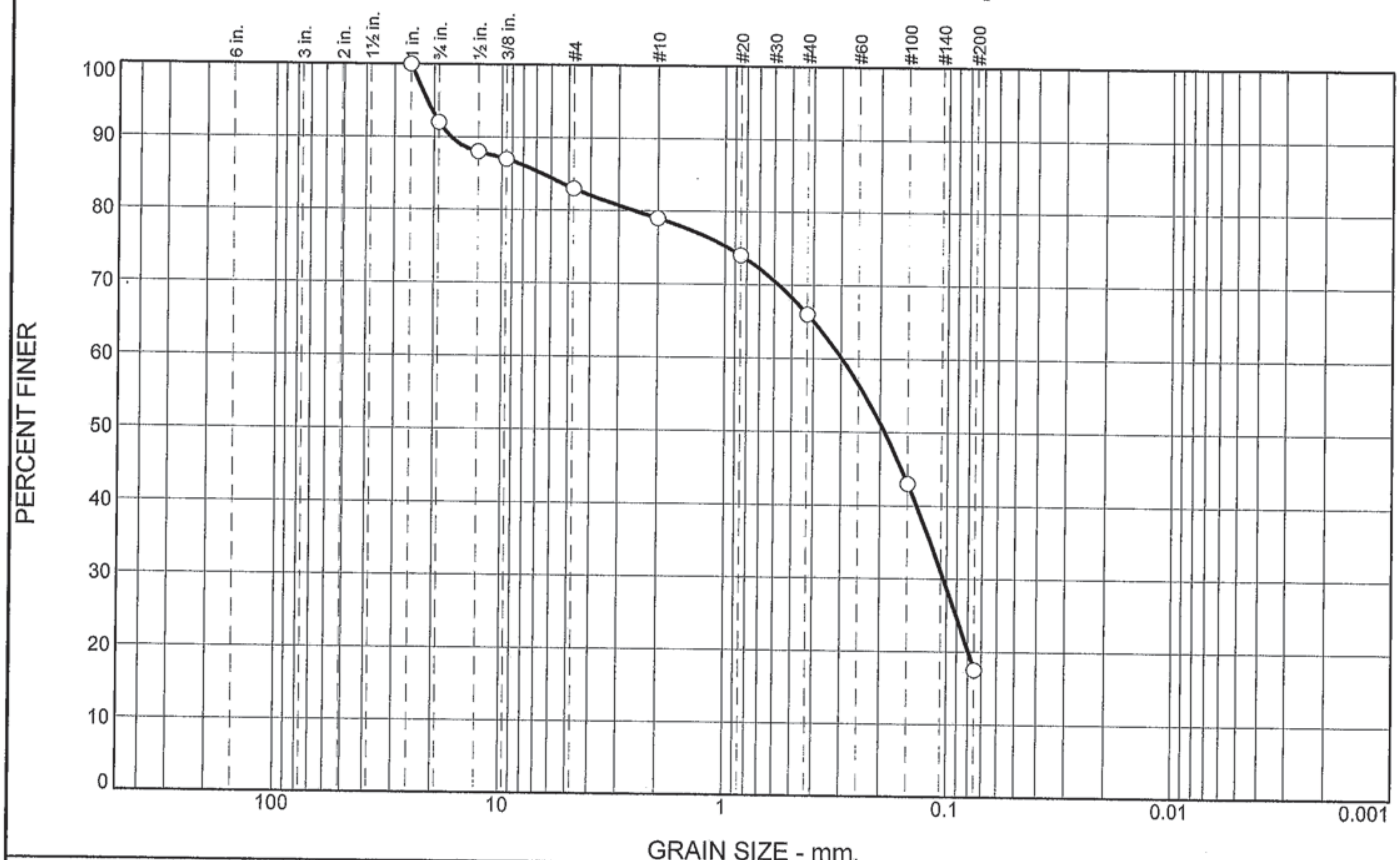
Date: 3/6/12

amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp
Project No: 5014-09-0006.30 **Figure** #26720

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	8.0	9.0	4.0	13.0	48.5	17.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
0.75"	92.0		
0.5"	88.0		
0.375"	87.0		
#4	83.0		
#10	79.0		
#20	74.0		
#40	66.0		
#100	43.0		
#200	17.5		

* (no specification provided)

Material Description

Silty Sand, SM (Lab #26721)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 16.8612 D_{85}= 6.5627 D_{60}= 0.2973
D_{50}= 0.1910 D_{30}= 0.1035 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample Number: B8-1 **Depth:** 0'

Date: 3/6/12

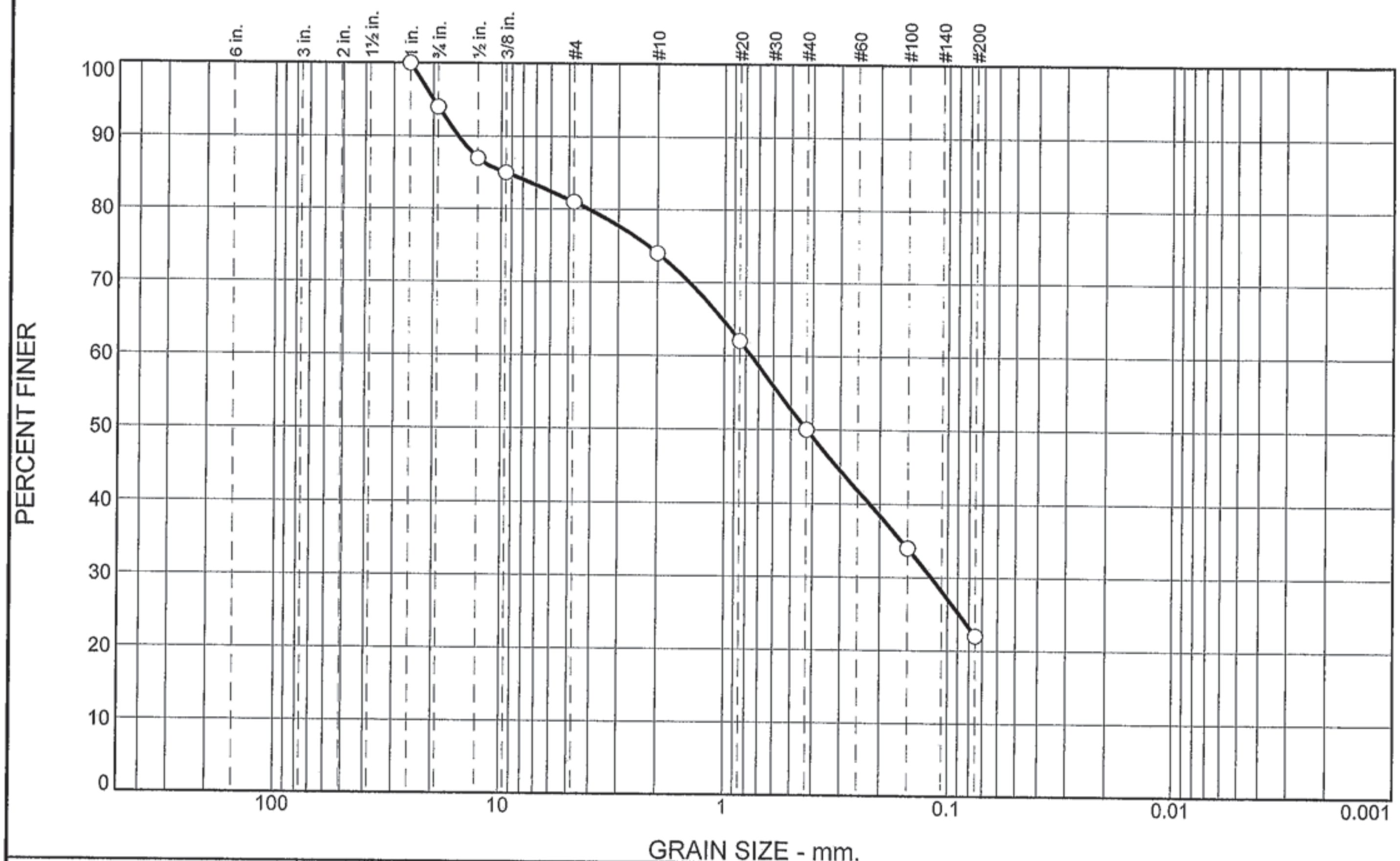
amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp

Project No: 5014-09-0006.30 **Figure** #26721

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	6.0	13.0	7.0	24.0	28.0	22.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.0"	100.0		
0.75"	94.0		
0.5"	87.0		
0.375"	85.0		
#4	81.0		
#10	74.0		
#20	62.0		
#40	50.0		
#100	34.0		
#200	22.0		

* (no specification provided)

Material Description

Silty Sand, SM (Lab #26722)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 15.5388 D_{85}= 9.5250 D_{60}= 0.7559
D_{50}= 0.4250 D_{30}= 0.1180 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample Number: B8-2 **Depth:** 4.0'

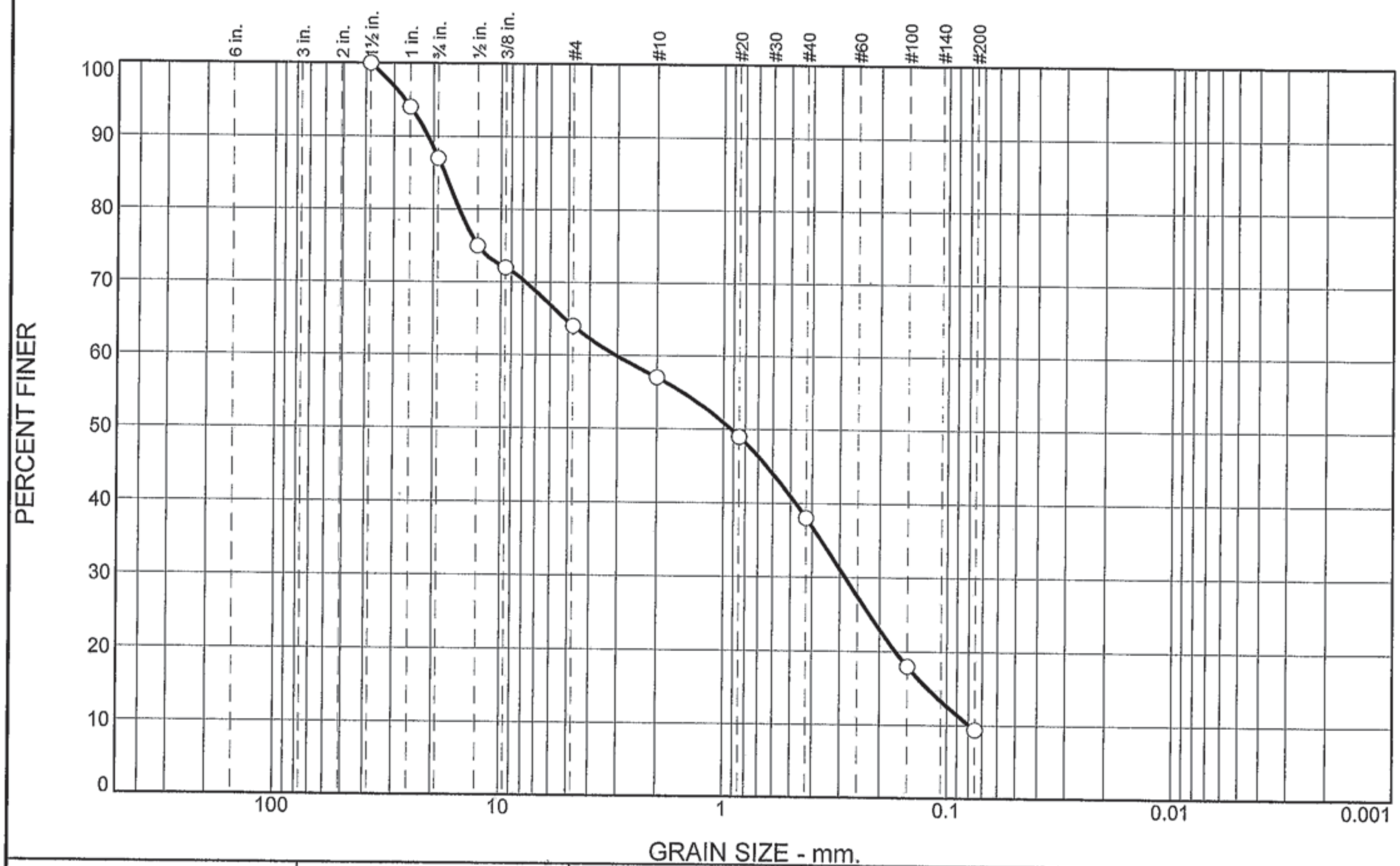
Date: 3/6/12

amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp
Project No: 5014-09-0006.30 **Figure** #26722

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	13.0	23.0	7.0	19.0	28.6	9.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5"	100.0		
1"	94.0		
0.75"	87.0		
0.5"	75.0		
0.375"	72.0		
#4	64.0		
#10	57.0		
#20	49.0		
#40	38.0		
#100	18.0		
#200	9.4		

* (no specification provided)

Material Description

Well Graded Sand, SW (Lab #26723)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 21.2147 D_{85}= 17.8763 D_{60}= 3.0600
D_{50}= 0.9225 D_{30}= 0.2844 D_{15}= 0.1217
D_{10}= 0.0793 C_u= 38.59 C_c= 0.33

Classification

USCS= SW AASHTO=

Remarks

Sample Number: B8-3 **Depth:** 8.0'

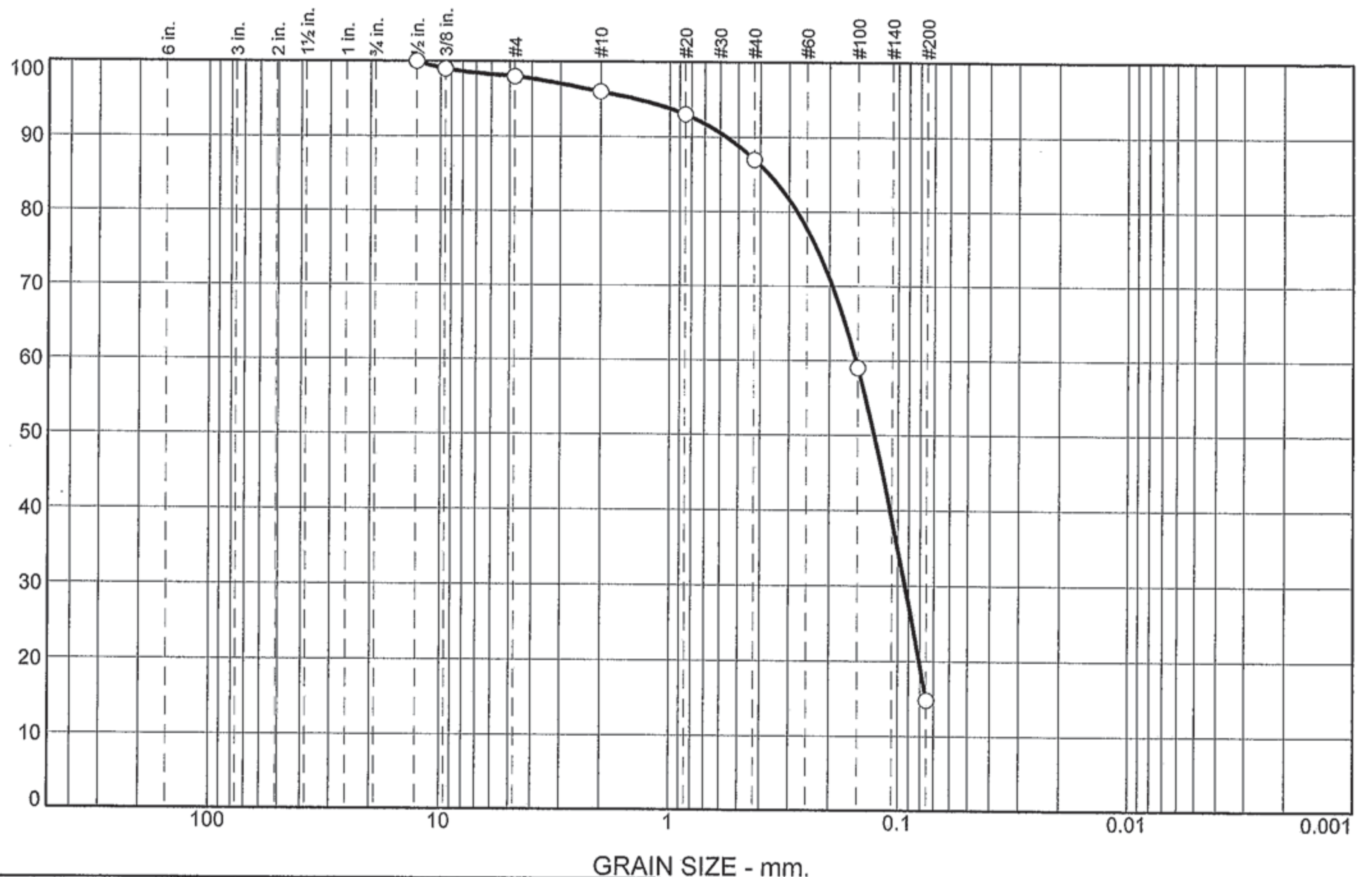
Date: 3/6/12

amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp
Project No: 5014-09-0006.30 **Figure** #26723

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.0	2.0	9.0	72.2	14.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5"	100.0		
0.375"	99.0		
#4	98.0		
#10	96.0		
#20	93.0		
#40	87.0		
#100	59.0		
#200	14.8		

* (no specification provided)

Material Description

Silty Sand, SM (Lab #26724)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.5627 D_{85}= 0.3659 D_{60}= 0.1531
D_{50}= 0.1271 D_{30}= 0.0932 D_{15}= 0.0752
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample Number: B8-4 **Depth:** 12.0'

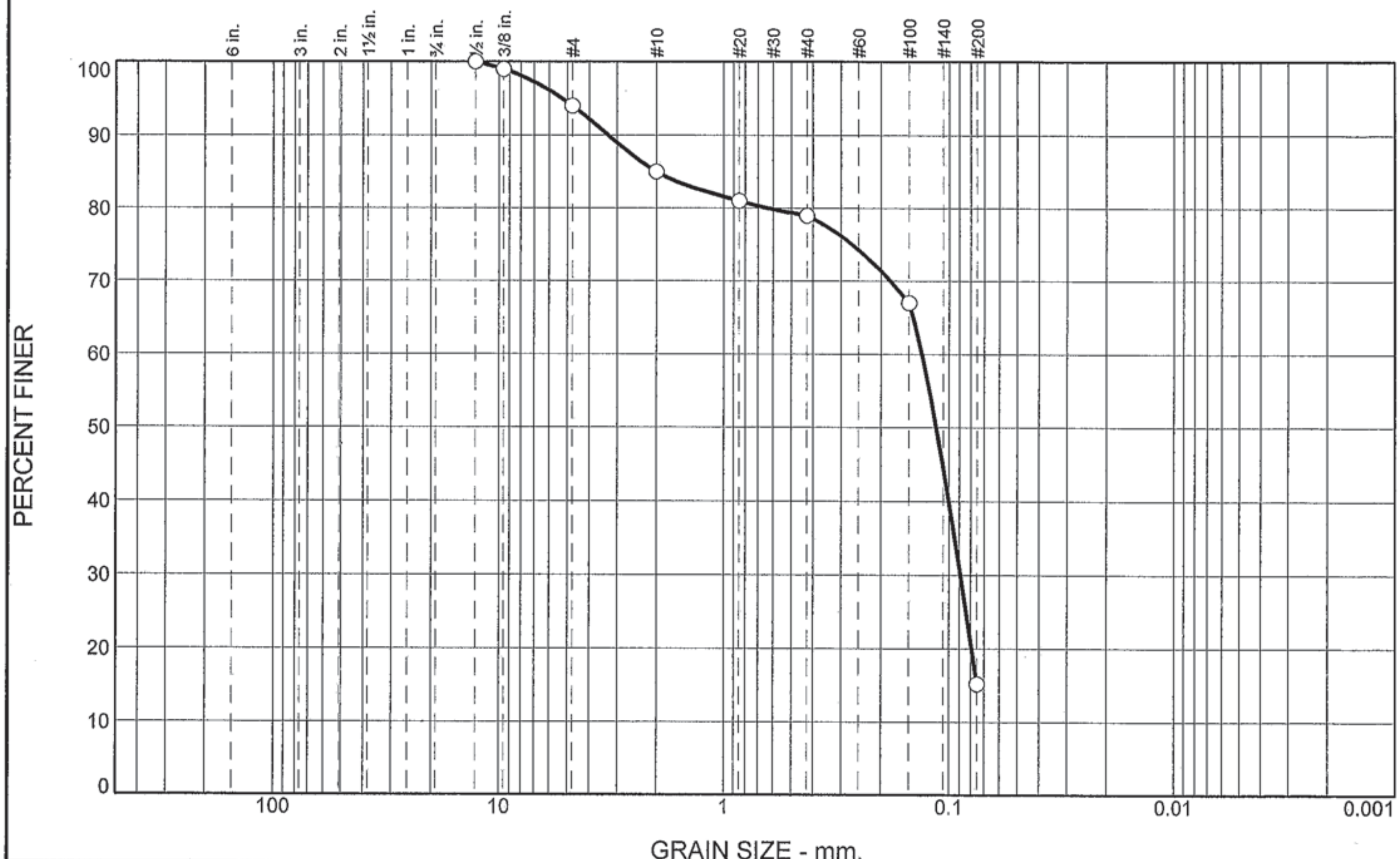
Date: 3/6/12

amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp
Project No: 5014-09-0006.30 **Figure** #26724

Tested By: R. Valles **Checked By:** L. Collins

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	6.0	9.0	6.0	63.8	15.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
0.5"	100.0		
0.375"	99.0		
#4	94.0		
#10	85.0		
#20	81.0		
#40	79.0		
#100	67.0		
#200	15.2		

* (no specification provided)

Material Description

Silty Sand, SM (Lab #26725)

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 3.2935 D_{85}= 2.0000 D_{60}= 0.1321
D_{50}= 0.1139 D_{30}= 0.0889 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample Number: B8-5 **Depth:** 16.0'

Date: 3/6/12

amec

Client: TerraCosta Consulting Group, Inc.
Project: #2766 Shelter Island Boat Ramp
Project No: 5014-09-0006.30 **Figure** #26725

Tested By: R. Valles **Checked By:** L. Collins

Project:	Shelter Island, Boat Ramp #2766
Project No.:	5014.09.0006.30
Lab No.:	26718
Client:	TerraCosta
Location:	B5-1@1-6'
Material:	Brown Silty Sand (DG)
Source:	B5-1@1-6'
Tested by:	RV
Date Tested:	03/16/2012

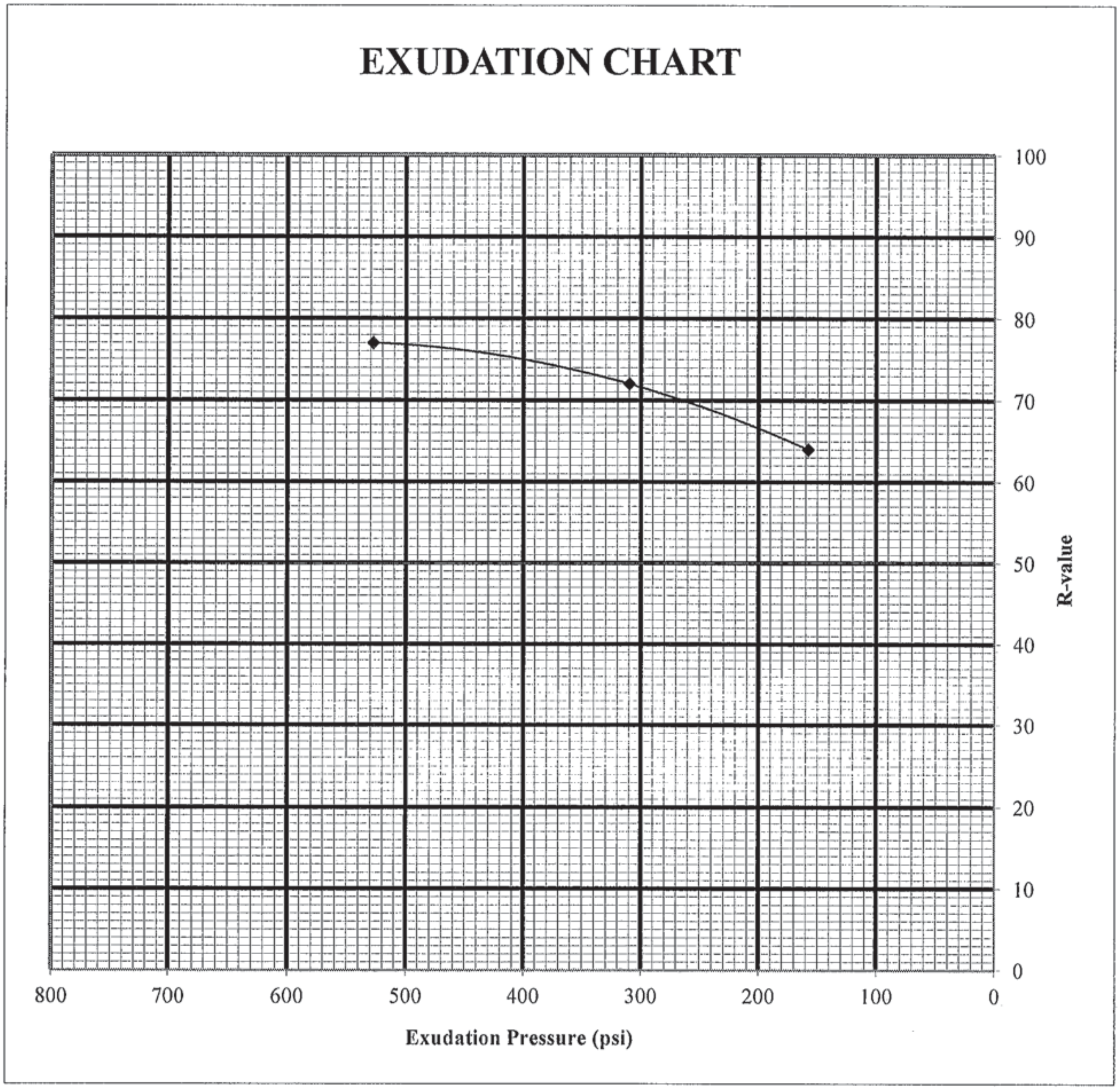
T.I. (assumed or given):	4.5
Gf (assumed or given):	1.1

	Specimen		
	A	B	C
Compaction Pressure	350	350	350
Wet Weight	1240	1260	1230
Dry Weight	1125.5	1125.5	1125.5
Tare Weight	0	0	0
Exudation Load (lbs.)	3890	1980	6630
Area of Mold (sq. in.)	12.56	12.56	12.56
Total Weight	3157	3279.5	3261.2
Mold Weight	1969.1	2109	2101
Sample Height (in)	2.54	2.59	2.62
Dial Reading	0	0	0
Ph @ 2000 lbs	30	42	28
D turns	4.16	4.25	3.75
R-Value from Exudation	72	62	76
Density (pcf)	128.6	122.3	122.8
% Moisture	10.2	12.0	9.3
Exudation Pressure (psi)	310	158	528
Cover Thickness By Exudation	0.36	0.49	0.32
Cover Thickness By Expansion	0.00	0.00	0.00

EXUDATION CHART - ENTER FROM SMALLEST TO LARGEST EXUDATION PRESSURE

Corrected R-Value from Exudation	64	72	77
Exudation Pressure (psi)	158	310	528

** Height correction on B & C


EXUDATION CHART
100
90
80
70
60
50
40
30
20
10
0
R-value
800
700
600
500
400
300
200
100
0
Exudation Pressure (psi)

R-value by Exudation: 72

R-value by Expansion: $R = 100 - [G_f * (T)] / [.0032 * (TI)]$

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R-value by Equilibrium: 72

Checked by: R.V.

Project:	Shelter Island, Boat Ramp #2766
Project No.:	5014.09.0006.30
Lab No.:	26720
Client:	TerraCosta
Location:	B7-2@1-6'
Material:	Dark Gray Silty Sand w/ Gravel
Source:	B7-2@1-6'
Tested by:	RV
Date Tested:	03/06/2012

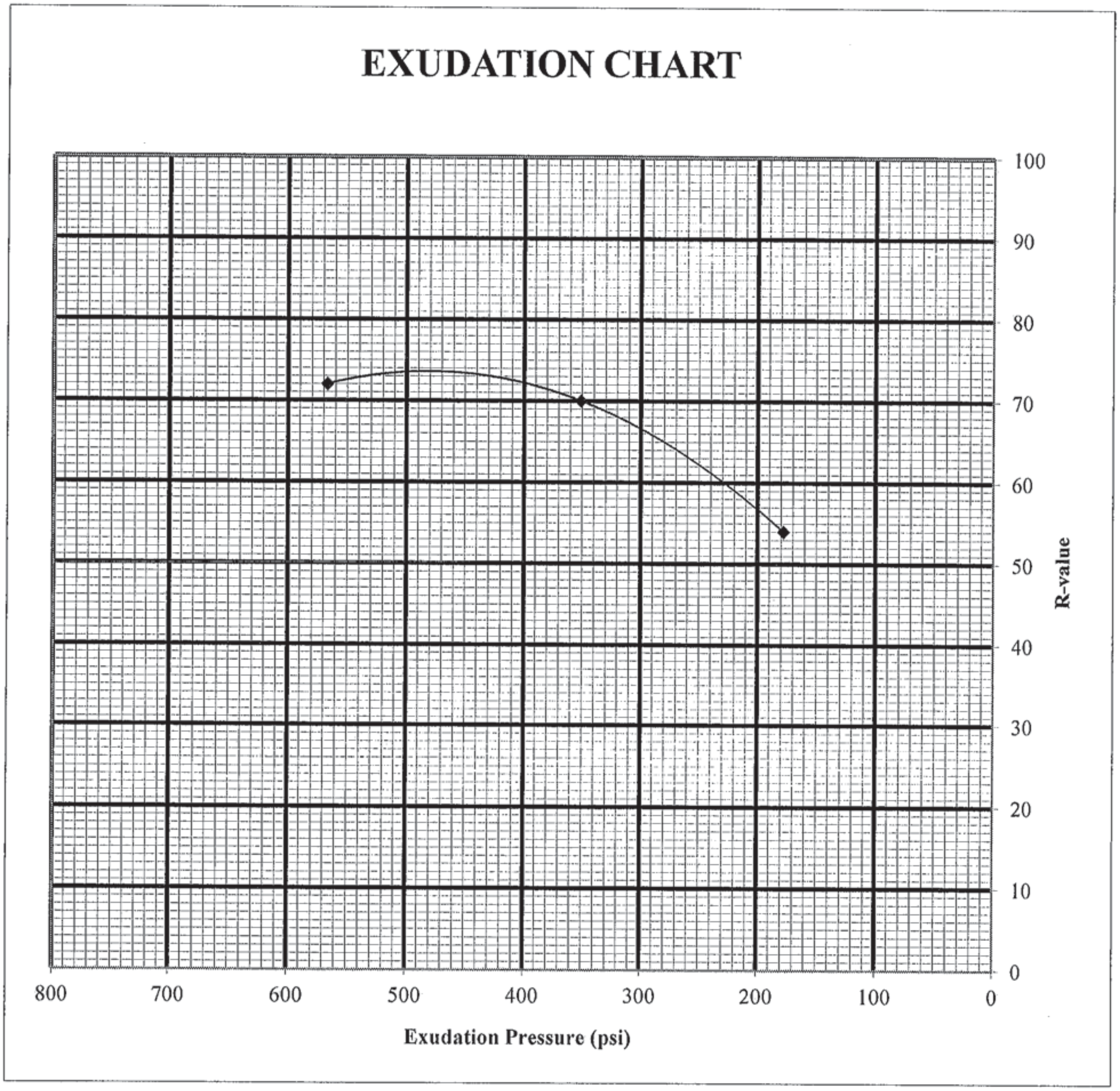
T.I. (assumed or given):	4.5
Gf (assumed or given):	1.1

	Specimen		
	A	B	C
Compaction Pressure	350	350	350
Wet Weight	1240	1210	1220
Dry Weight	1103.1	1103.1	1103.1
Tare Weight	0	0	0
Exudation Load (lbs.)	2230	7120	4410
Area of Mold (sq. in.)	12.56	12.56	12.56
Total Weight	3023.2	3220.8	3062.4
Mold Weight	1913.2	2116.4	1942.4
Sample Height (in)	2.49	2.40	2.54
Dial Reading	0	0	0
Ph @ 2000 lbs	56	31	37
D turns	4.01	3.65	3.77
R-Value from Exudation	54	74	69
Density (pcf)	120.2	127.1	120.8
% Moisture	12.4	9.7	10.6
Exudation Pressure (psi)	178	567	351
Cover Thickness By Exudation	0.61	0.34	0.41
Cover Thickness By Expansion	0.00	0.00	0.00

EXUDATION CHART - ENTER FROM SMALLEST TO LARGEST EXUDATION PRESSURE

Corrected R-Value from Exudation	54	70	72
Exudation Pressure (psi)	178	351	567

** Height Correction on B & C


EXUDATION CHART
100
90
80
70
60
50
40
30
20
10
0
R-value
800
700
600
500
400
300
200
100
0
Exudation Pressure (psi)

R-value by Exudation: 67

R-value by Expansion: $R = 100 - [G_f * (T)] / [.0032 * (TI)]$

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R-value by Equilibrium: 67

Checked by: R. Valles/L. Collins

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APPENDIX C

EQSEARCH RESULTS

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*     E Q S E A R C H   *
*                       *
*      Version 3.00     *
*                       *
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ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 2766

DATE: 03-06-2012

JOB NAME: Shelter Island Boat Launch Ramp

EARTHQUAKE-CATALOG-FILE NAME: C:\Program Files\EQSEARCH\ALLQUAKE.DAT

MAGNITUDE RANGE:
MINIMUM MAGNITUDE: 4.00
MAXIMUM MAGNITUDE: 9.00

SITE COORDINATES:
SITE LATITUDE: 32.7156
SITE LONGITUDE: 117.2234

SEARCH DATES:
START DATE: 1800
END DATE: 2100

SEARCH RADIUS:
100.0 mi
160.9 km

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)

UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
ASSUMED SOURCE TYPE: DS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
SCOND: 0 Depth Source: A
Basement Depth: 5.00 km Campbell SSR: Campbell SHR:
COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 0.0

EARTHQUAKE SEARCH RESULTS

Page 1

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
MGI	32.7000	117.2000	09/08/1915	742 0.0	0.0	4.00	0.141	VIII	1.7(2.8)
DMG	32.7000	117.2000	05/27/1862	20 0 0.0	0.0	5.90	0.385	X	1.7(2.8)
MGI	32.7000	117.2000	05/20/1920	1330 0.0	0.0	4.00	0.141	VIII	1.7(2.8)
MGI	32.7000	117.2000	04/19/1906	028 0.0	0.0	4.30	0.166	VIII	1.7(2.8)
T-A	32.6700	117.1700	04/15/1865	840 0.0	0.0	4.30	0.124	VII	4.4(7.1)
T-A	32.6700	117.1700	12/00/1856	0 0 0.0	0.0	5.00	0.179	VIII	4.4(7.1)
T-A	32.6700	117.1700	01/25/1863	1020 0.0	0.0	4.30	0.124	VII	4.4(7.1)
T-A	32.6700	117.1700	05/24/1865	0 0 0.0	0.0	5.00	0.179	VIII	4.4(7.1)
T-A	32.6700	117.1700	10/21/1862	0 0 0.0	0.0	5.00	0.179	VIII	4.4(7.1)
PAS	32.6790	117.1510	06/18/1985	32228.7	5.7	4.00	0.101	VII	4.9(7.9)
GSP	32.7670	117.3410	09/04/2007	144759.0	10.0	4.00	0.077	VII	7.7(12.4)
PAS	32.6150	117.1520	10/29/1986	23815.3	14.6	4.10	0.079	VII	8.1(13.0)
MGI	32.8000	117.1000	05/25/1803	0 0 0.0	0.0	5.00	0.116	VII	9.2(14.9)
PAS	32.6270	117.3770	06/29/1983	8 836.4	5.0	4.60	0.084	VII	10.8(17.4)
DMG	32.8500	117.4830	02/23/1943	92112.0	0.0	4.00	0.043	VI	17.7(28.5)
DMG	33.0000	117.3000	11/22/1800	2130 0.0	0.0	6.50	0.145	VIII	20.1(32.4)
DMG	33.0000	117.0000	03/03/1906	2025 0.0	0.0	4.50	0.045	VI	23.5(37.9)
MGI	33.0000	117.0000	12/29/1914	10 0 0.0	0.0	4.00	0.034	V	23.5(37.9)
MGI	33.0000	117.0000	09/21/1856	730 0.0	0.0	5.00	0.058	VI	23.5(37.9)
DMG	32.8000	116.8000	10/23/1894	23 3 0.0	0.0	5.70	0.080	VII	25.3(40.7)
MGI	32.8000	116.8000	08/14/1927	1448 0.0	0.0	4.60	0.045	VI	25.3(40.7)
PDP	32.3440	117.2600	02/01/2010	141954.0	6.0	4.40	0.040	V	25.7(41.4)
MGI	32.7000	116.7000	03/21/1918	2325 0.0	0.0	4.00	0.028	V	30.4(49.0)

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PAS  |32.9470|117.7360|01/15/1989|153955.2|  6.0| 4.20| 0.029 |  V | 33.8(
54.3)
GSP  |33.0700|116.8000|12/04/1991|071057.5| 15.0| 4.20| 0.028 |  V | 34.7(
55.8)
DMG  |32.5830|117.8000|04/19/1939| 741 0.0|  0.0| 4.50| 0.033 |  V | 34.7(
55.9)
PAS  |32.3020|116.8810|08/19/1978| 931 5.7| 19.8| 4.10| 0.027 |  V | 34.8(
56.0)
DMG  |32.7170|117.8330|11/06/1950|205546.0|  0.0| 4.40| 0.031 |  V | 35.4(
57.0)
MGI  |33.2000|117.0000|07/20/1923| 7 0 0.0|  0.0| 4.00| 0.025 |  V | 35.9(
57.7)
DMG  |32.8000|117.8330|01/24/1942|214148.0|  0.0| 4.00| 0.025 |  V | 35.9(
57.7)
T-A  |32.2500|117.5000|01/13/1877|20 0 0.0|  0.0| 5.00| 0.042 | VI | 36.0(
57.9)
MGI  |33.1000|116.8000|06/22/1918| 557 0.0|  0.0| 4.00| 0.025 |  V | 36.1(
58.2)
PAS  |32.9450|117.8060|09/07/1984|11 313.4|  6.0| 4.30| 0.028 |  V | 37.3(
60.1)
PAS  |32.9700|117.8030|07/14/1986| 03246.2| 10.0| 4.00| 0.024 | IV | 37.9(
61.0)
GSP  |32.9700|117.8100|04/04/1990|085439.3|  6.0| 4.00| 0.024 | IV | 38.3(
61.6)
PAS  |32.9450|117.8310|07/29/1986| 81741.8| 10.0| 4.10| 0.025 |  V | 38.6(
62.2)
PAS  |32.9330|117.8410|07/29/1986| 81741.6| 10.0| 4.30| 0.027 |  V | 38.8(
62.5)
GSP  |32.9850|117.8180|06/21/1995|211736.2|  6.0| 4.30| 0.027 |  V | 39.2(
63.1)
PAS  |32.7590|117.9060|10/18/1976|172753.1| 13.8| 4.20| 0.026 |  V | 39.8(
64.0)
PAS  |32.7140|117.9100|10/18/1976|172652.6| 15.1| 4.20| 0.026 |  V | 39.9(
64.2)
DMG  |33.2670|117.0170|06/07/1935|1633 0.0|  0.0| 4.00| 0.023 | IV | 39.9(
64.2)
USG  |33.0170|117.8170|07/16/1986|1247 3.7| 10.0| 4.11| 0.024 |  V | 40.2(
64.7)
USG  |33.0170|117.8170|07/14/1986| 11112.6| 10.0| 4.12| 0.024 |  V | 40.2(
64.7)
PAS  |32.9860|117.8440|10/01/1986|201218.6|  6.0| 4.00| 0.023 | IV | 40.5(
65.2)
PAS  |32.9900|117.8490|07/13/1986|14 133.0| 12.0| 4.60| 0.031 |  V | 40.9(
65.9)
MGI  |33.0000|116.6000|06/11/1917| 354 0.0|  0.0| 4.00| 0.022 | IV | 41.1(
66.2)
PAS  |32.9710|117.8700|07/13/1986|1347 8.2|  6.0| 5.30| 0.044 | VI | 41.4(
66.7)
PDP  |32.2030|117.6040|05/26/2010|035729.3| 17.0| 4.20| 0.025 |  V | 41.8(
67.2)
MGI  |32.6000|116.5000|05/03/1918| 425 0.0|  0.0| 4.00| 0.022 | IV | 42.8(
68.9)
DMG  |33.1000|116.6330|02/08/1952|174028.0|  0.0| 4.00| 0.022 | IV | 43.3(
69.7)
DMG  |33.2000|116.7200|05/12/1930|172548.5|  0.0| 4.20| 0.024 | IV | 44.4(
71.4)
PAS  |32.7560|117.9880|01/12/1975|212214.8| 15.3| 4.80| 0.032 |  V | 44.5(
71.6)
MGI  |33.1000|116.6000|02/05/1922|1915 0.0|  0.0| 4.00| 0.021 | IV | 44.8(
72.1)
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FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
MGI	33.1000	116.6000	08/10/1921	19 6 0.0	0.0	4.00	0.021	IV	44.8(72.1)
MGI	33.1000	116.6000	05/28/1917	1017 0.0	0.0	4.00	0.021	IV	44.8(72.1)
MGI	33.1000	116.6000	02/16/1915	1330 0.0	0.0	4.00	0.021	IV	44.8(72.1)
MGI	33.1000	116.6000	03/04/1915	1250 0.0	0.0	4.00	0.021	IV	44.8(72.1)
MGI	33.1000	116.6000	05/11/1915	1145 0.0	0.0	4.00	0.021	IV	44.8(72.1)
MGI	33.1000	116.6000	02/09/1920	220 0.0	0.0	4.00	0.021	IV	44.8(72.1)
MGI	33.1000	116.6000	08/19/1917	710 0.0	0.0	4.00	0.021	IV	44.8(72.1)
MGI	33.1000	116.6000	08/10/1921	2151 0.0	0.0	4.00	0.021	IV	44.8(72.1)
DMG	33.2000	116.7000	01/01/1920	235 0.0	0.0	5.00	0.035	V	45.1(72.6)
DMG	32.0830	117.0000	05/10/1948	34925.0	0.0	4.00	0.021	IV	45.6(73.3)
DMG	32.1670	117.6670	10/29/1935	1017 0.0	0.0	4.50	0.027	V	45.9(73.8)
PAS	32.6250	118.0090	07/11/1981	215029.4	5.0	4.30	0.024	V	46.1(74.2)
PAS	33.0330	117.9440	02/22/1983	21830.4	10.0	4.30	0.024	IV	47.2(75.9)
GSP	32.9000	118.0070	06/20/2009	010030.6	14.0	4.10	0.021	IV	47.2(76.0)
DMG	33.1500	116.5830	12/02/1935	319 0.0	0.0	4.00	0.020	IV	47.7(76.8)
GSP	32.3290	117.9170	06/15/2004	222848.2	10.0	5.30	0.039	V	48.4(77.9)
DMG	32.1130	116.7850	04/23/1968	131825.4	10.0	4.20	0.022	IV	48.8(78.6)
DMG	33.1100	116.5230	01/24/1957	205449.9	3.9	4.60	0.027	V	48.9(78.7)
GSP	32.7260	118.0680	12/27/2000	002714.1	6.0	4.10	0.021	IV	49.1(79.0)
GSP	32.0180	117.3840	06/26/2003	062001.1	25.0	4.10	0.021	IV	49.1(79.0)
MGI	33.2000	116.6000	10/12/1920	1748 0.0	0.0	5.30	0.039	V	49.2(79.2)
PDP	32.2420	116.5910	02/14/2010	213547.9	6.0	4.50	0.025	V	49.3(79.3)
DMG	32.6800	118.0770	10/28/1973	22 0 2.7	8.0	4.50	0.025	V	49.7(79.9)
DMG	33.0020	116.4360	07/02/1957	65638.5	12.8	4.10	0.020	IV	49.8(80.1)
DMG	33.0000	116.4330	06/04/1940	1035 8.3	0.0	5.10	0.035	V	49.9(80.2)
DMG	32.0000	117.0670	06/23/1939	2048 0.0	0.0	4.50	0.025	V	50.2(80.8)
DMG	32.6800	116.3540	01/21/1970	1124 0.4	8.0	4.10	0.020	IV	50.6(81.4)
PAS	33.1380	116.5010	10/10/1984	212258.9	11.6	4.50	0.025	V	51.0(82.1)

DMG	32.0000	117.0000	02/11/1949	95725.0	0.0	4.00	0.019	IV	51.1(82.2)
DMG	32.0000	117.0000	04/27/1942	112754.0	0.0	4.00	0.019	IV	51.1(82.2)
DMG	32.3330	116.4670	01/13/1935	224 0.0	0.0	4.00	0.019	IV	51.3(82.6)
GSP	32.6810	118.1090	06/20/1997	043540.5	6.0	4.70	0.027	V	51.5(82.9)
DMG	32.5290	118.0820	05/26/1973	234633.3	8.0	4.30	0.022	IV	51.6(83.0)
DMG	32.9670	116.3830	10/31/1942	15 758.0	0.0	4.00	0.019	IV	51.7(83.3)
DMG	32.0000	117.5000	05/01/1939	2353 0.0	0.0	5.00	0.032	V	52.0(83.6)
DMG	32.0000	117.5000	05/03/1939	2358 0.0	0.0	4.50	0.024	V	52.0(83.6)
DMG	32.0000	117.5000	06/25/1939	1 9 0.0	0.0	4.00	0.019	IV	52.0(83.6)
DMG	32.0000	117.5000	06/24/1939	1627 0.0	0.0	5.00	0.032	V	52.0(83.6)
DMG	32.0000	117.5000	05/03/1939	828 0.0	0.0	4.00	0.019	IV	52.0(83.6)
DMG	32.0000	117.5000	05/01/1939	2357 0.0	0.0	4.50	0.024	V	52.0(83.6)
DMG	33.1000	116.4500	11/23/1953	1339 7.0	0.0	4.30	0.022	IV	52.1(83.8)
DMG	33.1670	116.5000	06/23/1932	22552.7	0.0	4.00	0.019	IV	52.2(84.1)
DMG	33.1670	116.5000	06/23/1932	23037.1	0.0	4.00	0.019	IV	52.2(84.1)
DMG	33.0970	116.4440	08/18/1959	215221.3	17.3	4.30	0.022	IV	52.3(84.1)
DMG	31.9920	116.9270	04/10/1968	104237.8	10.0	4.50	0.024	V	52.9(85.1)
DMG	32.2000	116.5500	11/04/1949	204238.0	0.0	5.70	0.045	VI	53.0(85.2)
DMG	32.2000	116.5500	11/11/1949	1354 0.0	0.0	4.20	0.020	IV	53.0(85.2)
DMG	32.2000	116.5500	11/05/1949	43524.0	0.0	5.10	0.033	V	53.0(85.2)
DMG	32.2000	116.5500	11/06/1949	23 510.0	0.0	4.00	0.018	IV	53.0(85.2)
DMG	32.2000	116.5500	11/05/1949	20 2 7.0	0.0	4.00	0.018	IV	53.0(85.2)
GSP	32.6850	118.1380	06/20/1997	053855.0	6.0	4.20	0.020	IV	53.2(85.6)
DMG	32.6000	116.3170	06/15/1946	194653.0	0.0	4.80	0.028	V	53.3(85.8)
DMG	32.7000	116.3000	02/24/1892	720 0.0	0.0	6.70	0.076	VII	53.7(86.3)

EARTHQUAKE SEARCH RESULTS

Page 3

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]

```
PDP |32.9940|116.3590|03/09/2010|041821.9|  5.0| 4.00| 0.018 | IV | 53.7(
86.4)
DMG |33.1670|116.4670|08/01/1960|193930.0|  0.0| 4.20| 0.020 | IV | 53.8(
86.5)
GSP |32.6260|118.1510|06/20/1997|080413.6|  6.0| 4.60| 0.025 |  V | 54.3(
87.3)
DMG |33.1170|116.4170|06/04/1940|103656.0|  0.0| 4.00| 0.018 | IV | 54.3(
87.4)
DMG |33.1170|116.4170|10/21/1940| 64933.0|  0.0| 4.50| 0.024 | IV | 54.3(
87.4)
DMG |33.4540|116.8980|07/29/1936|142252.8| 10.0| 4.00| 0.018 | IV | 54.3(
87.5)
DMG |32.0830|116.6670|11/25/1934| 818 0.0|  0.0| 5.00| 0.031 |  V | 54.4(
87.5)
DMG |32.0830|116.6670|09/27/1934|2140 0.0|  0.0| 4.00| 0.018 | IV | 54.4(
87.5)
DMG |32.0830|116.6670|10/12/1938|1231 0.0|  0.0| 4.00| 0.018 | IV | 54.4(
87.5)
DMG |33.4560|116.8960|06/16/1938| 55916.9| 10.0| 4.00| 0.018 | IV | 54.5(
87.7)
DMG |33.0380|116.3610|02/26/1957|211652.2|  0.0| 4.10| 0.019 | IV | 54.7(
88.1)
T-A |33.5000|117.0700|12/29/1880| 7 0 0.0|  0.0| 4.30| 0.021 | IV | 54.9(
88.3)
GSP |33.1100|116.4000|04/01/1984|071702.3| 11.0| 4.00| 0.018 | IV | 54.9(
88.4)
DMG |32.7180|118.1720|04/28/1938| 6 728.0| 10.0| 4.50| 0.023 | IV | 55.1(
88.7)
DMG |31.9540|117.5060|09/29/1972|141341.2|  8.0| 4.30| 0.021 | IV | 55.1(
88.7)
DMG |33.5000|117.0000|08/08/1925|1013 0.0|  0.0| 4.50| 0.023 | IV | 55.7(
89.6)
GSP |32.4970|118.1450|10/19/2005|085126.1| 12.0| 4.20| 0.020 | IV | 55.7(
89.6)
DMG |32.1000|116.6000|01/07/1950| 93735.0|  0.0| 4.00| 0.018 | IV | 55.9(
90.0)
DMG |33.1670|116.4170|12/05/1939|173352.0|  0.0| 4.00| 0.018 | IV | 56.2(
90.4)
DMG |33.1670|116.4170|07/10/1938|18 6 0.0|  0.0| 4.00| 0.018 | IV | 56.2(
90.4)
DMG |33.1670|116.4170|10/14/1935|1550 0.0|  0.0| 4.00| 0.018 | IV | 56.2(
90.4)
DMG |32.0830|117.8330|09/13/1940|144548.0|  0.0| 4.50| 0.023 | IV | 56.3(
90.6)
DMG |32.9610|116.2900|08/25/1971|23 033.0|  8.0| 4.00| 0.017 | IV | 56.7(
91.3)
DMG |32.7500|118.2000|06/25/1939| 149 0.0|  0.0| 4.50| 0.023 | IV | 56.8(
91.4)
DMG |31.9390|116.8930|04/10/1968|1055 3.2| 10.0| 4.30| 0.020 | IV | 57.0(
91.7)
DMG |33.5000|116.9170|11/04/1935| 355 0.0|  0.0| 4.50| 0.023 | IV | 57.0(
91.7)
DMG |32.9230|116.2720|10/14/1969|131842.7| 10.0| 4.50| 0.023 | IV | 57.0(
91.8)
DMG |32.9520|116.2790|09/13/1973|173039.8|  8.0| 4.80| 0.026 |  V | 57.2(
92.0)
PAS |33.4200|116.6980|06/05/1978|16 3 3.9| 11.9| 4.40| 0.021 | IV | 57.4(
92.3)
PAS |32.9050|116.2610|12/25/1975| 71852.3|  3.6| 4.00| 0.017 | IV | 57.4(
92.3)
GSP |32.4550|118.1630|10/16/2005|211135.0| 10.0| 4.90| 0.028 |  V | 57.5(
92.6)
DMG |33.1210|116.3490|05/25/1971|10 252.9|  8.0| 4.10| 0.018 | IV | 57.9(
93.2)
GSP |33.5000|116.8620|11/17/2008|123542.0| 12.0| 4.10| 0.018 | IV | 58.0(
93.4)
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DMG	33.0530	116.3060	04/02/1967	201538.6	1.0	4.30	0.020	IV	58.1(93.4)
GSP	32.7280	118.2230	01/29/2009	084159.0	0.0	4.20	0.019	IV	58.1(93.4)
DMG	32.0000	116.7000	12/02/1929	1124 0.0	0.0	4.50	0.022	IV	58.1(93.5)
DMG	33.1830	116.3830	10/14/1949	02925.0	0.0	4.10	0.018	IV	58.4(94.0)
DMG	32.9900	116.2680	11/08/1958	132044.1	2.4	4.10	0.018	IV	58.6(94.2)
DMG	32.9500	116.2500	11/14/1951	2355 3.0	0.0	4.10	0.018	IV	58.7(94.5)
DMG	33.4880	116.7770	06/12/1959	11 313.0	5.7	4.00	0.017	IV	59.2(95.3)
MGI	33.5000	116.8000	05/31/1917	435 0.0	0.0	4.00	0.017	IV	59.4(95.6)
MGI	33.5000	116.8000	03/30/1918	16 5 0.0	0.0	4.60	0.023	IV	59.4(95.6)
MGI	33.5000	116.8000	11/26/1916	17 5 0.0	0.0	4.00	0.017	IV	59.4(95.6)
MGI	33.5000	116.8000	06/02/1917	435 0.0	0.0	4.00	0.017	IV	59.4(95.6)
DMG	33.4500	116.6830	04/25/1955	25515.0	0.0	4.00	0.017	IV	59.6(95.9)
MGI	32.8000	116.2000	07/23/1929	1155 0.0	0.0	4.30	0.020	IV	59.7(96.1)
DMG	32.8170	116.2000	11/22/1953	81138.0	0.0	4.10	0.018	IV	59.8(96.3)
GSG	31.8490	117.1980	01/29/1995	160231.5	12.0	4.40	0.021	IV	59.8(96.3)
DMG	32.1000	116.5000	01/08/1937	1246 0.0	0.0	4.00	0.017	IV	59.9(96.3)
DMG	31.9700	116.6980	04/23/1968	132234.8	10.0	4.00	0.017	IV	59.9(96.4)
DMG	33.0430	116.2600	08/22/1961	231933.6	12.1	4.40	0.021	IV	60.3(97.0)
DMG	32.1670	116.4170	09/17/1950	194330.0	0.0	4.50	0.022	IV	60.4(97.1)
DMG	32.8670	118.2500	02/13/1952	151337.0	0.0	4.70	0.024	V	60.5(97.3)

EARTHQUAKE SEARCH RESULTS

Page 4

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.4000	116.5670	02/04/1953	43616.0	0.0	4.30	0.019	IV	60.6(97.6)
DMG	33.2670	116.4000	06/06/1940	2321 4.0	0.0	4.00	0.017	IV	61.0(98.2)
DMG	33.4830	116.7000	12/28/1948	125341.0	0.0	4.00	0.017	IV	61.0(98.2)
GSP	32.8220	116.1750	05/24/1992	122225.8	12.0	4.10	0.017	IV	61.3(98.7)
DMG	33.0330	116.2330	09/20/1961	5 410.0	0.0	4.00	0.016	IV	61.5(98.9)

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DMG |33.4170|116.5670|12/22/1950| 2 536.0|  0.0| 4.00| 0.016 | IV | 61.5(
99.0)
DMG |33.0190|116.2250|08/20/1969|152957.2|  0.6| 4.00| 0.016 | IV | 61.6(
99.1)
DMG |33.0500|116.2380|08/23/1961| 1 047.8| 11.9| 4.70| 0.024 | IV | 61.6(
99.2)
DMG |33.0210|116.2230|01/13/1963| 23938.9| 13.0| 4.20| 0.018 | IV | 61.7(
99.3)
DMG |32.5330|116.1830|11/12/1939|1849 0.0|  0.0| 4.00| 0.016 | IV | 61.8(
99.4)
DMG |32.5330|116.1830|02/22/1939|1030 0.0|  0.0| 4.00| 0.016 | IV | 61.8(
99.4)
GSP |32.7600|118.2880|08/16/2001|180433.8|  6.0| 4.40| 0.020 | IV | 61.9(
99.6)
GSP |32.5880|116.1670|03/13/1999|133120.4|  6.0| 4.30| 0.019 | IV | 62.0(
99.8)
DMG |33.4670|116.6330|02/20/1934|1035 0.0|  0.0| 4.00| 0.016 | IV | 62.1(
99.9)
GSP |32.5920|116.1650|02/19/1999|030832.2|  3.0| 4.20| 0.018 | IV |
62.1(100.0)
GSP |32.5930|116.1630|04/07/1999|062640.1|  8.0| 4.00| 0.016 | IV |
62.2(100.1)
GSP |32.5870|116.1630|04/18/1999|155301.1|  7.0| 4.20| 0.018 | IV |
62.3(100.2)
DMG |33.3330|116.4330|02/12/1954| 94428.0|  0.0| 4.50| 0.021 | IV |
62.5(100.6)
DMG |31.8110|117.1310|12/22/1964|205433.2|  2.3| 5.60| 0.038 |  V |
62.7(100.9)
DMG |33.2000|116.3000|05/12/1930| 414 0.0|  0.0| 4.00| 0.016 | IV |
63.1(101.5)
DMG |33.4000|116.5000|10/11/1918| 4 0 0.0|  0.0| 4.00| 0.016 | IV |
63.1(101.6)
PAS |33.0580|116.2110|03/22/1982| 85328.6|  4.6| 4.50| 0.021 | IV |
63.3(101.8)
DMG |33.4670|116.5830|01/04/1938| 029 0.0|  0.0| 4.50| 0.021 | IV |
63.7(102.6)
DMG |33.4670|116.5830|03/27/1937| 528 0.0|  0.0| 4.00| 0.016 | IV |
63.7(102.6)
DMG |33.4670|116.5830|03/26/1937|2124 0.0|  0.0| 4.00| 0.016 | IV |
63.7(102.6)
DMG |33.4670|116.5830|03/27/1937| 742 0.0|  0.0| 4.50| 0.021 | IV |
63.7(102.6)
DMG |33.3680|116.4440|03/25/1937|232026.7| 10.0| 4.00| 0.016 | IV |
63.7(102.6)
DMG |33.2830|116.3500|04/13/1949| 75336.0|  0.0| 4.10| 0.017 | IV |
64.0(102.9)
DMG |32.9500|116.1500|10/25/1942|185939.0|  0.0| 4.00| 0.016 | IV |
64.3(103.5)
GSP |32.7340|118.3340|08/16/2001|220628.1| 25.0| 4.20| 0.018 | IV |
64.5(103.8)
DMG |33.4200|116.4900|03/29/1937|17 316.8| 10.0| 4.00| 0.016 | IV |
64.5(103.9)
DMG |33.5080|116.6310|08/11/1967| 05711.4| 10.7| 4.10| 0.017 | IV |
64.5(103.9)
PAS |31.7940|117.4100|03/31/1979|213656.7|  5.0| 4.70| 0.023 | IV |
64.6(103.9)
PDG |33.4200|116.4890|07/07/2010|235333.5| 14.0| 5.50| 0.035 |  V |
64.6(103.9)
USG |32.7700|118.3340|06/16/1985|1027 0.7|  5.0| 4.14| 0.017 | IV |
64.6(104.0)
GSP |33.3790|116.4350|01/02/2002|121128.7| 12.0| 4.20| 0.018 | IV |
64.6(104.0)
DMG |32.8940|116.1190|09/16/1961|194939.4| 18.5| 4.40| 0.019 | IV |
65.3(105.0)
PDP |33.3830|116.4160|06/13/2010|030857.1| 12.0| 4.90| 0.025 |  V |
65.6(105.6)
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DMG |32.8170|118.3500|12/26/1951| 04654.0|  0.0| 5.90| 0.042 | VI |
65.8(105.9)
DMG |32.6000|116.1000|12/24/1941| 73012.0|  0.0| 4.50| 0.020 | IV |
65.8(105.9)
DMG |33.2910|116.3170|03/19/1966|142156.0| 10.9| 4.00| 0.016 | IV |
65.8(105.9)
DMG |33.5060|116.5850|05/21/1967|144234.4| 19.4| 4.70| 0.023 | IV |
65.9(106.0)
DMG |33.5330|116.6330|09/21/1942| 7 754.0|  0.0| 4.00| 0.016 | IV |
66.0(106.1)
DMG |33.2350|116.2660|04/09/1968| 93833.0|  5.2| 4.00| 0.016 | IV |
66.0(106.3)
DMG |33.2000|116.2330|04/05/1942| 92039.0|  0.0| 4.00| 0.015 | IV |
66.4(106.9)
PAS |33.5580|116.6670|06/15/1982|234921.3| 12.2| 4.80| 0.024 | IV |
66.5(107.0)
DMG |33.5450|117.8070|10/27/1969|1316 2.3|  6.5| 4.50| 0.020 | IV |
66.5(107.0)
DMG |32.0250|116.4240|08/20/1961| 42843.0| 12.6| 4.60| 0.021 | IV |
66.7(107.3)
DMG |32.3340|116.1700|08/24/1963|204749.5|  4.8| 4.10| 0.016 | IV |
66.7(107.4)
DMG |33.3430|116.3460|04/28/1969|232042.9| 20.0| 5.80| 0.040 |  V |
66.8(107.4)
PDP |33.3920|116.3950|06/13/2010|030920.4|  5.0| 4.20| 0.017 | IV |
66.9(107.7)
DMG |33.3000|116.3000|01/04/1940| 8 711.0|  0.0| 4.00| 0.015 | IV |
67.0(107.8)
PAS |33.4840|116.5130|08/11/1976|152455.5| 15.4| 4.30| 0.018 | IV |
67.1(108.0)
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                     EARTHQUAKE SEARCH RESULTS
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Page  5
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    |       |        |          |  TIME   |     |     | SITE  |SITE|  APPROX.
FILE|  LAT. |  LONG. |   DATE   |  (UTC)  |DEPTH|QUAKE|  ACC. | MM |  DISTANCE
CODE| NORTH |  WEST  |          | H M Sec| (km)| MAG.|   g   |INT.|  mi  [km]
----+-------+--------+----------+--------+-----+-----+-------+----+-----------
-
GSP |33.4430|116.4540|05/01/2008|035535.0| 10.0| 4.20| 0.017 | IV |
67.1(108.0)
DMG |33.4170|116.4170|01/02/1943|141118.0|  0.0| 4.50| 0.020 | IV |
67.2(108.2)
GSP |33.4470|116.4550|05/09/2008|223807.9|  2.0| 4.10| 0.016 | IV |
67.3(108.3)
DMG |33.3150|116.3050|04/09/1968|1831 3.8| 12.6| 4.70| 0.022 | IV |
67.4(108.4)
DMG |33.4830|116.5000|02/15/1951|104759.0|  0.0| 4.80| 0.023 | IV |
67.5(108.6)
DMG |33.4830|116.5000|02/15/1951|104957.0|  0.0| 4.80| 0.023 | IV |
67.5(108.6)
GSP |32.7090|116.0610|09/14/2006|001106.1|  5.0| 4.00| 0.015 | IV |
67.5(108.7)
DMG |33.4260|116.4210|03/25/1937|20 4 8.3| 10.0| 4.00| 0.015 | IV |
67.5(108.7)
PAS |33.5200|116.5580|08/02/1975| 014 7.7| 13.4| 4.70| 0.022 | IV |
67.6(108.7)
GSP |33.5290|116.5720|06/12/2005|154146.5| 14.0| 5.20| 0.029 |  V |
67.6(108.8)
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DMG |31.8590|116.6570|11/15/1972|205117.4|  8.0| 4.00| 0.015 | IV |
67.8(109.0)
GSP |32.6920|116.0560|04/15/2007|225726.0|  8.0| 4.30| 0.018 | IV |
67.8(109.2)
PAS |32.2020|116.2290|12/12/1979|213741.0|  5.5| 4.00| 0.015 | IV |
67.9(109.3)
DMG |32.7860|116.0550|07/04/1938|215945.3| 10.0| 4.00| 0.015 | IV |
68.0(109.5)
PAS |33.5010|116.5130|02/25/1980|104738.5| 13.6| 5.50| 0.033 |  V |
68.0(109.5)
DMG |32.7960|116.0550|11/30/1965| 84325.1| 16.4| 4.00| 0.015 | IV |
68.1(109.5)
DMG |33.2000|116.2000|05/28/1892|1115 0.0|  0.0| 6.30| 0.051 | VI |
68.1(109.5)
DMG |33.5340|116.5610|09/23/1956|112441.9| 12.2| 4.30| 0.018 | IV |
68.3(109.8)
DMG |33.7000|117.1000|06/11/1902| 245 0.0|  0.0| 4.50| 0.020 | IV |
68.3(110.0)
GSP |32.6760|116.0480|11/03/2006|155643.1| 13.0| 4.10| 0.016 | IV |
68.3(110.0)
DMG |33.3330|116.3000|08/06/1933| 332 0.0|  0.0| 4.70| 0.022 | IV |
68.4(110.0)
DMG |33.3330|116.3000|08/05/1933|2331 0.0|  0.0| 4.40| 0.019 | IV |
68.4(110.0)
GSP |33.5080|116.5140|10/31/2001|075616.6| 15.0| 5.10| 0.027 |  V |
68.4(110.0)
DMG |33.5000|116.5000|09/30/1916| 211 0.0|  0.0| 5.00| 0.026 |  V |
68.4(110.1)
DMG |33.2790|116.2490|01/07/1966|191023.0| -1.7| 4.00| 0.015 | IV |
68.5(110.3)
PAS |33.4580|116.4340|02/12/1979| 44842.3|  3.9| 4.20| 0.017 | IV |
68.6(110.5)
DMG |33.1670|116.1670|11/16/1937|1057 0.0|  0.0| 4.00| 0.015 | IV |
68.7(110.5)
DMG |33.7000|117.4000|05/15/1910|1547 0.0|  0.0| 6.00| 0.043 | VI |
68.7(110.6)
DMG |33.7000|117.4000|05/13/1910| 620 0.0|  0.0| 5.00| 0.026 |  V |
68.7(110.6)
DMG |33.7000|117.4000|04/11/1910| 757 0.0|  0.0| 5.00| 0.026 |  V |
68.7(110.6)
GSP |33.2240|116.2030|05/21/2005|003932.7| 15.0| 4.10| 0.016 | IV |
68.7(110.6)
PAS |32.0580|116.3370|01/29/1980|1949 3.3|  5.0| 4.40| 0.019 | IV |
68.8(110.7)
DMG |33.0020|116.0850|11/21/1964|172559.7|  4.1| 4.20| 0.017 | IV |
68.9(110.9)
GSP |33.3990|116.3540|07/26/1997|031456.0| 11.0| 4.80| 0.023 | IV |
69.0(111.0)
DMG |33.5000|116.4830|02/23/1941|183614.0|  0.0| 4.50| 0.020 | IV |
69.0(111.1)
DMG |33.4670|116.4330|05/12/1939|1925 2.2|  0.0| 4.50| 0.020 | IV |
69.1(111.3)
DMG |32.7170|116.0330|06/01/1959|163536.0|  0.0| 4.60| 0.021 | IV |
69.1(111.3)
DMG |33.6820|117.5530|07/05/1938|18 655.7| 10.0| 4.50| 0.019 | IV |
69.4(111.7)
DMG |32.2000|116.2000|03/03/1957|11 6 3.0|  0.0| 4.40| 0.018 | IV |
69.4(111.7)
GSP |33.6320|116.7190|07/19/1999|220927.5| 14.0| 4.20| 0.017 | IV |
69.7(112.1)
PAS |33.4830|116.4380|07/02/1988| 02658.2| 12.6| 4.00| 0.015 | IV |
69.8(112.3)
DMG |33.2370|116.1900|04/14/1968|125558.7| 10.8| 4.30| 0.017 | IV |
69.8(112.4)
DMG |33.1170|116.1170|06/18/1943|161546.0|  0.0| 4.50| 0.019 | IV |
69.9(112.4)
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DMG	31.8670	116.5710	02/27/1937	12918.4	10.0	5.00	0.025	V	69.9(112.4)
DMG	33.6990	117.5110	05/31/1938	83455.4	10.0	5.50	0.033	V	69.9(112.5)
DMG	33.3670	118.1500	04/16/1942	72833.0	0.0	4.00	0.015	IV	70.0(112.6)
DMG	33.6500	116.7500	09/05/1950	191956.0	0.0	4.80	0.023	IV	70.1(112.8)
GSP	33.6500	116.7400	12/02/1989	231647.8	14.0	4.20	0.016	IV	70.3(113.1)
DMG	31.9940	116.3700	08/20/1961	125245.9	8.2	4.00	0.015	IV	70.4(113.3)
DMG	32.1020	116.2580	05/07/1966	32657.4	12.7	4.50	0.019	IV	70.4(113.3)
DMG	33.7380	117.1870	04/27/1962	91232.1	5.7	4.10	0.016	IV	70.6(113.6)
GSP	33.5100	116.4500	02/18/1990	155259.9	9.0	4.10	0.016	IV	70.8(113.9)
DMG	32.0280	116.3230	09/20/1961	1036 2.6	11.4	4.20	0.016	IV	70.8(113.9)

EARTHQUAKE SEARCH RESULTS

Page 6

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.7100	116.9250	09/23/1963	144152.6	16.5	5.00	0.025	V	70.8(113.9)
DMG	33.3100	116.2240	05/22/1968	132655.4	7.5	4.40	0.018	IV	70.9(114.2)
DMG	33.7170	117.5070	08/06/1938	22 056.0	10.0	4.00	0.015	IV	71.1(114.3)
GSP	33.2110	116.1480	02/09/2007	033344.1	12.0	4.20	0.016	IV	71.1(114.4)
DMG	33.5010	116.4290	02/23/1971	0 739.2	8.0	4.20	0.016	IV	71.1(114.4)
DMG	32.7500	116.0000	02/19/1919	458 0.0	0.0	4.50	0.019	IV	71.1(114.4)
PAS	33.4710	118.0610	02/27/1984	101815.0	6.0	4.00	0.015	IV	71.2(114.6)
DMG	33.7170	117.5170	06/19/1935	1117 0.0	0.0	4.00	0.015	IV	71.2(114.6)
DMG	32.0320	116.3090	08/27/1963	121 1.8	14.6	4.00	0.015	IV	71.2(114.6)
PAS	33.4600	116.3700	09/07/1984	175730.3	15.2	4.10	0.015	IV	71.3(114.7)
DMG	33.1670	116.1170	04/09/1968	233 9.0	0.0	4.30	0.017	IV	71.3(114.7)
DMG	33.1670	116.1170	04/09/1968	23930.0	0.0	4.40	0.018	IV	71.3(114.7)
DMG	33.3330	116.2360	10/05/1962	1529 2.6	13.9	4.10	0.015	IV	71.3(114.7)
DMG	33.4000	116.3000	02/09/1890	12 6 0.0	0.0	6.30	0.049	VI	71.3(114.8)
DMG	33.1900	116.1290	04/09/1968	22859.1	11.1	6.40	0.052	VI	71.4(114.8)

DMG |33.3330|116.2330|06/09/1942| 5 633.0| 0.0| 4.00| 0.015 | IV |
71.4(115.0)
DMG |33.7250|117.4980|01/03/1956| 02548.9| 13.7| 4.70| 0.021 | IV |
71.5(115.0)
PAS |33.7010|116.8370|08/22/1979| 2 136.3| 5.0| 4.10| 0.015 | IV |
71.6(115.2)
GSP |33.7330|117.4660|09/02/2007|172914.0| 2.0| 4.70| 0.021 | IV |
71.6(115.3)
DMG |33.7330|117.4670|10/26/1954|162226.0| 0.0| 4.10| 0.015 | IV |
71.6(115.3)
DMG |33.2830|116.1830|03/20/1954| 41919.0| 0.0| 4.90| 0.023 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954| 95748.0| 0.0| 4.00| 0.015 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954|101957.0| 0.0| 4.50| 0.019 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954|143750.0| 0.0| 4.00| 0.015 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/20/1954| 6 353.0| 0.0| 4.30| 0.017 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954|14 057.0| 0.0| 4.10| 0.015 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/23/1954| 41450.0| 0.0| 5.10| 0.026 | V |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954| 957 7.0| 0.0| 4.60| 0.020 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954|102117.0| 0.0| 5.50| 0.032 | V |
71.9(115.6)
DMG |33.2830|116.1830|10/26/1944|225410.0| 0.0| 4.20| 0.016 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954| 95556.0| 0.0| 5.00| 0.025 | V |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954|13 8 4.0| 0.0| 4.30| 0.017 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954|10 139.0| 0.0| 4.20| 0.016 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954|102610.0| 0.0| 4.00| 0.015 | IV |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954| 95429.0| 0.0| 6.20| 0.046 | VI |
71.9(115.6)
DMG |33.2830|116.1830|03/19/1954|101522.0| 0.0| 4.50| 0.019 | IV |
71.9(115.6)
DMG |33.2830|116.1830|04/04/1954| 42920.0| 0.0| 4.10| 0.015 | IV |
71.9(115.6)
PDP |32.8640|115.9970|11/04/2010|193959.6| 13.0| 4.60| 0.020 | IV |
71.9(115.7)
DMG |33.2170|116.1330|08/15/1945|175624.0| 0.0| 5.70| 0.036 | V |
72.0(115.9)
DMG |33.1330|116.0830|10/16/1940|175213.0| 0.0| 4.00| 0.015 | IV |
72.1(116.0)
DMG |33.1330|116.0830|10/06/1940|181953.0| 0.0| 4.00| 0.015 | IV |
72.1(116.0)
DMG |33.1330|116.0830|05/07/1936|1147 0.0| 0.0| 4.50| 0.019 | IV |
72.1(116.0)
DMG |33.1330|116.0830|02/28/1940|1728 7.0| 0.0| 4.50| 0.019 | IV |
72.1(116.0)
PDP |32.7270|115.9800|07/24/2010|022941.0| 3.0| 4.00| 0.014 | IV |
72.2(116.2)
DMG |33.2000|116.1170|12/28/1950| 52211.0| 0.0| 4.20| 0.016 | IV |
72.3(116.3)
DMG |33.1030|116.0610|04/09/1968|111754.5| 4.8| 4.00| 0.014 | IV |
72.5(116.7)
GSP |32.8150|115.9800|11/29/2006|211055.0| 0.0| 4.00| 0.014 | IV |
72.5(116.7)
DMG |33.7500|117.0000|04/21/1918|223225.0| 0.0| 6.80| 0.063 | VI |
72.6(116.8)

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DMG  |33.7500|117.0000|06/06/1918|2232 0.0|  0.0| 5.00| 0.024 |  V |
72.6(116.8)
DMG  |31.7000|116.9000|11/21/1952|192618.0|  0.0| 4.10| 0.015 | IV |
72.6(116.9)
DMG  |33.7480|117.4790|06/22/1971|104119.0|  8.0| 4.20| 0.016 | IV |
72.8(117.1)
PAS  |33.1360|116.0710|02/29/1984| 2 731.7|  6.6| 4.30| 0.017 | IV |
72.8(117.2)
DMG  |32.9670|116.0000|10/21/1942|162213.0|  0.0| 6.50| 0.054 | VI |
73.1(117.6)
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                      EARTHQUAKE SEARCH RESULTS
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Page  7
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    |       |        |          |  TIME   |     |     | SITE  |SITE|  APPROX.
FILE|  LAT. | LONG.  |   DATE   |  (UTC)  |DEPTH|QUAKE|  ACC. | MM |  DISTANCE
CODE| NORTH |  WEST  |          | H M Sec | (km)| MAG.|   g   |INT.|  mi   [km]
----+-------+--------+----------+---------+-----+-----+-------+----+-----------
-
DMG  |32.9670|116.0000|08/20/1944|113310.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|11/16/1943|18 9 9.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|11/03/1942| 5 629.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|10/21/1942|162654.0|  0.0| 5.00| 0.024 |  V |
73.1(117.6)
DMG  |32.9670|116.0000|10/26/1942| 434 4.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|11/02/1943|165716.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|02/24/1943| 15831.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|01/08/1943| 024 3.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|11/02/1943|175041.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|11/12/1942| 0 737.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|10/29/1942|173552.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|11/02/1943|164759.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|10/29/1942|162157.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|11/03/1942|101834.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|10/21/1942|163439.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|04/27/1943| 32833.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|10/30/1942| 53545.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|03/07/1943|205631.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|11/02/1943|1753 5.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG  |32.9670|116.0000|11/02/1942|125942.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
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DMG |32.9670|116.0000|04/07/1943| 34614.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|11/22/1942| 63951.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|10/29/1942|1556 0.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
DMG |32.9670|116.0000|11/02/1943|18 134.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|10/21/1942|162519.0|  0.0| 5.00| 0.024 |  V |
73.1(117.6)
DMG |32.9670|116.0000|03/26/1943| 62957.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|10/21/1942|225031.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|11/07/1942| 439 6.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|10/21/1942|1638 6.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
DMG |32.9670|116.0000|10/22/1942|181326.0|  0.0| 5.00| 0.024 |  V |
73.1(117.6)
DMG |32.9670|116.0000|08/17/1943|155058.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|10/21/1942|191028.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
DMG |32.9670|116.0000|10/22/1942|113951.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|10/22/1942|125553.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|04/30/1943|155256.0|  0.0| 4.00| 0.014 | IV |
73.1(117.6)
DMG |32.9670|116.0000|10/21/1942|214928.0|  0.0| 4.50| 0.019 | IV |
73.1(117.6)
PDP |32.7200|115.9630|06/24/2010|170736.3|  1.0| 4.00| 0.014 | IV |
73.2(117.8)
PDP |32.7140|115.9620|05/22/2010|045318.8| 10.0| 4.00| 0.014 | IV |
73.3(117.9)
GSP |33.2250|116.1130|09/21/2002|212616.6| 14.0| 4.30| 0.017 | IV |
73.3(118.0)
DMG |33.5670|117.9830|07/07/1937|1112 0.0|  0.0| 4.00| 0.014 | IV |
73.4(118.1)
DMG |33.5670|117.9830|04/17/1934|1833 0.0|  0.0| 4.00| 0.014 | IV |
73.4(118.1)
DMG |33.4080|116.2610|03/25/1937|1649 1.8| 10.0| 6.00| 0.041 |  V |
73.4(118.1)
PAS |33.5080|118.0710|11/20/1988| 53928.7|  6.0| 4.50| 0.019 | IV |
73.5(118.2)
DMG |33.0000|116.0000|05/18/1920| 625 0.0|  0.0| 4.50| 0.019 | IV |
73.6(118.5)
PDP |32.7090|115.9560|06/15/2010|053416.8|  5.0| 4.30| 0.017 | IV |
73.6(118.5)
DMG |33.0500|116.0170|08/26/1955| 52322.0|  0.0| 4.30| 0.017 | IV |
73.7(118.5)
GSP |33.6200|117.9000|04/07/1989|200730.2| 13.0| 4.50| 0.019 | IV |
73.7(118.6)
DMG |33.5750|117.9830|03/11/1933| 518 4.0|  0.0| 5.20| 0.027 |  V |
73.8(118.8)
DMG |33.1040|116.0360|04/09/1968| 34810.3|  4.8| 4.70| 0.021 | IV |
73.9(118.9)
PDP |32.7000|115.9500|06/15/2010|045945.5| 10.0| 4.60| 0.020 | IV |
74.0(119.1)
DMG |33.1130|116.0370|04/09/1968| 3 353.5|  5.0| 5.20| 0.027 |  V |
74.0(119.1)
DMG |33.0400|116.0050|05/11/1968| 810 4.0|  8.8| 4.20| 0.016 | IV |
74.1(119.3)
DMG |33.3490|116.1880|05/19/1969|144033.0|  8.6| 4.50| 0.018 | IV |
74.2(119.4)
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EARTHQUAKE SEARCH RESULTS

Page 8

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	32.9830	115.9830	05/23/1942	154729.0	0.0	5.00	0.024	V	74.3(119.5)
GSP	33.2240	116.0880	07/10/1998	212913.8	12.0	4.10	0.015	IV	74.5(120.0)
DMG	31.9670	116.3000	05/31/1961	72339.0	0.0	4.00	0.014	IV	74.6(120.1)
DMG	32.3830	116.0000	01/03/1956	1424 1.0	0.0	4.70	0.020	IV	74.8(120.4)
DMG	33.2330	116.0860	08/26/1965	133814.0	-2.0	4.50	0.018	IV	74.9(120.6)
DMG	33.5170	118.1000	03/22/1941	82240.0	0.0	4.00	0.014	IV	75.0(120.8)
DMG	33.0560	115.9930	04/09/1968	35836.0	7.9	4.30	0.016	IV	75.1(120.9)
DMG	33.0480	115.9860	04/16/1968	33029.9	8.3	4.80	0.021	IV	75.3(121.2)
GSP	32.7270	115.9260	01/13/1999	132056.0	2.0	4.40	0.017	IV	75.4(121.3)
DMG	33.2670	116.1000	01/04/1954	233152.0	0.0	4.20	0.016	IV	75.4(121.3)
DMG	33.1070	116.0070	04/09/1968	8 038.5	4.0	4.00	0.014	IV	75.5(121.5)
PDP	32.6790	115.9240	06/15/2010	043607.6	12.0	4.10	0.015	IV	75.5(121.6)
DMG	33.6170	117.9670	03/11/1933	154 7.8	0.0	6.30	0.047	VI	75.6(121.7)
PDG	32.7000	115.9210	06/15/2010	042658.5	5.0	5.80	0.036	V	75.7(121.8)
DMG	33.5610	118.0580	01/15/1937	183547.0	10.0	4.00	0.014	IV	75.7(121.9)
DMG	33.6000	118.0000	03/11/1933	217 0.0	0.0	4.50	0.018	IV	75.8(122.0)
DMG	33.6000	118.0000	03/11/1933	231 0.0	0.0	4.40	0.017	IV	75.8(122.0)
DMG	33.8000	117.0000	12/25/1899	1225 0.0	0.0	6.40	0.049	VI	76.0(122.3)
PDP	32.6810	115.9130	06/15/2010	081651.4	5.0	4.00	0.014	IV	76.2(122.6)
DMG	32.7920	115.9140	10/12/1936	135631.8	10.0	4.00	0.014	IV	76.2(122.6)
DMG	33.0830	115.9830	03/02/1934	2130 0.0	0.0	4.50	0.018	IV	76.2(122.7)
DMG	33.0830	115.9830	12/10/1938	312 0.0	0.0	4.00	0.014	IV	76.2(122.7)
DMG	33.0830	115.9830	07/14/1940	0 144.0	0.0	4.00	0.014	IV	76.2(122.7)
DMG	33.0830	115.9830	07/13/1940	163923.0	0.0	4.00	0.014	IV	76.2(122.7)
DMG	33.0830	115.9830	12/15/1937	958 0.0	0.0	4.00	0.014	IV	76.2(122.7)

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PDP |32.6880|115.9110|06/15/2010|081447.0|  3.0| 4.20| 0.015  | IV |
76.3(122.7)
DMG |33.6000|118.0170|12/25/1935|1715 0.0|  0.0| 4.50| 0.018  | IV |
76.4(122.9)
DMG |32.7640|115.9080|10/12/1936|17 750.1| 10.0| 4.00| 0.014  | IV |
76.5(123.0)
PDP |32.7320|115.9070|04/07/2010|052125.9|  0.0| 4.50| 0.018  | IV |
76.5(123.1)
DMG |33.2780|116.0850|08/26/1965|125351.0|  1.0| 4.20| 0.015  | IV |
76.5(123.1)
DMG |32.0500|116.1670|02/06/1958|111530.0|  0.0| 4.50| 0.018  | IV |
76.8(123.7)
MGI |33.8000|116.9000|04/23/1918|1415 0.0|  0.0| 4.00| 0.014  | IV |
77.2(124.2)
MGI |33.8000|116.9000|12/18/1920|1726 0.0|  0.0| 4.00| 0.014  | IV |
77.2(124.2)
MGI |33.8000|116.9000|04/29/1918| 2 0 0.0|  0.0| 4.00| 0.014  | IV |
77.2(124.2)
MGI |33.8000|116.9000|06/14/1918|1024 0.0|  0.0| 4.00| 0.014  | IV |
77.2(124.2)
PDP |32.7050|115.8950|04/07/2010|052141.9|  5.0| 4.40| 0.017  | IV |
77.2(124.2)
DMG |33.0390|115.9490|05/06/1968|173147.6|  6.7| 4.00| 0.014  | IV |
77.2(124.2)
DMG |33.6170|118.0170|03/14/1933|19 150.0|  0.0| 5.10| 0.025  |  V |
77.3(124.4)
DMG |33.6170|118.0170|10/02/1933|1326 1.0|  0.0| 4.00| 0.014  | III|
77.3(124.4)
DMG |33.6170|118.0170|03/15/1933|111332.0|  0.0| 4.90| 0.022  | IV |
77.3(124.4)
GSP |33.2500|116.0500|08/31/1990|033800.0|  8.0| 4.20| 0.015  | IV |
77.3(124.4)
DMG |32.0500|116.1500|03/01/1945|111958.0|  0.0| 4.40| 0.017  | IV |
77.6(124.9)
DMG |33.2400|116.0360|04/28/1961| 63021.2| -1.2| 4.20| 0.015  | IV |
77.7(125.1)
GSP |33.2410|116.0360|06/30/2006|002806.6|  3.0| 4.30| 0.016  | IV |
77.8(125.1)
DMG |33.3330|116.1000|06/12/1943|192141.0|  0.0| 4.00| 0.014  | III|
77.8(125.1)
DMG |33.8330|117.4000|06/05/1940| 82727.0|  0.0| 4.00| 0.014  | III|
77.8(125.2)
DMG |33.6170|118.0330|05/21/1938| 944 0.0|  0.0| 4.00| 0.014  | III|
77.9(125.3)
DMG |32.9550|115.9110|04/10/1967| 04717.3|  4.4| 4.00| 0.014  | III|
77.9(125.4)
PDP |32.7060|115.8820|05/06/2010|090141.0|  2.0| 4.20| 0.015  | IV |
77.9(125.4)
DMG |33.8000|117.6000|09/16/1903|1210 0.0|  0.0| 4.00| 0.014  | III|
78.0(125.5)
MGI |33.8000|117.6000|04/22/1918|2115 0.0|  0.0| 5.00| 0.023  | IV |
78.0(125.5)
PAS |31.8640|116.3420|12/09/1984| 8 3 9.0|  6.0| 4.30| 0.016  | IV |
78.1(125.7)
DMG |31.9670|116.2170|02/18/1955|152728.0|  0.0| 4.70| 0.020  | IV |
78.2(125.9)
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EARTHQUAKE SEARCH RESULTS

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	32.1170	116.0830	07/09/1951	9 622.0	0.0	4.20	0.015	IV	78.3(126.0)
DMG	33.1670	115.9830	07/21/1940	836 3.0	0.0	4.40	0.017	IV	78.3(126.1)
DMG	33.2000	116.0000	08/15/1951	1227 9.0	0.0	4.00	0.014	III	78.4(126.1)
DMG	31.8990	116.2900	06/04/1964	10 341.3	-0.5	4.10	0.014	IV	78.4(126.2)
DMG	32.5000	115.9000	06/25/1941	1715 0.0	0.0	4.00	0.014	III	78.4(126.2)
MGI	33.7000	117.9000	07/08/1902	945 0.0	0.0	4.00	0.014	III	78.4(126.2)
DMG	33.6590	117.9810	10/20/1961	20 714.5	6.1	4.00	0.014	III	78.5(126.3)
DMG	32.5000	118.5500	02/24/1948	81510.0	0.0	5.30	0.027	V	78.6(126.5)
DMG	33.6540	117.9940	10/20/1961	194950.5	4.6	4.30	0.016	IV	78.6(126.5)
DMG	33.6650	117.9790	10/20/1961	214240.7	7.2	4.00	0.014	III	78.8(126.7)
DMG	33.3170	116.0670	09/04/1944	125528.0	0.0	4.10	0.014	IV	78.8(126.8)
DMG	31.7500	116.5000	05/01/1935	352 0.0	0.0	4.00	0.014	III	78.9(127.0)
DMG	31.7500	116.5000	04/29/1935	2149 0.0	0.0	4.00	0.014	III	78.9(127.0)
DMG	31.7500	116.5000	05/01/1935	1825 0.0	0.0	4.00	0.014	III	78.9(127.0)
DMG	31.7500	116.5000	04/29/1935	20 8 0.0	0.0	5.00	0.023	IV	78.9(127.0)
DMG	31.7500	116.5000	05/01/1935	0 7 0.0	0.0	4.50	0.018	IV	78.9(127.0)
DMG	31.7500	116.5000	05/01/1935	655 0.0	0.0	4.00	0.014	III	78.9(127.0)
DMG	31.7500	116.5000	05/01/1935	1823 0.0	0.0	4.00	0.014	III	78.9(127.0)
PDP	32.6710	115.8640	05/20/2010	092626.0	4.0	4.40	0.017	IV	79.0(127.2)
DMG	33.2310	116.0040	05/26/1957	155933.6	15.1	5.00	0.023	IV	79.1(127.3)
DMG	33.2830	116.0330	03/16/1949	18 027.0	0.0	4.00	0.013	III	79.3(127.6)
DMG	33.2830	116.0330	03/29/1951	233929.0	0.0	4.40	0.017	IV	79.3(127.6)
GSP	31.9390	116.2220	02/02/2005	131739.7	6.0	4.10	0.014	IV	79.3(127.6)
PDP	32.6850	115.8570	04/19/2010	042608.5	10.0	4.20	0.015	IV	79.4(127.8)
DMG	33.0360	115.9030	10/05/1964	121 9.5	-2.0	4.10	0.014	IV	79.7(128.2)
DMG	32.8850	115.8650	10/27/1963	145822.4	-2.0	4.40	0.017	IV	79.7(128.3)
DMG	32.7000	115.8500	11/01/1941	142434.0	0.0	4.00	0.013	III	79.8(128.4)
DMG	33.6800	117.9930	11/20/1961	85334.7	4.4	4.00	0.013	III	80.1(128.8)
DMG	31.8330	116.3330	06/27/1932	94643.0	0.0	4.00	0.013	III	80.1(128.9)
DMG	31.8330	116.3330	06/27/1932	1016 9.0	0.0	4.00	0.013	III	80.1(128.9)

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DMG |31.8330|116.3330|06/26/1932|103222.0|  0.0| 4.00| 0.013 | III|
80.1(128.9)
DMG |31.8330|116.3330|06/27/1932|10 720.0|  0.0| 4.50| 0.017 | IV |
80.1(128.9)
DMG |33.6710|118.0120|10/20/1961|223534.2|  5.6| 4.10| 0.014 | IV |
80.2(129.0)
DMG |32.1520|116.0200|02/16/1967|194127.4|  5.3| 4.00| 0.013 | III|
80.2(129.1)
DMG |33.2880|116.0180|07/27/1965|14 441.4|  0.6| 4.30| 0.016 | IV |
80.2(129.1)
GSP |33.2100|115.9700|07/19/1991|024136.8|  3.0| 4.00| 0.013 | III|
80.2(129.1)
DMG |33.7670|117.8170|08/22/1936| 521 0.0|  0.0| 4.00| 0.013 | III|
80.3(129.2)
USG |32.6450|115.8440|02/28/1988| 5 259.5|  7.1| 4.21| 0.015 | IV |
80.3(129.2)
DMG |33.5000|118.2500|06/18/1920|10 8 0.0|  0.0| 4.50| 0.017 | IV |
80.4(129.3)
PAS |33.5380|118.2070|05/25/1982|134430.3| 13.7| 4.10| 0.014 | IV |
80.4(129.3)
PAS |33.0290|115.8880|11/26/1987|1739 2.0|  1.8| 4.30| 0.016 | IV |
80.4(129.4)
GSP |33.8060|117.7150|03/07/2000|002028.2| 11.0| 4.00| 0.013 | III|
80.5(129.5)
PAS |33.0170|115.8810|11/24/1987|185040.3|  0.0| 4.30| 0.016 | IV |
80.6(129.7)
DMG |31.5700|117.4880|05/01/1939|202223.3| 10.0| 4.00| 0.013 | III|
80.6(129.7)
PAS |32.9930|115.8720|11/24/1987|133259.9|  0.0| 4.20| 0.015 | IV |
80.7(129.8)
PDP |32.6820|115.8350|04/27/2010|105535.4| 14.0| 4.70| 0.019 | IV |
80.7(129.9)
DMG |33.8000|116.7000|08/11/1911|2340 0.0|  0.0| 4.50| 0.017 | IV |
80.7(129.9)
DMG |33.8000|116.7000|08/11/1911|1820 0.0|  0.0| 4.00| 0.013 | III|
80.7(129.9)
DMG |33.0330|115.8830|08/27/1945|112520.0|  0.0| 4.00| 0.013 | III|
80.8(130.0)
PDP |32.6520|115.8350|05/19/2010|003900.0|  7.0| 5.10| 0.024 | IV |
80.8(130.0)
DMG |33.6170|118.1170|01/20/1934|2117 0.0|  0.0| 4.50| 0.017 | IV |
80.9(130.1)
PDP |32.6700|115.8300|12/18/2010|070442.9| 10.0| 4.20| 0.015 | IV |
81.0(130.4)
PDP |32.6510|115.8310|05/24/2010|052107.1| 13.0| 4.20| 0.015 | IV |
81.0(130.4)
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                              EARTHQUAKE SEARCH RESULTS
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Page  10
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    |       |        |          |  TIME    |     |     | SITE  |SITE|  APPROX.
FILE|  LAT. |  LONG. |   DATE   |  (UTC)   |DEPTH|QUAKE|  ACC. | MM |  DISTANCE
CODE| NORTH |  WEST  |          | H M Sec  | (km)| MAG.|   g   |INT.|  mi   [km]
----+-------+--------+----------+--------+-----+-----+-------+----+-----------
-
DMG |33.1000|115.9000|04/25/1957|22 5 0.0|  0.0| 4.20| 0.015 | IV |
81.2(130.6)
DMG |33.1000|115.9000|04/25/1957|2248 0.0|  0.0| 4.10| 0.014 | IV |
81.2(130.6)
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DMG |33.1000|115.9000|04/25/1957|2249 0.0|  0.0| 4.20| 0.015 | IV |
81.2(130.6)
PAS |32.9320|115.8470|09/05/1982| 52126.6|  4.2| 4.40| 0.016 | IV |
81.2(130.7)
PDP |32.6690|115.8260|05/09/2010|033344.1|  2.0| 4.10| 0.014 | IV |
81.3(130.8)
GSP |31.8280|116.3030|06/18/2008|065026.3|  0.0| 4.50| 0.017 | IV |
81.5(131.2)
DMG |31.5500|116.9830|09/05/1959| 91744.0|  0.0| 4.00| 0.013 | III|
81.7(131.5)
DMG |33.9000|117.2000|12/19/1880| 0 0 0.0|  0.0| 6.00| 0.038 |  V |
81.8(131.6)
DMG |31.7000|116.5000|01/12/1941|12 8 0.0|  0.0| 4.00| 0.013 | III|
81.9(131.7)
MGI |33.8000|117.8000|11/04/1926|2238 0.0|  0.0| 4.60| 0.018 | IV |
81.9(131.9)
MGI |33.8000|117.8000|11/09/1926|1535 0.0|  0.0| 4.60| 0.018 | IV |
81.9(131.9)
MGI |33.8000|117.8000|11/07/1926|1948 0.0|  0.0| 4.60| 0.018 | IV |
81.9(131.9)
MGI |33.8000|117.8000|05/20/1917| 945 0.0|  0.0| 4.00| 0.013 | III|
81.9(131.9)
MGI |33.8000|117.8000|05/19/1917| 719 0.0|  0.0| 4.00| 0.013 | III|
81.9(131.9)
MGI |33.8000|117.8000|05/19/1917| 635 0.0|  0.0| 4.00| 0.013 | III|
81.9(131.9)
MGI |33.8000|117.8000|11/10/1926|1723 0.0|  0.0| 4.60| 0.018 | IV |
81.9(131.9)
PAS |31.9430|116.1550|08/06/1980| 94622.7|  7.4| 4.00| 0.013 | III|
82.0(132.0)
DMG |32.0000|116.1000|12/15/1959|152419.0|  0.0| 4.30| 0.015 | IV |
82.1(132.1)
PDP |32.6680|115.8120|04/22/2010|142203.1|  3.0| 4.60| 0.018 | IV |
82.1(132.1)
DMG |31.9000|116.2000|08/21/1960|212732.0|  0.0| 4.00| 0.013 | III|
82.1(132.1)
DMG |33.0450|115.8630|12/17/1968|225351.2|  8.0| 4.70| 0.019 | IV |
82.1(132.1)
DMG |33.6830|118.0500|03/11/1933| 658 3.0|  0.0| 5.50| 0.029 |  V |
82.1(132.1)
DMG |33.6830|118.0500|03/11/1933|1250 0.0|  0.0| 4.40| 0.016 | IV |
82.1(132.1)
PDP |32.6750|115.8110|05/08/2010|184627.6| 14.0| 4.90| 0.021 | IV |
82.1(132.1)
DMG |31.7920|116.3340|06/12/1963|221516.9|  8.8| 4.80| 0.020 | IV |
82.2(132.3)
PDP |32.6630|115.8080|04/05/2010|111414.9| 13.0| 4.90| 0.021 | IV |
82.3(132.5)
PDP |32.6570|115.8080|04/22/2010|171213.0|  6.0| 4.60| 0.018 | IV |
82.3(132.5)
PDP |32.6750|115.8060|05/08/2010|183311.0|  6.0| 4.80| 0.020 | IV |
82.4(132.6)
PAS |31.9370|116.1520|11/07/1984|142326.8|  6.0| 4.00| 0.013 | III|
82.4(132.7)
PAS |31.7820|116.3400|07/24/1981|113846.2| 15.0| 4.60| 0.018 | IV |
82.6(132.9)
DMG |33.0530|115.8550|10/05/1964| 12455.5|  0.0| 4.40| 0.016 | IV |
82.7(133.1)
PDP |32.6340|115.8030|06/25/2010|063753.3|  4.0| 4.20| 0.014 | IV |
82.7(133.2)
PDP |32.6700|115.7990|04/13/2010|153632.2|  3.0| 4.00| 0.013 | III|
82.8(133.3)
PDP |32.6400|115.8010|04/05/2010|133305.4|  0.0| 5.10| 0.023 | IV |
82.8(133.3)
PDP |32.6350|115.8010|04/05/2010|100536.9| 14.0| 4.00| 0.013 | III|
82.9(133.3)
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PAS	33.0130	115.8390	11/24/1987	131556.5	2.4	6.00	0.037	V	82.9(133.4)
DMG	33.0000	115.8330	01/08/1946	185418.0	0.0	5.40	0.027	V	83.0(133.6)
DMG	32.1000	116.0000	02/03/1960	83718.0	0.0	4.50	0.017	IV	83.0(133.6)
DMG	33.8000	116.6000	09/10/1931	436 0.0	0.0	4.00	0.013	III	83.1(133.7)
PDP	32.6100	115.7980	04/05/2010	061700.1	10.0	4.20	0.014	IV	83.2(133.8)
PAS	33.1330	115.8730	11/24/1987	133355.8	0.0	4.00	0.013	III	83.4(134.2)
PDP	32.6180	115.7930	04/06/2010	100636.9	4.0	4.60	0.018	IV	83.4(134.2)
DMG	33.7000	118.0670	03/11/1933	85457.0	0.0	5.10	0.023	IV	83.6(134.6)
DMG	33.7000	118.0670	02/08/1940	165617.0	0.0	4.00	0.013	III	83.6(134.6)
DMG	33.7000	118.0670	07/20/1940	4 113.0	0.0	4.00	0.013	III	83.6(134.6)
DMG	33.7000	118.0670	03/11/1933	51022.0	0.0	5.10	0.023	IV	83.6(134.6)
PAS	32.9790	115.8160	11/25/1987	135410.0	0.6	4.20	0.014	IV	83.6(134.6)
DMG	31.7870	116.3000	01/18/1965	65719.5	6.3	4.00	0.013	III	83.8(134.8)
DMG	33.2670	115.9330	12/30/1960	214025.0	0.0	4.00	0.013	III	83.9(135.0)
PAS	32.9960	115.8160	11/27/1987	11010.5	6.0	4.70	0.019	IV	83.9(135.0)
PDP	32.6650	115.7800	04/14/2010	111959.6	1.0	4.10	0.014	III	83.9(135.1)
PDP	32.6340	115.7820	04/05/2010	031525.2	3.0	5.00	0.022	IV	84.0(135.1)
PDP	32.6110	115.7840	04/06/2010	010435.2	4.0	4.00	0.013	III	84.0(135.1)

EARTHQUAKE SEARCH RESULTS

Page 11

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
PDP	32.6200	115.7830	04/29/2010	175116.4	3.0	4.40	0.016	IV	84.0(135.1)
DMG	32.9310	115.7980	01/12/1972	1231 9.6	0.0	4.00	0.013	III	84.0(135.2)
PAS	32.9950	115.8130	12/02/1987	4 3 6.2	1.7	4.00	0.013	III	84.0(135.2)
PAS	32.9800	115.8090	11/28/1987	03910.9	0.8	4.20	0.014	IV	84.0(135.3)
PDP	32.6170	115.7800	05/22/2010	173318.3	4.0	4.90	0.021	IV	84.2(135.4)
DMG	33.0330	115.8210	09/30/1971	224611.3	8.0	5.10	0.023	IV	84.2(135.5)
PAS	33.0140	115.8150	11/24/1987	131848.9	6.0	4.10	0.014	III	84.2(135.6)

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GSP |31.8020|116.2670|06/13/2006|153021.5|  5.0| 4.50| 0.017 | IV |
84.2(135.6)
DMG |33.8540|117.7520|10/04/1961| 22131.6|  4.3| 4.10| 0.014 | III|
84.3(135.7)
PAS |33.0360|115.8200|11/24/1987| 21435.5|  4.7| 4.50| 0.017 | IV |
84.3(135.7)
PDP |32.6710|115.7730|04/10/2010|091228.4|  6.0| 4.50| 0.017 | IV |
84.3(135.7)
DMG |33.7500|118.0000|11/16/1934|2126 0.0|  0.0| 4.00| 0.013 | III|
84.3(135.7)
PDP |32.6180|115.7770|04/05/2010|054137.6|  0.0| 4.00| 0.013 | III|
84.3(135.7)
PDP |32.6080|115.7780|12/09/2010|090228.0|  3.0| 4.00| 0.013 | III|
84.3(135.7)
DMG |31.8000|116.2670|06/20/1963| 446 8.0|  0.0| 4.00| 0.013 | III|
84.3(135.7)
DMG |31.8000|116.2670|06/12/1963| 85536.0|  0.0| 4.00| 0.013 | III|
84.3(135.7)
DMG |31.8000|116.2670|06/12/1963|221556.0|  0.0| 4.70| 0.019 | IV |
84.3(135.7)
DMG |31.8000|116.2670|06/11/1963|154948.0|  0.0| 4.00| 0.013 | III|
84.3(135.7)
DMG |32.5510|115.7850|01/23/1971|22 736.0|  8.0| 4.10| 0.014 | III|
84.4(135.8)
MGI |33.8000|117.9000|05/22/1902| 740 0.0|  0.0| 4.30| 0.015 | IV |
84.4(135.9)
DMG |33.9330|117.3670|10/24/1943| 02921.0|  0.0| 4.00| 0.013 | III|
84.5(135.9)
DMG |31.7960|116.2690|06/11/1963|152338.3| -2.0| 5.80| 0.033 |  V |
84.5(135.9)
PDP |32.5880|115.7780|04/08/2010|154459.6|  0.0| 4.50| 0.017 | IV |
84.5(136.0)
GSG |31.7930|116.2720|12/08/2006|224610.8|  5.0| 4.30| 0.015 | IV |
84.5(136.0)
PDG |32.6160|115.7730|05/22/2010|173058.8|  3.0| 5.00| 0.022 | IV |
84.6(136.1)
PAS |33.0330|115.8140|11/24/1987| 22159.6|  4.5| 4.00| 0.013 | III|
84.6(136.2)
DMG |33.6300|118.2000|09/13/1929|132338.2|  0.0| 4.00| 0.013 | III|
84.7(136.3)
PAS |33.0220|115.8080|11/24/1987| 62323.1|  3.4| 4.00| 0.013 | III|
84.8(136.4)
PDP |33.9320|117.0230|01/16/2010|120325.7| 13.0| 4.30| 0.015 | IV |
84.8(136.4)
DMG |33.6330|118.2000|11/01/1940|20 046.0|  0.0| 4.00| 0.013 | III|
84.8(136.5)
PAS |33.0400|115.8120|11/24/1987| 253 0.7|  3.5| 4.70| 0.019 | IV |
84.8(136.5)
DMG |32.2000|115.9000|05/31/1960|191736.0|  0.0| 4.00| 0.013 | III|
84.9(136.7)
PDP |32.6120|115.7670|04/06/2010|041221.6|  2.0| 4.60| 0.018 | IV |
85.0(136.7)
PDP |32.6340|115.7630|05/19/2010|143926.9|  3.0| 4.00| 0.013 | III|
85.1(136.9)
PDP |32.6570|115.7610|04/08/2010|024756.4|  1.0| 4.50| 0.017 | IV |
85.1(136.9)
DMG |33.2830|115.9170|03/28/1952| 11622.0|  0.0| 4.20| 0.014 | IV |
85.2(137.1)
PAS |33.0470|115.8080|11/24/1987|143629.9|  0.0| 4.00| 0.013 | III|
85.2(137.1)
DMG |32.4170|115.8000|05/13/1960|123640.0|  0.0| 4.10| 0.013 | III|
85.3(137.4)
PDP |32.5970|115.7580|04/05/2010|015226.1|  6.0| 4.40| 0.016 | IV |
85.6(137.7)
PAS |33.0500|115.8000|11/24/1987| 21647.2|  6.0| 4.00| 0.013 | III|
85.7(137.9)
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GSP	31.7860	116.2500	12/11/2006	132108.4	5.0	4.00	0.013	III	85.7(138.0)
PAS	33.0080	115.7860	11/24/1987	1321 0.2	6.0	4.10	0.013	III	85.8(138.0)
PAS	33.0480	115.7980	11/24/1987	21523.2	5.0	4.80	0.019	IV	85.8(138.0)
PDP	32.5990	115.7540	04/04/2010	233428.3	6.0	4.10	0.013	III	85.8(138.1)
DMG	33.1830	115.8500	04/25/1957	222412.0	0.0	5.10	0.023	IV	85.9(138.2)
DMG	33.1830	115.8500	04/25/1957	222148.0	0.0	4.20	0.014	IV	85.9(138.2)
DMG	32.8330	115.7500	02/24/1933	1933 0.0	0.0	4.50	0.016	IV	85.9(138.3)
PAS	32.9420	115.7630	11/24/1987	133439.9	14.0	4.80	0.019	IV	86.2(138.6)
DMG	33.5430	118.3400	09/14/1963	35116.2	2.2	4.20	0.014	IV	86.2(138.7)
PDP	32.5920	115.7470	04/04/2010	231931.9	10.0	4.00	0.013	III	86.2(138.8)
PDP	32.6400	115.7400	04/06/2010	220910.0	2.0	4.30	0.015	IV	86.4(139.0)
DMG	33.7330	118.1000	03/11/1933	1447 0.0	0.0	4.40	0.016	IV	86.6(139.3)
DMG	33.7330	118.1000	03/11/1933	15 9 0.0	0.0	4.40	0.016	IV	86.6(139.3)

EARTHQUAKE SEARCH RESULTS

Page 12

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.7330	118.1000	03/11/1933	1350 0.0	0.0	4.40	0.016	IV	86.6(139.3)
DMG	32.0000	116.0000	02/07/1930	2323 0.0	0.0	4.50	0.016	IV	86.8(139.7)
DMG	32.0000	116.0000	07/19/1954	20 154.0	0.0	4.80	0.019	IV	86.8(139.7)
DMG	32.0000	116.0000	07/20/1963	14518.0	0.0	4.20	0.014	IV	86.8(139.7)
DMG	33.7500	118.0830	04/02/1933	1536 0.0	0.0	4.00	0.013	III	87.0(140.0)
DMG	33.7500	118.0830	03/11/1933	837 0.0	0.0	4.00	0.013	III	87.0(140.0)
DMG	33.7500	118.0830	04/01/1933	642 0.0	0.0	4.20	0.014	IV	87.0(140.0)
DMG	33.7500	118.0830	03/12/1933	448 0.0	0.0	4.00	0.013	III	87.0(140.0)
DMG	33.7500	118.0830	03/23/1933	1831 0.0	0.0	4.10	0.013	III	87.0(140.0)
DMG	33.7500	118.0830	03/11/1933	1147 0.0	0.0	4.40	0.015	IV	87.0(140.0)
DMG	33.7500	118.0830	03/13/1933	131828.0	0.0	5.30	0.025	V	87.0(140.0)
DMG	33.7500	118.0830	03/11/1933	311 0.0	0.0	4.20	0.014	IV	87.0(140.0)

DMG |33.7500|118.0830|03/13/1933| 432 0.0| 0.0| 4.70| 0.018 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 759 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 8 8 0.0| 0.0| 4.50| 0.016 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/25/1933|1346 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/20/1933|1358 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 926 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/30/1933|1225 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1138 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 910 0.0| 0.0| 5.10| 0.022 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/13/1933| 617 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933| 027 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/13/1933|1532 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 635 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1141 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1129 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/13/1933| 343 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 3 5 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933| 546 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/21/1933| 326 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/23/1933| 840 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 323 0.0| 0.0| 5.00| 0.021 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1357 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933| 6 1 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 230 0.0| 0.0| 5.10| 0.022 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 911 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|04/02/1933| 8 0 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933|2354 0.0| 0.0| 4.50| 0.016 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 3 9 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|11 0 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|2240 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933|2128 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/16/1933|1529 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 258 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)

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DMG |33.7500|118.0830|03/12/1933|1651 0.0|  0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 555 0.0|  0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/19/1933|2123 0.0|  0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 210 0.0|  0.0| 4.60| 0.017 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 751 0.0|  0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 832 0.0|  0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933|15 2 0.0|  0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 216 0.0|  0.0| 4.80| 0.019 | IV |
87.0(140.0)
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EARTHQUAKE SEARCH RESULTS

Page 13

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    |       |        |          |  TIME   |     |     | SITE  |SITE|  APPROX.
FILE|  LAT. |  LONG. |   DATE   |  (UTC)  |DEPTH|QUAKE| ACC.  | MM |  DISTANCE
CODE| NORTH |  WEST  |          | H M Sec| (km)| MAG.|   g   |INT.|  mi   [km]
----+-------+--------+----------+--------+-----+-----+-------+----+-----------
-
DMG |33.7500|118.0830|03/11/1933| 222 0.0|  0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 252 0.0|  0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1025 0.0|  0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933|1825 0.0|  0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 259 0.0|  0.0| 4.60| 0.017 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 553 0.0|  0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933|1738 0.0|  0.0| 4.50| 0.016 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|2231 0.0|  0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|2232 0.0|  0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 524 0.0|  0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|23 5 0.0|  0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 2 4 0.0|  0.0| 4.90| 0.020 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/18/1933|2052 0.0|  0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 336 0.0|  0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 2 5 0.0|  0.0| 4.30| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 436 0.0|  0.0| 4.60| 0.017 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933| 835 0.0|  0.0| 4.20| 0.014 | IV |
87.0(140.0)
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DMG |33.7500|118.0830|03/31/1933|1049 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1045 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 227 0.0| 0.0| 4.60| 0.017 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 257 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|22 0 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1944 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 521 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 515 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 439 0.0| 0.0| 4.90| 0.020 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/15/1933| 540 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 611 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 618 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933| 034 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/16/1933|1530 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/15/1933| 432 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 211 0.0| 0.0| 4.40| 0.015 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/13/1933|1929 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933| 616 0.0| 0.0| 4.60| 0.017 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/14/1933|2242 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1547 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/17/1933|1651 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1653 0.0| 0.0| 4.80| 0.019 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/12/1933| 740 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/15/1933| 2 8 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 347 0.0| 0.0| 4.10| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933|1956 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/14/1933| 036 0.0| 0.0| 4.20| 0.014 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/16/1933|1456 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 2 9 0.0| 0.0| 5.00| 0.021 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 513 0.0| 0.0| 4.70| 0.018 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/14/1933|1219 0.0| 0.0| 4.50| 0.016 | IV |
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 339 0.0| 0.0| 4.00| 0.013 | III|
87.0(140.0)
DMG |33.7500|118.0830|03/11/1933| 440 0.0| 0.0| 4.70| 0.018 | IV |
87.0(140.0)

PAS	33.0670	115.7810	11/24/1987	13248.1	4.0	4.20	0.014	IV	87.1(140.1)
PAS	33.0720	115.7820	11/24/1987	153 3.2	4.2	4.00	0.013	III	87.1(140.2)
DMG	33.8000	118.0000	10/21/1913	938 0.0	0.0	4.00	0.013	III	87.3(140.4)

EARTHQUAKE SEARCH RESULTS

Page 14

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.9170	116.7500	01/25/1933	1444 0.0	0.0	4.00	0.013	III	87.3(140.5)
PAS	33.0820	115.7750	11/24/1987	15414.5	4.9	5.80	0.032	V	87.7(141.1)
DMG	33.9500	117.5830	04/11/1941	12024.0	0.0	4.00	0.012	III	87.7(141.2)
DMG	33.9500	116.8500	09/28/1946	719 9.0	0.0	5.00	0.021	IV	87.9(141.5)
DMG	31.6670	116.3670	07/17/1959	72630.0	0.0	4.90	0.020	IV	88.0(141.6)
DMG	33.2330	115.8330	06/24/1942	235240.0	0.0	4.00	0.012	III	88.1(141.8)
DMG	33.2330	115.8330	06/14/1942	213623.0	0.0	4.00	0.012	III	88.1(141.8)
DMG	33.2330	115.8330	06/14/1942	222549.0	0.0	4.00	0.012	III	88.1(141.8)
DMG	32.2830	115.8000	09/26/1959	34050.0	0.0	4.30	0.015	IV	88.1(141.8)
DMG	33.9170	116.7000	11/17/1943	112841.0	0.0	4.50	0.016	IV	88.3(142.1)
DMG	32.8560	115.7100	09/18/1936	144032.1	10.0	4.50	0.016	IV	88.4(142.2)
DMG	33.9330	116.7500	10/28/1944	183016.0	0.0	4.40	0.015	IV	88.4(142.2)
DMG	33.9330	116.7500	08/06/1938	228 0.0	0.0	4.00	0.012	III	88.4(142.2)
DMG	32.9830	115.7330	01/24/1951	717 2.6	0.0	5.60	0.029	V	88.4(142.3)
DMG	32.9830	115.7330	01/24/1951	733 7.0	0.0	4.00	0.012	III	88.4(142.3)
DMG	31.5000	117.7000	10/12/1940	34542.0	0.0	4.00	0.012	III	88.4(142.3)
DMG	33.9960	117.2700	02/17/1952	123658.3	16.0	4.50	0.016	IV	88.4(142.3)
DMG	32.7330	115.7000	04/21/1960	233920.0	0.0	4.20	0.014	IV	88.5(142.4)
PDP	33.9660	116.8760	01/12/2010	023608.4	10.0	4.30	0.014	IV	88.6(142.6)
DMG	33.7500	118.1330	03/11/1933	11 4 0.0	0.0	4.60	0.017	IV	88.7(142.7)
DMG	33.9680	116.8820	06/27/1959	162211.1	13.8	4.00	0.012	III	88.7(142.7)
DMG	34.0000	117.2500	11/01/1932	445 0.0	0.0	4.00	0.012	III	88.7(142.7)

DMG |34.0000|117.2500|07/23/1923| 73026.0| 0.0| 6.25| 0.040 | V |
88.7(142.7)
DMG |34.0000|117.2830|11/07/1939|1852 8.4| 0.0| 4.70| 0.018 | IV |
88.7(142.8)
GSP |33.9170|117.7760|09/03/2002|070851.9| 12.0| 4.80| 0.019 | IV |
88.9(143.0)
DMG |32.9500|115.7170|06/14/1953| 42958.0| 0.0| 4.80| 0.019 | IV |
88.9(143.0)
DMG |32.9500|115.7170|06/14/1953| 41729.9| 0.0| 5.50| 0.027 | V |
88.9(143.0)
DMG |32.6000|115.7000|04/26/1963| 1 342.0| 0.0| 4.00| 0.012 | III|
88.9(143.1)
DMG |32.6000|115.7000|12/19/1958|1437 0.0| 0.0| 4.10| 0.013 | III|
88.9(143.1)
DMG |33.2160|115.8080|04/25/1957|215738.7| -0.3| 5.20| 0.023 | IV |
89.0(143.2)
PDP |34.0050|117.1800|02/13/2010|213906.6| 8.0| 4.10| 0.013 | III|
89.1(143.3)
DMG |33.7670|118.1170|11/04/1939|2141 0.0| 0.0| 4.00| 0.012 | III|
89.1(143.3)
MGI |33.5000|116.0000|09/30/1916| 425 0.0| 0.0| 4.00| 0.012 | III|
89.1(143.4)
MGI |34.0000|117.4000|05/22/1907| 652 0.0| 0.0| 4.60| 0.017 | IV |
89.3(143.6)
DMG |32.9000|115.7000|10/02/1928|19 1 0.0| 0.0| 5.00| 0.021 | IV |
89.3(143.7)
DMG |32.0000|118.5000|07/15/1943|2138 0.0| 0.0| 4.00| 0.012 | III|
89.4(143.8)
T-A |34.0000|117.4200|09/10/1920|1415 0.0| 0.0| 4.30| 0.014 | IV |
89.4(143.9)
T-A |34.0000|117.4200|04/12/1888|1315 0.0| 0.0| 4.30| 0.014 | IV |
89.4(143.9)
GSP |31.7660|116.1820|12/20/2007|163523.3| 7.0| 4.50| 0.016 | IV |
89.4(143.9)
GSP |32.2320|115.7980|12/10/2002|210400.7| 7.0| 4.80| 0.019 | IV |
89.5(144.0)
DMG |34.0000|117.0000|06/30/1923| 022 0.0| 0.0| 4.50| 0.016 | IV |
89.6(144.2)
DMG |32.9150|115.6970|05/23/1963| 63635.7| 1.2| 4.30| 0.014 | IV |
89.6(144.2)
GSG |31.8060|116.1280|03/23/1994|025916.2| 22.0| 5.00| 0.021 | IV |
89.6(144.2)
DMG |32.3330|115.7500|12/15/1938| 0 2 0.0| 0.0| 4.00| 0.012 | III|
89.7(144.4)
GSP |33.9510|117.7090|01/05/1998|181406.5| 11.0| 4.30| 0.014 | IV |
89.8(144.5)
DMG |33.9670|116.8000|09/07/1945|153424.0| 0.0| 4.30| 0.014 | IV |
89.8(144.5)
DMG |33.9500|116.7330|04/26/1942|151023.0| 0.0| 4.00| 0.012 | III|
89.8(144.5)
DMG |33.7500|118.1670|05/16/1933|205855.0| 0.0| 4.00| 0.012 | III|
89.8(144.6)
GSP |32.2250|115.7950|12/10/2002|214715.3| 7.0| 4.00| 0.012 | III|
89.8(144.6)
DMG |33.8980|116.5690|11/17/1964|145228.2| 10.3| 4.00| 0.012 | III|
89.9(144.7)
DMG |33.1670|115.7670|05/10/1955| 43840.0| 0.0| 4.30| 0.014 | IV |
90.0(144.8)
MGI |33.7000|116.2000|08/12/1917|11 0 0.0| 0.0| 4.00| 0.012 | III|
90.1(145.0)
MGI |34.0000|117.5000|12/16/1858|10 0 0.0| 0.0| 7.00| 0.059 | VI |
90.1(145.0)

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EARTHQUAKE SEARCH RESULTS

Page 15

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.0000	117.5000	07/03/1908	1255 0.0	0.0	4.00	0.012	III	90.1(145.0)
PAS	34.0230	117.2450	10/02/1985	234412.4	15.2	4.80	0.019	IV	90.3(145.3)
DMG	33.1750	115.7640	10/28/1963	81417.1	0.9	4.00	0.012	III	90.3(145.3)
GSP	34.0240	117.2300	03/11/1998	121851.8	14.0	4.50	0.016	IV	90.3(145.4)
PAS	32.9140	115.6840	01/28/1988	254 2.4	5.9	4.70	0.018	IV	90.4(145.4)
DMG	33.0380	118.7340	09/13/1937	221439.5	10.0	4.00	0.012	III	90.4(145.4)
DMG	33.7500	118.1830	08/04/1933	41748.0	0.0	4.00	0.012	III	90.4(145.5)
DMG	34.0170	117.0500	02/19/1940	12 655.7	0.0	4.60	0.017	IV	90.4(145.5)
DMG	32.1330	115.8330	06/10/1961	21742.0	0.0	4.10	0.013	III	90.5(145.6)
DMG	33.7830	118.1330	10/02/1933	91017.6	0.0	5.40	0.025	V	90.5(145.6)
DMG	33.7830	118.1330	11/20/1933	1032 0.0	0.0	4.00	0.012	III	90.5(145.6)
DMG	33.7830	118.1330	01/13/1940	749 7.0	0.0	4.00	0.012	III	90.5(145.6)
DMG	33.9730	116.7690	06/10/1944	111531.9	10.0	4.00	0.012	III	90.7(145.9)
GSP	33.9550	117.7460	12/14/2001	120135.5	13.0	4.00	0.012	III	90.7(146.0)
DMG	33.9760	116.7750	10/17/1965	94519.0	17.0	4.90	0.020	IV	90.8(146.1)
MGI	33.7500	116.2500	11/19/1917	1730 0.0	0.0	4.00	0.012	III	90.9(146.3)
GSG	33.9530	117.7610	07/29/2008	184215.7	14.0	5.30	0.024	V	90.9(146.3)
DMG	31.8000	116.1000	10/10/1953	1849 6.0	0.0	5.00	0.021	IV	91.1(146.6)
DMG	34.0330	117.3170	09/03/1935	647 0.0	0.0	4.50	0.016	IV	91.1(146.6)
DMG	34.0330	117.3500	04/18/1940	184343.9	0.0	4.40	0.015	IV	91.2(146.8)
DMG	32.9900	115.6820	11/29/1964	142526.4	13.8	4.20	0.013	III	91.4(147.1)
GSP	32.6720	115.6510	11/02/2009	192731.8	7.0	4.10	0.013	III	91.4(147.1)
PAS	31.8940	115.9940	03/04/1979	183746.0	5.0	4.00	0.012	III	91.5(147.2)
DMG	31.8540	116.0320	07/23/1970	125947.0	8.0	4.40	0.015	IV	91.5(147.3)
DMG	33.7830	116.2830	03/04/1937	16 4 0.0	0.0	4.00	0.012	III	91.5(147.3)
DMG	32.2500	115.7500	12/01/1958	6 3 0.0	0.0	4.60	0.017	IV	91.6(147.5)
DMG	32.2500	115.7500	01/18/1959	1933 0.0	0.0	4.00	0.012	III	91.6(147.5)

DMG |32.2500|115.7500|01/22/1959| 820 0.0| 0.0| 4.10| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|02/16/1959| 643 0.0| 0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/01/1958| 426 0.0| 0.0| 4.80| 0.018 | IV |
91.6(147.5)
DMG |32.2500|115.7500|12/08/1958| 051 0.0| 0.0| 4.40| 0.015 | IV |
91.6(147.5)
DMG |32.2500|115.7500|12/08/1958| 052 0.0| 0.0| 4.50| 0.016 | IV |
91.6(147.5)
DMG |32.2500|115.7500|01/22/1959| 023 0.0| 0.0| 4.60| 0.017 | IV |
91.6(147.5)
DMG |32.2500|115.7500|12/01/1958| 350 0.0| 0.0| 5.00| 0.020 | IV |
91.6(147.5)
DMG |32.2500|115.7500|03/04/1959|1659 0.0| 0.0| 4.10| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/06/1958| 324 0.0| 0.0| 4.40| 0.015 | IV |
91.6(147.5)
DMG |32.2500|115.7500|12/06/1958| 331 0.0| 0.0| 4.50| 0.016 | IV |
91.6(147.5)
DMG |32.2500|115.7500|12/02/1958|1358 0.0| 0.0| 4.20| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/25/1958| 127 0.0| 0.0| 4.60| 0.017 | IV |
91.6(147.5)
DMG |32.2500|115.7500|01/25/1959| 345 0.0| 0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/01/1958| 331 0.0| 0.0| 4.10| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/09/1958|1922 0.0| 0.0| 4.10| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|01/22/1959| 739 0.0| 0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|01/15/1959| 635 0.0| 0.0| 4.10| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|03/22/1961|151115.0| 0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/02/1958| 054 0.0| 0.0| 4.70| 0.017 | IV |
91.6(147.5)
DMG |32.2500|115.7500|01/25/1959|10 1 0.0| 0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/24/1958|2027 0.0| 0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/02/1958| 957 0.0| 0.0| 4.30| 0.014 | IV |
91.6(147.5)
DMG |32.2500|115.7500|01/22/1959| 631 0.0| 0.0| 4.40| 0.015 | IV |
91.6(147.5)
DMG |32.2500|115.7500|01/18/1959|1813 0.0| 0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/20/1958| 0 7 0.0| 0.0| 4.70| 0.017 | IV |
91.6(147.5)
DMG |32.2500|115.7500|12/03/1958|19 6 0.0| 0.0| 4.10| 0.013 | III|
91.6(147.5)

EARTHQUAKE SEARCH RESULTS

Page 16

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]

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DMG |32.2500|115.7500|12/14/1958| 0 7 0.0|  0.0| 4.20| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/01/1958| 6 2 0.0|  0.0| 5.50| 0.027 |  V |
91.6(147.5)
DMG |32.2500|115.7500|12/20/1958| 3 5 0.0|  0.0| 4.50| 0.016 | IV |
91.6(147.5)
DMG |32.2500|115.7500|12/01/1958| 843 0.0|  0.0| 4.10| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/01/1958| 340 0.0|  0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|01/07/1959|1514 0.0|  0.0| 4.30| 0.014 | IV |
91.6(147.5)
DMG |32.2500|115.7500|01/10/1959|15 2 0.0|  0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|01/14/1959| 332 0.0|  0.0| 4.20| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/01/1958| 32118.0|  0.0| 5.80| 0.031 |  V |
91.6(147.5)
DMG |32.2500|115.7500|12/15/1958| 621 0.0|  0.0| 4.60| 0.017 | IV |
91.6(147.5)
DMG |32.2500|115.7500|02/26/1959| 3 3 0.0|  0.0| 4.50| 0.016 | IV |
91.6(147.5)
DMG |32.2500|115.7500|12/02/1958|1156 0.0|  0.0| 4.10| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|01/09/1959|1835 0.0|  0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/04/1958| 142 0.0|  0.0| 4.20| 0.013 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/17/1958|1330 0.0|  0.0| 4.30| 0.014 | IV |
91.6(147.5)
DMG |32.2500|115.7500|12/19/1958|1533 0.0|  0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/23/1958| 653 0.0|  0.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |32.2500|115.7500|12/20/1958| 0 6 0.0|  0.0| 4.30| 0.014 | IV |
91.6(147.5)
DMG |34.0430|117.2280|04/03/1939| 25044.7| 10.0| 4.00| 0.012 | III|
91.6(147.5)
DMG |33.9760|116.7210|06/12/1944|104534.7| 10.0| 5.10| 0.022 | IV |
91.7(147.6)
DMG |32.5000|115.6670|02/12/1932| 23021.0|  0.0| 4.00| 0.012 | III|
91.7(147.6)
PAS |33.9760|116.7130|08/06/1984| 81436.6| 14.2| 4.30| 0.014 | IV |
91.9(147.8)
GSP |34.0470|117.2550|02/21/2000|134943.1| 15.0| 4.50| 0.016 | IV |
91.9(148.0)
DMG |33.9590|116.6510|09/23/1949|214440.1| 12.2| 4.00| 0.012 | III|
92.0(148.0)
DMG |33.0270|115.6810|05/23/1963|1553 1.8|  0.4| 4.80| 0.018 | IV |
92.0(148.0)
DMG |33.8800|116.4370|04/17/1959|1619 0.2| 22.2| 4.20| 0.013 | III|
92.3(148.6)
DMG |33.9810|116.7020|06/12/1944|222119.5| 10.0| 4.20| 0.013 | III|
92.4(148.7)
PAS |33.9790|116.6810|12/16/1988| 553 5.0|  8.1| 4.80| 0.018 | IV |
92.7(149.1)
GSP |32.9750|118.7910|03/04/1992|190627.0|  6.0| 4.20| 0.013 | III|
92.7(149.1)
DMG |33.7830|118.2000|12/27/1939|192849.0|  0.0| 4.70| 0.017 | IV |
92.8(149.3)
MGI |34.0000|117.7000|12/03/1929| 9 5 0.0|  0.0| 4.00| 0.012 | III|
92.8(149.4)
DMG |33.0080|115.6600|06/17/1965| 74013.5|  8.8| 4.10| 0.013 | III|
92.9(149.5)
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PAS	33.0790	115.6800	04/26/1981	124043.4	6.0	4.20	0.013	III	92.9(149.5)
DMG	33.6330	118.4000	10/17/1934	938 0.0	0.0	4.00	0.012	III	92.9(149.5)
GSP	32.6120	115.6280	07/27/1992	204008.8	15.0	4.10	0.013	III	93.0(149.7)
DMG	33.9940	116.7120	06/12/1944	111636.0	10.0	5.30	0.024	IV	93.1(149.8)
GSP	34.0540	117.0300	06/27/2005	221733.6	12.0	4.00	0.012	III	93.1(149.8)
GSP	34.0120	116.7750	10/18/2005	073103.5	18.0	4.40	0.015	IV	93.2(149.9)
PAS	33.9670	116.6170	07/08/1986	155526.2	6.0	4.00	0.012	III	93.2(150.0)
PAS	33.9670	116.6170	07/08/1986	102240.6	6.0	4.40	0.015	IV	93.2(150.0)
DMG	32.3000	115.7000	02/28/1961	212254.0	0.0	4.40	0.015	IV	93.2(150.0)
GSP	34.0140	116.7750	10/18/2005	040841.5	16.0	4.10	0.013	III	93.3(150.1)
PAS	33.9530	116.5720	10/15/1986	22847.8	8.7	4.70	0.017	IV	93.3(150.2)
PAS	32.7880	115.6180	10/15/1979	2355 2.6	5.0	4.20	0.013	III	93.4(150.2)
DMG	34.0140	116.7710	06/10/1944	111150.5	10.0	4.50	0.015	IV	93.4(150.2)
DMG	33.7590	118.2530	08/31/1938	31814.2	10.0	4.50	0.015	IV	93.4(150.3)
DMG	32.1500	115.7670	06/10/1959	172046.0	0.0	4.10	0.013	III	93.4(150.3)
GSP	34.0580	117.0100	06/16/2005	205326.0	11.0	4.90	0.019	IV	93.5(150.5)
DMG	32.7940	115.6150	04/23/1968	1624 9.5	5.0	4.10	0.013	III	93.5(150.5)
DMG	34.0000	116.7000	08/25/1944	73025.0	0.0	4.20	0.013	III	93.7(150.7)
PAS	31.7760	116.0660	05/16/1976	232612.9	5.0	4.20	0.013	III	93.7(150.8)
DMG	32.0330	115.8330	01/28/1932	171749.0	0.0	4.50	0.015	IV	93.8(150.9)
DMG	32.0330	115.8330	01/08/1932	23445.0	0.0	4.00	0.012	III	93.8(150.9)

EARTHQUAKE SEARCH RESULTS

Page 17

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	31.5680	116.3630	08/13/1967	8 213.0	10.0	4.50	0.015	IV	93.9(151.0)
DMG	31.8330	116.0000	06/07/1956	6 4 0.0	0.0	4.10	0.012	III	93.9(151.1)
DMG	31.8330	116.0000	05/10/1956	114854.0	0.0	5.00	0.020	IV	93.9(151.1)
DMG	31.8330	116.0000	04/28/1956	641 0.0	0.0	4.30	0.014	IV	93.9(151.1)

PAS |34.0060|117.7390|02/18/1989| 717 4.8| 3.3| 4.30| 0.014 | IV |
93.9(151.1)
DMG |32.8830|115.6170|01/16/1946|11 654.0| 0.0| 4.20| 0.013 | III|
93.9(151.2)
PAS |33.9890|116.6490|07/17/1986|203515.0| 6.2| 4.00| 0.012 | III|
94.0(151.2)
PDP |32.5060|115.6270|04/05/2010|025435.6| 8.0| 4.30| 0.014 | IV |
94.0(151.2)
DMG |32.2670|115.7000|06/11/1960|213656.0| 0.0| 4.50| 0.015 | IV |
94.0(151.2)
DMG |31.5000|116.5000|02/18/1939| 557 0.0| 0.0| 4.00| 0.012 | III|
94.0(151.3)
DMG |31.5000|116.5000|10/17/1954|225718.0| 0.0| 5.70| 0.029 | V |
94.0(151.3)
PDP |32.5140|115.6250|04/21/2010|103715.3| 7.0| 4.20| 0.013 | III|
94.0(151.3)
PAS |33.9910|116.6490|07/17/1986|215445.2| 7.4| 4.40| 0.015 | IV |
94.1(151.4)
DMG |34.0290|116.7870|04/30/1954| 03623.9| 11.1| 4.20| 0.013 | III|
94.1(151.4)
DMG |31.7090|116.1370|02/16/1967|1738 8.0| 2.8| 4.20| 0.013 | III|
94.1(151.5)
T-A |34.0800|117.2500|10/07/1869| 0 0 0.0| 0.0| 4.30| 0.014 | IV |
94.2(151.6)
DMG |33.2330|115.7170|10/26/1942| 615 4.0| 0.0| 4.50| 0.015 | IV |
94.3(151.7)
DMG |33.2330|115.7170|10/26/1942| 34316.0| 0.0| 4.00| 0.012 | III|
94.3(151.7)
DMG |33.2330|115.7170|10/26/1942| 3 215.0| 0.0| 4.50| 0.015 | IV |
94.3(151.7)
DMG |33.2330|115.7170|10/22/1942| 15038.0| 0.0| 5.50| 0.026 | V |
94.3(151.7)
PAS |33.9650|117.8860|01/01/1976|172012.9| 6.2| 4.20| 0.013 | III|
94.3(151.8)
DMG |33.7830|116.2000|10/31/1943|131210.0| 0.0| 4.50| 0.015 | IV |
94.5(152.0)
DMG |33.7830|118.2500|11/14/1941| 84136.3| 0.0| 5.40| 0.025 | V |
94.6(152.2)
PAS |33.0940|115.6550|06/13/1979|194645.9| 6.0| 4.10| 0.012 | III|
94.6(152.2)
DMG |33.2840|115.7350|10/27/1963|145023.4| -2.0| 4.00| 0.012 | III|
94.7(152.4)
DMG |33.6630|118.4130|01/08/1967| 738 5.3| 17.7| 4.00| 0.012 | III|
94.9(152.7)
DMG |33.2330|115.7000|08/30/1946|111645.0| 0.0| 4.60| 0.016 | IV |
95.2(153.2)
DMG |32.4500|115.6170|03/25/1939| 259 0.0| 0.0| 4.00| 0.012 | III|
95.2(153.3)
DMG |32.4500|115.6170|06/20/1935| 724 0.0| 0.0| 4.00| 0.012 | III|
95.2(153.3)
DMG |32.4500|115.6170|03/21/1939|1351 0.0| 0.0| 4.00| 0.012 | III|
95.2(153.3)
DMG |32.4500|115.6170|01/31/1939|1616 0.0| 0.0| 4.00| 0.012 | III|
95.2(153.3)
DMG |32.4500|115.6170|04/17/1938| 347 0.0| 0.0| 4.00| 0.012 | III|
95.2(153.3)
DMG |33.8170|118.2170|10/22/1941| 65718.5| 0.0| 4.90| 0.019 | IV |
95.2(153.3)
GSP |32.0870|115.7680|05/05/2007|000143.8| 3.0| 4.10| 0.012 | III|
95.3(153.4)
PAS |32.6630|115.5830|10/31/1980|125536.7| 3.6| 4.40| 0.014 | IV |
95.4(153.5)
PAS |32.0880|115.7650|04/13/1984| 32835.6| 6.0| 4.10| 0.012 | III|
95.4(153.6)
PAS |33.9980|116.6060|07/08/1986| 92044.5| 11.7| 5.60| 0.027 | V |
95.4(153.6)

DMG	32.1590	115.7240	01/19/1972	15942.8	8.0	4.00	0.012	III	95.4(153.6)
GSP	34.0850	116.9890	06/30/1992	214900.3	3.0	4.40	0.014	IV	95.5(153.7)
PAS	33.9870	116.5690	07/09/1986	01232.1	6.0	4.40	0.014	IV	95.5(153.8)
DMG	32.5000	115.6000	12/08/1933	437 0.0	0.0	4.00	0.012	III	95.6(153.8)
MGI	34.1000	117.2000	04/23/1923	2113 0.0	0.0	4.00	0.012	III	95.6(153.8)
GSP	34.0840	116.9680	10/02/2008	094149.3	12.0	4.10	0.012	III	95.6(153.9)
DMG	32.2000	115.7000	10/16/1954	8 518.0	0.0	4.00	0.012	III	95.6(153.9)
MGI	34.1000	117.3000	07/15/1905	2041 0.0	0.0	5.30	0.023	IV	95.7(154.0)
MGI	34.1000	117.3000	11/22/1911	257 0.0	0.0	4.00	0.012	III	95.7(154.0)
MGI	34.1000	117.3000	12/27/1901	11 0 0.0	0.0	4.60	0.016	IV	95.7(154.0)
DMG	34.1000	117.3000	02/16/1931	1327 0.0	0.0	4.00	0.012	III	95.7(154.0)
DMG	33.6320	118.4670	01/08/1967	73730.4	11.4	4.00	0.012	III	95.7(154.1)
DMG	31.6250	116.2110	06/10/1969	34132.7	-2.0	5.00	0.020	IV	95.8(154.1)
DMG	32.2670	115.6670	05/17/1959	1257 0.0	0.0	4.00	0.012	III	95.8(154.1)
DMG	33.0560	115.6200	06/16/1965	242 6.1	-0.5	4.40	0.014	IV	95.9(154.3)
PAS	32.8390	115.5780	10/15/1979	232552.6	8.1	4.00	0.012	III	95.9(154.3)

EARTHQUAKE SEARCH RESULTS

Page 18

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	32.8830	115.5830	04/13/1938	1929 0.0	0.0	4.50	0.015	IV	95.9(154.3)
PAS	33.0980	115.6320	04/26/1981	12 928.4	3.8	5.70	0.028	V	95.9(154.4)
GSP	33.3180	115.7280	03/24/2009	115543.0	5.0	4.80	0.018	IV	96.0(154.6)
PAS	33.0990	115.6300	04/26/1981	12 557.4	4.2	4.00	0.012	III	96.1(154.6)
DMG	33.9000	118.1000	07/08/1929	1646 6.7	13.0	4.70	0.017	IV	96.2(154.7)
DMG	32.2500	115.6670	04/29/1932	165233.0	0.0	4.00	0.012	III	96.2(154.8)
GSP	34.1070	117.3040	01/09/2009	034946.3	14.0	4.50	0.015	IV	96.2(154.8)
PDP	32.4620	115.5970	04/04/2010	233733.5	10.0	4.70	0.017	IV	96.2(154.8)
PDP	32.4900	115.5900	04/17/2010	194123.0	2.0	4.00	0.012	III	96.3(154.9)

GSP |34.0970|116.9960|12/05/1997|170438.9| 4.0| 4.10| 0.012 | III|
96.3(154.9)
GSP |33.7110|116.0560|07/14/2004|005352.0| 12.0| 4.00| 0.012 | III|
96.3(154.9)
GSP |33.7080|116.0500|12/24/2006|034338.9| 13.0| 4.00| 0.012 | III|
96.4(155.1)
PAS |33.1100|115.6270|04/25/1981| 21155.3| 4.8| 4.10| 0.012 | III|
96.5(155.2)
PAS |32.9040|115.5760|10/17/1979|191438.4| 15.9| 4.10| 0.012 | III|
96.5(155.3)
PAS |34.0310|116.6570|07/08/1986| 92412.8| 6.0| 4.40| 0.014 | IV |
96.5(155.3)
DMG |33.9330|116.4000|12/10/1948|204257.0| 0.0| 4.40| 0.014 | IV |
96.5(155.4)
PAS |33.1030|115.6220|11/04/1976|133127.7| 3.7| 4.20| 0.013 | III|
96.6(155.5)
PAS |33.1030|115.6210|11/04/1976|1139 8.4| 0.9| 4.10| 0.012 | III|
96.7(155.5)
DMG |33.0120|115.5920|04/11/1965| 04646.1| -2.0| 4.10| 0.012 | III|
96.8(155.8)
PAS |33.1090|115.6190|11/04/1976|114940.4| 2.2| 4.10| 0.012 | III|
96.9(155.9)
GSP |33.1600|115.6370|09/02/2005|012719.8| 9.0| 5.10| 0.021 | IV |
96.9(156.0)
DMG |32.1500|115.7000|09/26/1959| 75316.0| 0.0| 4.10| 0.012 | III|
97.0(156.1)
DMG |33.9330|116.3830|12/04/1948|234317.0| 0.0| 6.50| 0.043 | VI |
97.0(156.2)
DMG |34.1180|117.3410|09/22/1951| 82239.1| 11.9| 4.30| 0.013 | III|
97.1(156.2)
PAS |32.9070|115.5660|10/16/1979|114655.3| 11.4| 4.80| 0.018 | IV |
97.1(156.2)
DMG |34.1120|117.4260|03/19/1937| 12338.4| 10.0| 4.00| 0.012 | III|
97.1(156.3)
GSP |33.1650|115.6350|08/31/2005|224745.6| 4.0| 4.60| 0.016 | IV |
97.1(156.3)
DMG |33.9670|116.4500|12/11/1948|161220.0| 0.0| 4.50| 0.015 | IV |
97.2(156.5)
PAS |33.1170|115.6150|04/26/1976| 64637.5| 14.8| 4.00| 0.012 | III|
97.3(156.5)
GSP |33.8760|116.2670|06/29/1992|160142.8| 1.0| 5.20| 0.022 | IV |
97.3(156.6)
GSP |33.9450|116.3990|07/05/1992|054938.2| 3.0| 4.00| 0.012 | III|
97.3(156.6)
DMG |33.8000|118.3000|11/03/1931|16 5 0.0| 0.0| 4.00| 0.012 | III|
97.3(156.6)
MGI |33.8000|118.3000|12/31/1928|1045 0.0| 0.0| 4.00| 0.012 | III|
97.3(156.6)
GSP |32.1330|115.7020|04/12/2009|094129.1| 5.0| 4.30| 0.013 | III|
97.4(156.7)
DMG |33.8670|118.2000|11/13/1933|2128 0.0| 0.0| 4.00| 0.011 | III|
97.4(156.8)
GSP |33.3170|115.7000|11/13/2001|204315.0| 5.0| 4.10| 0.012 | III|
97.5(156.9)
DMG |33.9330|116.3670|12/05/1948| 0 721.0| 0.0| 4.90| 0.018 | IV |
97.5(156.9)
PAS |33.0010|115.5760|10/16/1979| 74947.2| 8.5| 4.00| 0.011 | III|
97.6(157.0)
T-A |33.5000|115.8200|05/00/1868| 0 0 0.0| 0.0| 6.30| 0.039 | V |
97.6(157.0)
GSP |33.1780|115.6320|09/01/2005|135020.2| 0.0| 4.40| 0.014 | IV |
97.6(157.0)
DMG |34.1000|116.8830|10/24/1935|1452 0.0| 0.0| 4.50| 0.015 | IV |
97.6(157.0)
DMG |34.1000|116.8830|10/24/1935|1451 0.0| 0.0| 4.50| 0.015 | IV |
97.6(157.0)

DMG	34.1000	116.8830	10/24/1935	1527 0.0	0.0	4.00	0.011	III	97.6(157.0)
DMG	33.0370	115.5840	06/17/1965	73020.9	-1.3	4.30	0.013	III	97.6(157.1)
GSP	33.1750	115.6300	09/02/2005	012718.6	4.0	4.50	0.015	IV	97.6(157.1)
DMG	32.4170	115.5830	01/03/1936	14 7 0.0	0.0	4.00	0.011	III	97.7(157.1)
DMG	33.9630	116.4250	01/13/1950	5 719.4	5.9	4.10	0.012	III	97.7(157.2)
DMG	34.1270	117.3380	02/23/1936	222042.7	10.0	4.50	0.015	IV	97.7(157.2)
DMG	33.9670	116.4330	12/05/1948	04235.0	0.0	4.60	0.016	IV	97.7(157.2)
GSP	33.0300	115.5800	03/24/1989	231648.0	6.0	4.00	0.011	III	97.7(157.3)
DMG	33.1310	115.6110	10/27/1963	181250.7	7.8	4.20	0.013	III	97.7(157.3)
DMG	34.1160	117.4750	06/28/1960	20 048.0	12.0	4.10	0.012	III	97.8(157.3)
GSP	34.1200	116.9980	06/29/1992	144126.0	4.0	4.40	0.014	IV	97.8(157.4)

EARTHQUAKE SEARCH RESULTS

Page 19

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	33.2670	115.6670	08/10/1951	1130 8.0	0.0	4.40	0.014	IV	97.8(157.5)
DMG	32.1830	115.6670	09/21/1959	11753.0	0.0	4.30	0.013	III	97.9(157.5)
DMG	32.9820	115.5660	05/23/1963	9 6 4.7	25.4	4.60	0.016	IV	97.9(157.5)
GSP	33.9530	116.3950	01/12/2005	081046.4	7.0	4.30	0.013	III	97.9(157.5)
GSP	33.9460	116.3790	04/24/1992	123605.7	10.0	4.10	0.012	III	97.9(157.6)
DMG	33.0190	115.5730	06/17/1965	743 5.0	-2.0	4.20	0.013	III	98.0(157.7)
GSP	34.1120	116.9200	10/01/1998	181816.0	4.0	4.70	0.017	IV	98.0(157.7)
DMG	33.9330	116.3500	12/05/1948	04032.0	0.0	4.40	0.014	IV	98.0(157.7)
DMG	33.2000	115.6330	10/27/1963	145245.2	-2.0	4.10	0.012	III	98.0(157.7)
DMG	33.8670	118.2170	06/19/1944	0 333.0	0.0	4.50	0.015	IV	98.0(157.7)
DMG	33.8670	118.2170	06/19/1944	3 6 7.0	0.0	4.40	0.014	IV	98.0(157.7)
PAS	32.9500	115.5570	10/16/1979	33934.3	12.1	4.50	0.015	IV	98.0(157.7)
GSP	34.1250	117.4380	01/06/2005	143527.7	4.0	4.40	0.014	IV	98.1(157.9)
DMG	32.3540	115.5930	03/17/1972	029 1.2	8.0	4.50	0.015	IV	98.1(157.9)

PDP |33.9790|116.4430|08/06/2010|173931.7| 7.0| 4.10| 0.012 | III|
98.2(158.0)
GSP |33.9020|116.2840|07/24/1992|181436.2| 9.0| 5.00| 0.019 | IV |
98.2(158.1)
GSP |32.5680|115.5430|12/28/2008|051707.0| 10.0| 4.50| 0.015 | IV |
98.2(158.1)
GSP |33.9050|116.2880|05/07/1995|110333.0| 10.0| 4.80| 0.017 | IV |
98.3(158.1)
GSP |33.1760|115.6170|08/31/2005|230716.5| 4.0| 4.10| 0.012 | III|
98.4(158.3)
DMG |34.1240|117.4800|05/15/1955|17 326.0| 7.6| 4.00| 0.011 | III|
98.4(158.3)
PAS |33.1170|115.5950|11/04/1976|141250.2| 5.0| 4.40| 0.014 | IV |
98.4(158.3)
PAS |33.1180|115.5950|11/04/1976| 62110.7| 5.0| 4.10| 0.012 | III|
98.4(158.3)
GSP |32.9480|115.5500|05/24/2003|020429.0| 16.0| 4.20| 0.013 | III|
98.4(158.3)
PAS |33.1230|115.5960|11/04/1976| 54820.9| 5.0| 4.20| 0.013 | III|
98.4(158.4)
DMG |33.9960|117.9750|06/15/1967| 458 5.5| 10.0| 4.10| 0.012 | III|
98.5(158.4)
DMG |34.1320|117.4260|04/15/1965|20 833.3| 5.5| 4.50| 0.015 | IV |
98.5(158.5)
GSP |34.1210|116.9280|08/16/1998|133440.2| 6.0| 4.70| 0.016 | IV |
98.5(158.5)
DMG |34.1400|117.3390|02/26/1936| 93327.6| 10.0| 4.00| 0.011 | III|
98.6(158.6)
DMG |34.1000|116.8000|10/24/1935|1448 7.6| 0.0| 5.10| 0.020 | IV |
98.6(158.8)
GSP |33.1720|115.6100|08/31/2005|225024.0| 2.0| 4.50| 0.015 | IV |
98.6(158.8)
PAS |33.1180|115.5900|11/04/1976| 635 3.5| 4.5| 4.10| 0.012 | III|
98.7(158.8)
GSP |33.7300|116.0200|12/18/1989|062704.5| 10.0| 4.20| 0.013 | III|
98.7(158.8)
GSP |33.9400|116.3410|05/04/1992|011602.6| 6.0| 4.00| 0.011 | III|
98.7(158.8)
DMG |33.9670|118.0500|01/30/1941| 13446.9| 0.0| 4.10| 0.012 | III|
98.7(158.8)
DMG |32.5830|115.5330|04/02/1947|151539.0| 0.0| 4.20| 0.013 | III|
98.7(158.8)
USG |34.1390|117.3860|02/21/1987|231530.1| 2.6| 4.07| 0.012 | III|
98.7(158.9)
PAS |32.9270|115.5400|10/16/1979| 54910.2| 10.4| 5.10| 0.020 | IV |
98.8(158.9)
PAS |32.9450|115.5430|10/16/1979| 31625.4| 7.2| 4.10| 0.012 | III|
98.8(158.9)
DMG |32.3000|115.6000|01/07/1960|175130.0| 0.0| 4.10| 0.012 | III|
98.8(159.0)
PAS |33.1810|115.6110|03/07/1989| 02458.2| 2.8| 4.10| 0.012 | III|
98.8(159.0)
DMG |33.8500|118.2670|03/11/1933| 629 0.0| 0.0| 4.40| 0.014 | IV |
98.8(159.0)
DMG |33.8500|118.2670|03/11/1933|1425 0.0| 0.0| 5.00| 0.019 | IV |
98.8(159.0)
PAS |32.9280|115.5390|10/16/1979| 61948.7| 9.2| 5.10| 0.020 | IV |
98.8(159.0)
DMG |34.0000|116.4670|12/05/1948| 05057.0| 0.0| 4.40| 0.014 | IV |
98.8(159.0)
DMG |34.0000|116.4670|12/06/1948| 246 8.0| 0.0| 4.30| 0.013 | III|
98.8(159.0)
PAS |34.1350|117.4480|01/08/1983| 71930.4| 4.6| 4.10| 0.012 | III|
98.9(159.1)
PAS |32.9600|115.5440|10/16/1979| 31047.1| 9.4| 4.50| 0.015 | IV |
98.9(159.1)

GSP	33.8720	116.2120	06/02/2007	051126.0	4.0	4.20	0.013	III	98.9(159.2)
PAS	33.0140	115.5550	10/16/1979	65842.8	9.1	5.50	0.025	V	98.9(159.2)
DMG	34.1270	117.5210	12/27/1938	10 928.6	10.0	4.00	0.011	III	98.9(159.2)
PAS	32.9130	115.5340	10/16/1979	6 439.0	8.0	4.00	0.011	III	99.0(159.3)
DMG	34.0170	116.5000	07/24/1947	225426.0	0.0	4.90	0.018	IV	99.1(159.4)
DMG	34.0170	116.5000	07/26/1947	231351.0	0.0	4.10	0.012	III	99.1(159.4)

EARTHQUAKE SEARCH RESULTS

Page 20

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
DMG	34.0170	116.5000	07/26/1947	12415.0	0.0	4.20	0.013	III	99.1(159.4)
DMG	34.0170	116.5000	07/24/1947	221046.0	0.0	5.50	0.025	V	99.1(159.4)
DMG	34.0170	116.5000	07/25/1947	51752.0	0.0	4.30	0.013	III	99.1(159.4)
DMG	34.0170	116.5000	08/08/1947	64745.0	0.0	4.00	0.011	III	99.1(159.4)
DMG	34.0170	116.5000	07/26/1947	23 425.0	0.0	4.50	0.015	IV	99.1(159.4)
DMG	34.0170	116.5000	07/26/1947	24941.0	0.0	5.10	0.020	IV	99.1(159.4)
DMG	34.0170	116.5000	07/24/1947	225341.0	0.0	4.30	0.013	III	99.1(159.4)
DMG	34.0170	116.5000	07/25/1947	15647.0	0.0	4.60	0.016	IV	99.1(159.4)
DMG	34.0170	116.5000	07/25/1947	75730.0	0.0	4.20	0.013	III	99.1(159.4)
DMG	34.0170	116.5000	07/25/1947	161453.0	0.0	4.50	0.015	IV	99.1(159.4)
DMG	34.0170	116.5000	07/25/1947	61949.0	0.0	5.20	0.021	IV	99.1(159.4)
DMG	34.0170	116.5000	08/01/1947	17 137.0	0.0	4.10	0.012	III	99.1(159.4)
DMG	34.0170	116.5000	07/25/1947	04631.0	0.0	5.00	0.019	IV	99.1(159.4)
DMG	34.0170	116.5000	07/29/1947	163615.0	0.0	4.20	0.013	III	99.1(159.4)
DMG	34.0170	116.5000	07/30/1947	52217.0	0.0	4.20	0.013	III	99.1(159.4)
DMG	34.1330	116.9500	06/10/1938	1440 0.0	0.0	4.00	0.011	III	99.1(159.5)
DMG	34.1000	117.6830	01/18/1934	214 0.0	0.0	4.00	0.011	III	99.2(159.6)
DMG	34.1000	117.6830	01/09/1934	1410 0.0	0.0	4.50	0.015	IV	99.2(159.6)
GSP	33.1920	115.6080	12/31/1997	122245.1	10.0	4.10	0.012	III	99.2(159.6)

PAS |32.8920|115.5260|01/12/1980|2011 6.4| 5.0| 4.10| 0.012 | III|
99.3(159.7)
GSP |34.1390|117.4650|03/09/2008|092232.1| 3.0| 4.00| 0.011 | III|
99.3(159.7)
PAS |32.9090|115.5280|10/16/1979| 1 013.9| 4.8| 4.60| 0.016 | IV |
99.3(159.8)
MGI |33.9000|118.2000|10/08/1927|1914 0.0| 0.0| 4.60| 0.016 | IV |
99.3(159.8)
GSG |33.9430|116.3250|04/23/1992|052316.2| 5.0| 4.00| 0.011 | III|
99.3(159.9)
MGI |34.0000|118.0000|05/05/1929| 735 0.0| 0.0| 4.00| 0.011 | III|
99.3(159.9)
MGI |34.0000|118.0000|12/25/1903|1745 0.0| 0.0| 5.00| 0.019 | IV |
99.3(159.9)
MGI |34.0000|118.0000|05/05/1929| 1 7 0.0| 0.0| 4.60| 0.016 | IV |
99.3(159.9)
PAS |32.9320|115.5300|10/16/1979| 61346.5| 8.0| 4.10| 0.012 | III|
99.4(159.9)
GSP |33.9510|116.3380|05/18/1992|154418.0| 7.0| 4.90| 0.018 | IV |
99.4(160.0)
GSP |33.9470|116.3300|09/09/1992|125045.1| 5.0| 4.30| 0.013 | III|
99.4(160.0)
GSP |33.9330|116.3020|04/27/1992|031119.3| 0.0| 4.20| 0.013 | III|
99.4(160.0)
PAS |33.1820|115.5990|03/06/1989|221647.6| 1.0| 4.30| 0.013 | III|
99.5(160.1)
GSP |33.1900|115.6020|08/31/2005|233211.0| 4.0| 4.50| 0.015 | IV |
99.5(160.1)
DMG |33.7710|116.0500|09/02/1956| 24637.0| 14.1| 4.20| 0.013 | III|
99.5(160.1)
PDP |33.9370|116.3060|07/25/1992|043160.0| 5.0| 4.90| 0.018 | IV |
99.6(160.2)
GSP |33.2010|115.6050|08/31/2005|233338.9| 3.0| 4.00| 0.011 | III|
99.6(160.2)
DMG |32.9670|115.5330|02/13/1951|1716 0.0| 0.0| 4.20| 0.013 | III|
99.6(160.3)
DMG |32.9670|115.5330|02/13/1951|174634.0| 0.0| 4.10| 0.012 | III|
99.6(160.3)
DMG |32.2620|115.6000|07/13/1967| 94253.4| 10.0| 4.10| 0.012 | III|
99.6(160.3)
DMG |33.9580|116.3460|01/08/1952| 63427.4| 11.4| 4.40| 0.014 | IV |
99.6(160.3)
PAS |33.9850|116.4020|02/15/1985|232626.6| 2.3| 4.00| 0.011 | III|
99.6(160.3)
GSP |33.9430|116.3150|05/06/1992|023843.3| 7.0| 4.50| 0.015 | IV |
99.6(160.3)
PAS |32.8990|115.5190|10/16/1979| 72324.2| 9.0| 4.20| 0.013 | III|
99.7(160.5)
PAS |32.9260|115.5230|10/16/1979| 11421.3| 9.6| 4.30| 0.013 | III|
99.7(160.5)
PAS |31.8900|115.8210|05/08/1985|234020.8| 6.0| 5.00| 0.019 | IV |
99.7(160.5)
PAS |33.1820|115.5940|03/07/1989| 74344.1| 0.5| 4.20| 0.013 | III|
99.7(160.5)
DMG |34.1400|117.5150|01/01/1965| 8 418.0| 5.9| 4.40| 0.014 | IV |
99.8(160.6)
DMG |33.2000|115.6000|11/12/1942|175612.0| 0.0| 4.00| 0.011 | III|
99.8(160.6)
PAS |32.9470|115.5250|10/16/1979| 139 3.3| 2.0| 4.00| 0.011 | III|
99.8(160.6)
DMG |31.7830|115.9170|12/22/1956| 518 0.0| 0.0| 4.50| 0.015 | IV |
99.8(160.6)
DMG |31.8000|115.9000|01/18/1956|195724.0| 0.0| 4.10| 0.012 | III|
99.8(160.7)
PDP |32.4190|115.5440|04/05/2010|041014.3| 6.0| 4.30| 0.013 | III|
99.8(160.7)

PDP	33.0330	115.5430	12/15/2010	191647.9	13.0	4.40	0.014	IV	99.9(160.7)

EARTHQUAKE SEARCH RESULTS

Page 21

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
PAS	31.6840	116.0250	05/21/1983	204140.9	5.0	4.00	0.011	III	99.9(160.7)
GSP	33.9420	116.3040	05/04/1992	161949.7	12.0	4.80	0.017	IV	99.9(160.8)
DMG	33.1170	115.5670	07/29/1950	1714 0.0	0.0	4.30	0.013	III	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	325 0.0	0.0	4.70	0.016	IV	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	1817 0.0	0.0	4.20	0.013	III	99.9(160.8)
DMG	33.1170	115.5670	07/29/1950	1843 0.0	0.0	4.70	0.016	IV	99.9(160.8)
DMG	33.1170	115.5670	08/01/1950	83720.0	0.0	4.70	0.016	IV	99.9(160.8)
DMG	33.1170	115.5670	08/14/1950	1916 0.0	0.0	4.70	0.016	IV	99.9(160.8)
DMG	33.1170	115.5670	07/27/1950	954 0.0	0.0	4.10	0.012	III	99.9(160.8)
DMG	33.1170	115.5670	07/27/1950	112926.0	0.0	4.80	0.017	IV	99.9(160.8)
DMG	33.1170	115.5670	07/27/1950	12 2 0.0	0.0	4.20	0.013	III	99.9(160.8)
DMG	33.1170	115.5670	07/27/1950	2251 0.0	0.0	4.50	0.015	IV	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	1949 0.0	0.0	4.20	0.013	III	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	1624 0.0	0.0	4.00	0.011	III	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	1727 0.0	0.0	4.70	0.016	IV	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	1730 0.0	0.0	4.10	0.012	III	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	175048.0	0.0	5.40	0.024	IV	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	175812.0	0.0	4.80	0.017	IV	99.9(160.8)
DMG	33.1170	115.5670	07/29/1950	017 0.0	0.0	4.50	0.015	IV	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	1840 0.0	0.0	4.00	0.011	III	99.9(160.8)
DMG	33.1170	115.5670	07/29/1950	15 9 0.0	0.0	4.50	0.015	IV	99.9(160.8)
DMG	33.1170	115.5670	07/28/1950	2113 0.0	0.0	4.10	0.012	III	99.9(160.8)
DMG	33.1170	115.5670	07/29/1950	143632.0	0.0	5.50	0.025	V	99.9(160.8)
GSG	31.9010	115.8070	03/20/1996	050309.4	5.0	4.00	0.011	III	100.0(160.9)

DMG |33.0000|115.5330|10/25/1955|174942.0| 0.0| 4.30| 0.013 |
III|100.0(160.9)

****
*
-END OF SEARCH- 1085 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2100

LENGTH OF SEARCH TIME: 301 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 1.7 MILES (2.8 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 7.0

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.385 g

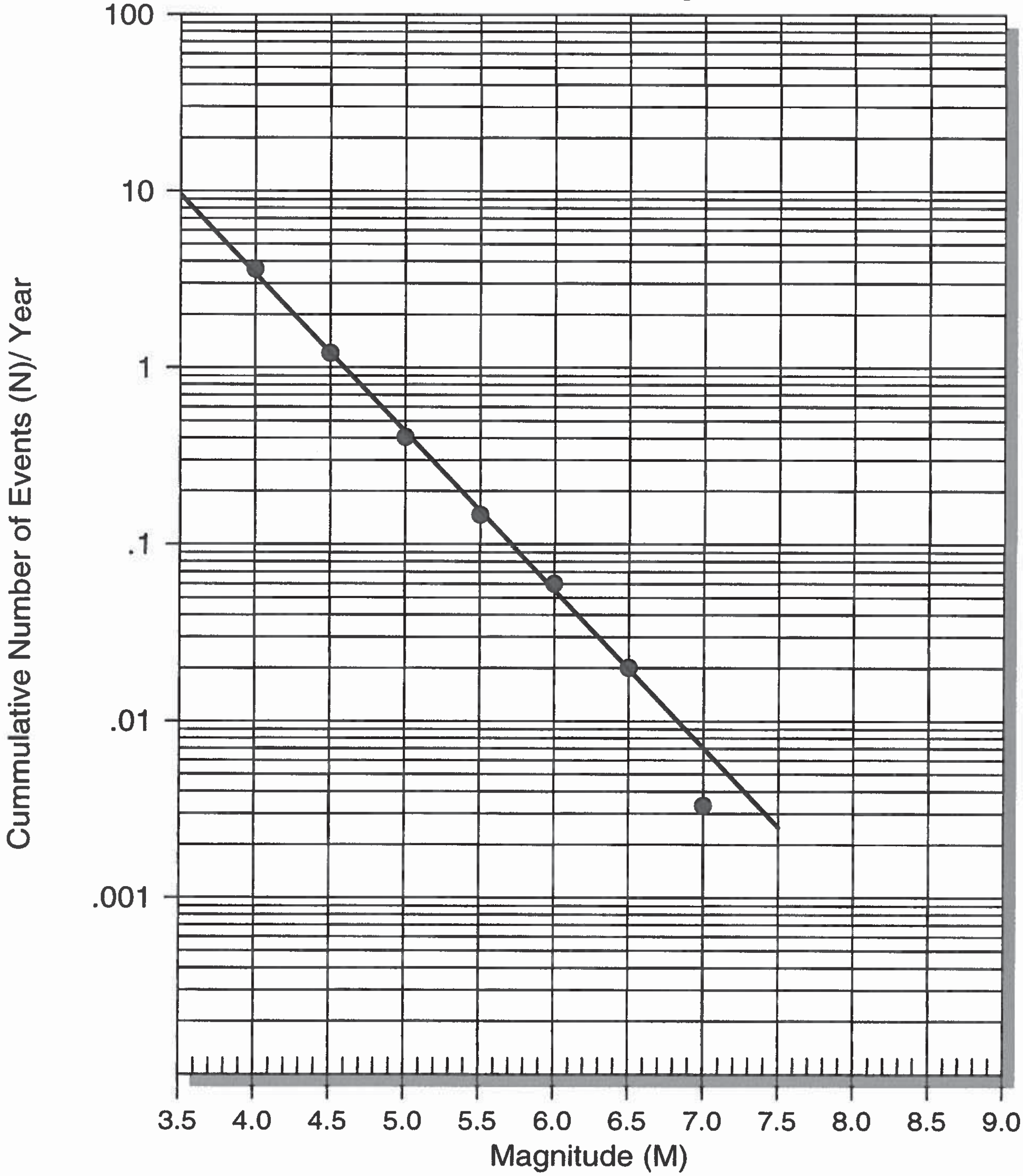
COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 4.114
b-value= 0.895
beta-value= 2.062

TABLE OF MAGNITUDES AND EXCEEDANCES:

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	1085	3.60465
4.5	363	1.20598
5.0	121	0.40199
5.5	44	0.14618
6.0	18	0.05980
6.5	6	0.01993
7.0	1	0.00332

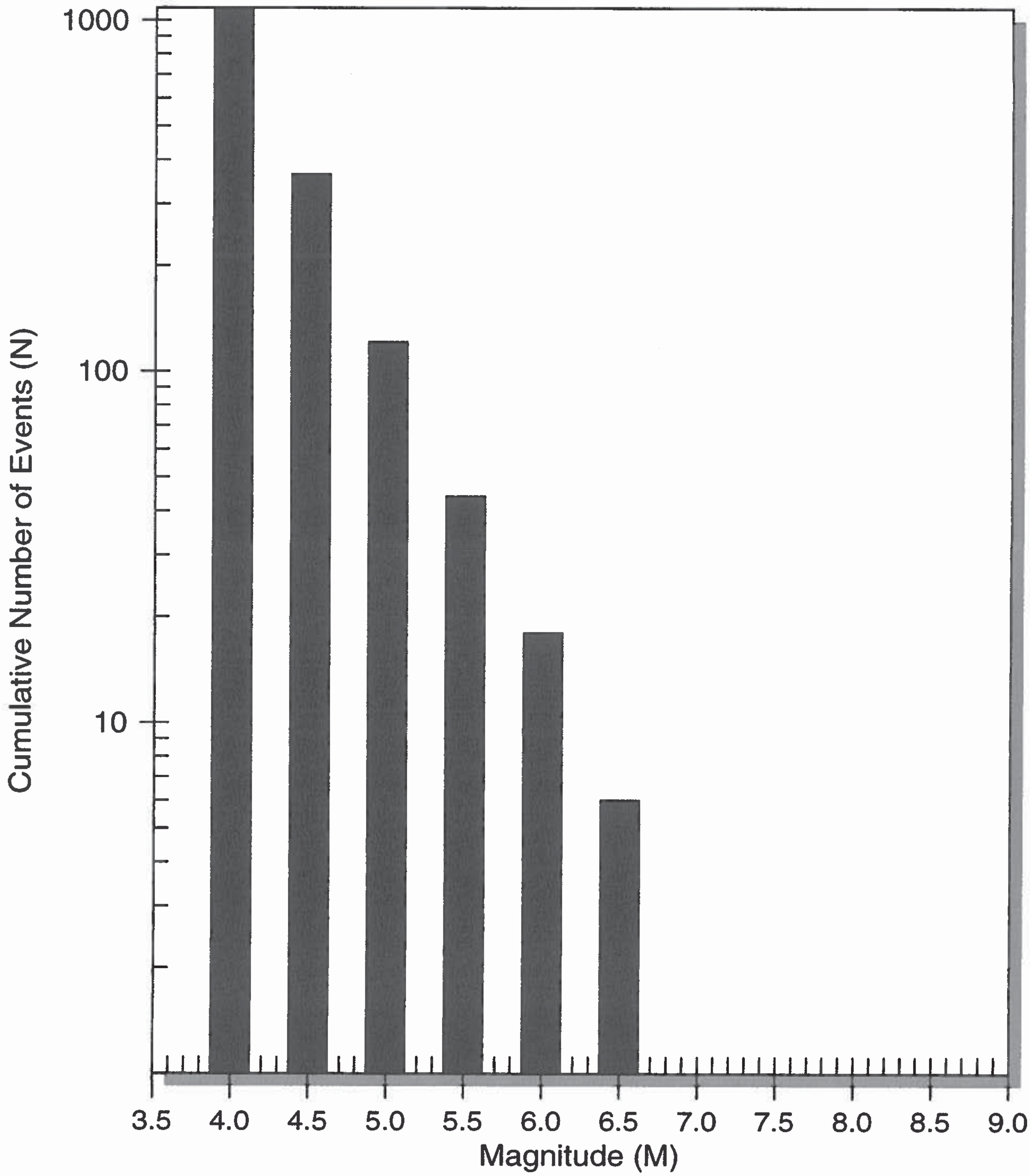
EARTHQUAKE RECURRENCE CURVE

Shelter Island Boat Launch Ramp



Number of Earthquakes (N) Above Magnitude (M)

Shelter Island Boat Launch Ramp



APPENDIX D

EXAMPLE OF
WAVE FORCE DETERMINATION

TerraCosta
Consulting Group

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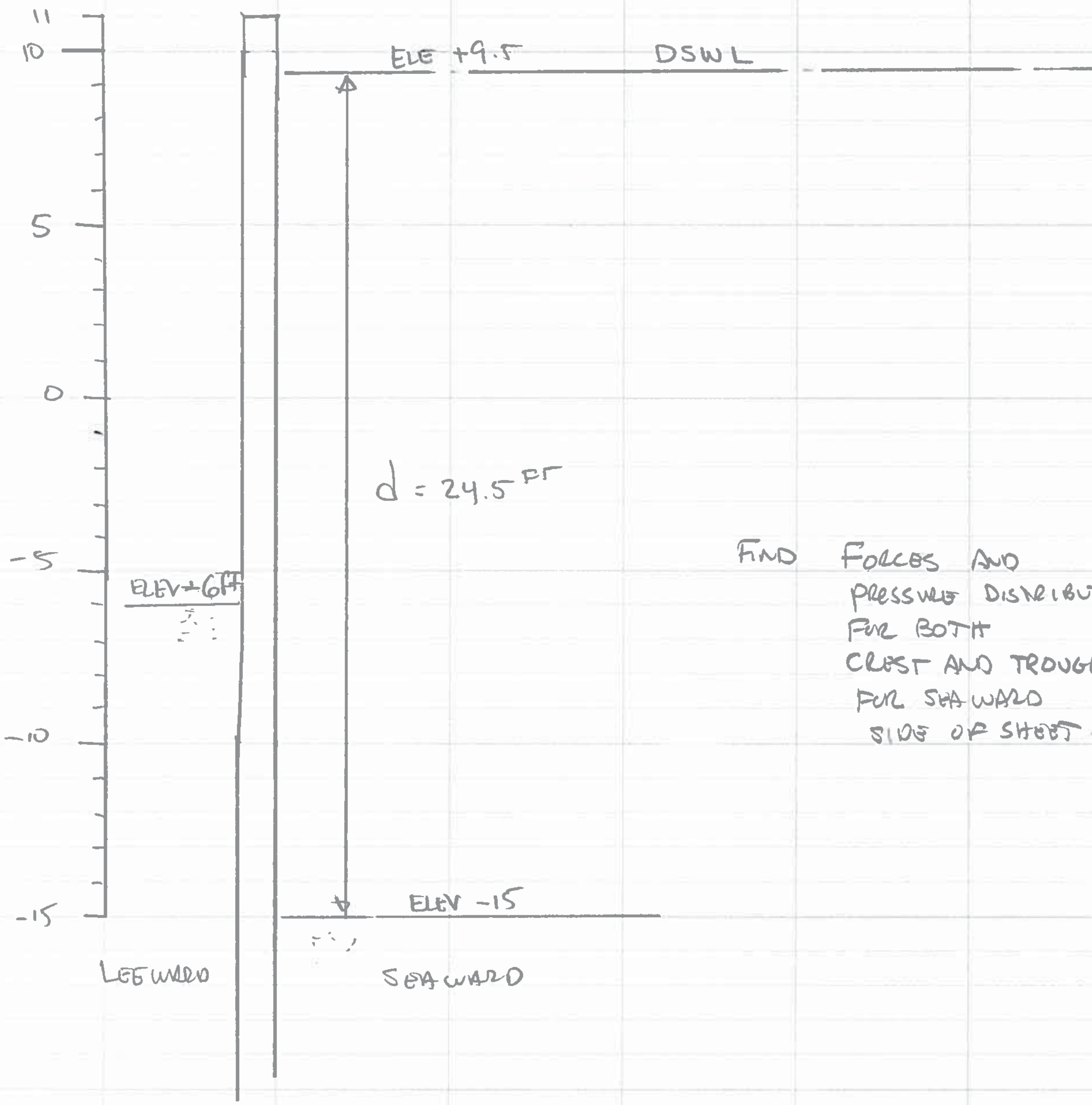
COMPUTATIONS OF WAVE FORCE & PRESSURE DISTRIBUTIONS ON SHEET-PILE WALLS.

GIVEN:



FIND FORCES AND PRESSURE DISTRIBUTION FOR BOTH CREST AND TROUGH FOR SEAWARD SIDE OF SHEET.

PROJECT NAME ____ DRAWN BY MWE

CHECKED BY ____

PROJECT NUMBER ____ DATE ____ PAGE 1 OF 3

FOR SEAWARD SIDE

$d = 24.5^{FT}$

FROM TABLE 1

$F_c = 22,670$ #/FT — CREST WAVE

F_t 15,370 # / FT. — TROUGH WAVE

ALSO FROM TABLE 1

$y_c = 29.9$ FT — DISTANCE TO WATER SURFACE (CREST)

$y_t = 22.0$ FT — (TROUGH)

ALSO FROM TABLE 1

THE EQUIVALENT UNIT weight of water for crest & trough conditions

$\gamma^{c}_{weq} = 50.7$ pcf

$\gamma^{t}_{weq} = 63.5$ pcf

WATER PRESSURE AT BAY FLOOR

$p_c = 50.7(29.9) = 1515.9 \sim 1516$ psf

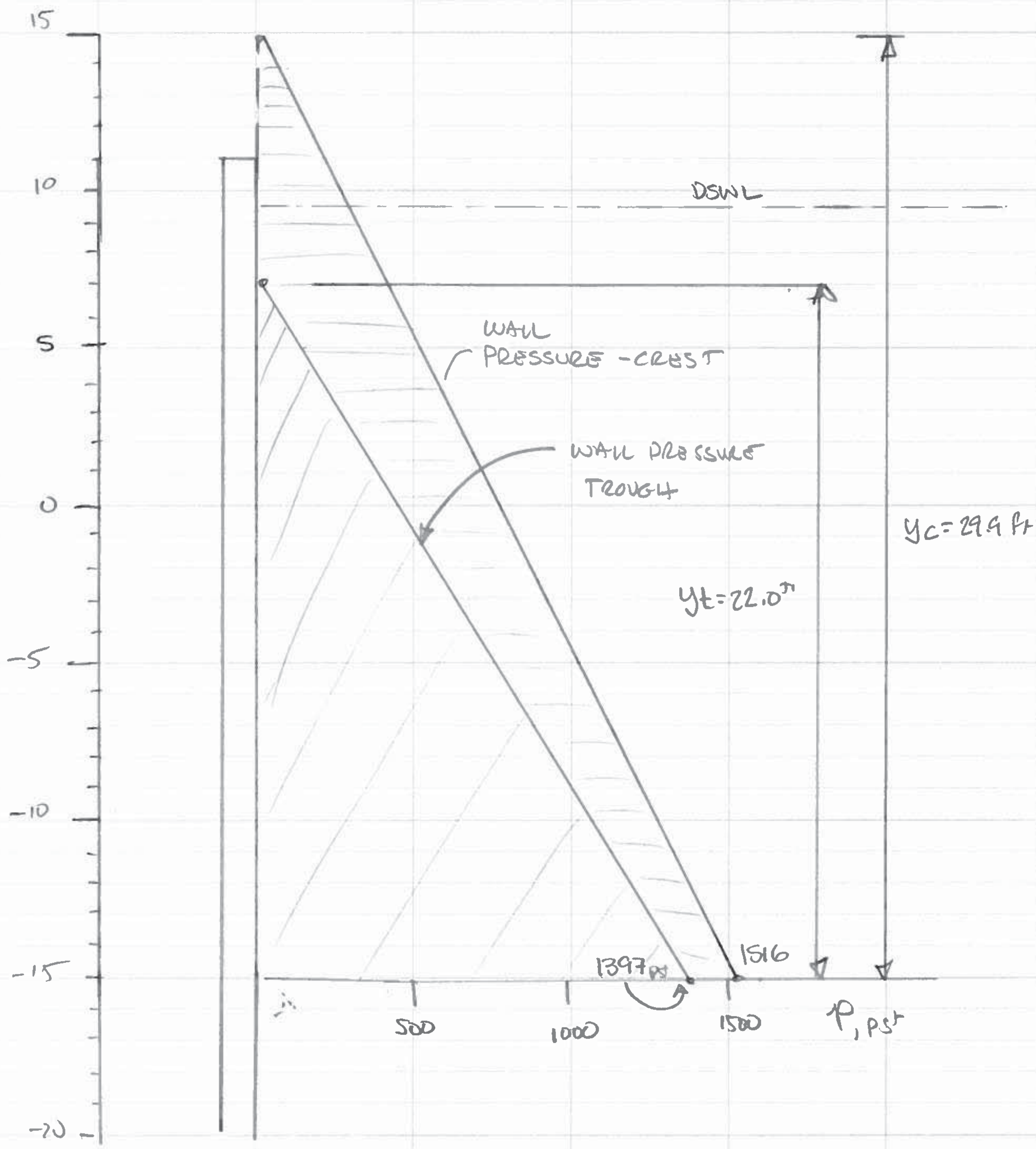
$p_c = 63.5(22.0) = 1397$ psf

TerraCosta Consulting Group

PROJECT NAME ______ DRAWN BY MWE

CHECKED BY ______

PROJECT NUMBER ______ DATE ______ PAGE 2 OF 3



TerraCosta Consulting Group

PROJECT NAME ______ DRAWN BY ______

CHECKED BY ______

PROJECT NUMBER ______ DATE ______ PAGE 3 OF 3

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APPENDIX D

NOISE TECHNICAL REPORT

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Prepared for:

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SHELTER ISLAND BOAT LAUNCHING FACILITY
NOISE IMPACT ANALYSIS
CITY OF SAN DIEGO, CALIFORNIA

August 16, 2013

JN:07895-04 Report.docx

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TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

APPENDICES

LIST OF EXHIBITS

LIST OF TABLES

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SHELTER ISLAND BOAT LAUNCHING FACILITY
NOISE IMPACT ANALYSIS
CITY OF SAN DIEGO, CALIFORNIA

1.0 INTRODUCTION

This analysis has been completed to determine the noise impacts associated with the development of the proposed Shelter Island Boat Launching Facility ("SIBLF"). The SIBLF is a 2 acre site, in the northeasterly area of Shelter Island and northwesterly area of the San Diego Bay as shown on Exhibit 1-A. This noise analysis briefly describes the proposed project, provides information regarding noise fundamentals, describes the regulatory setting, and evaluates the potential construction noise impacts.

1.1 PROJECT DESCRIPTION

The SIBLF as proposed will make significant improvements and rehabilitation of the existing facility to accommodate current and future needs of boaters in the limited area. The Project site will consist of 169-boat trailer parking spaces, public restrooms, a 10-lane boat launch ramp, and two floating docks These planned improvements are shown on project site plan, Exhibit 1-B. It is expected that the construction of the SIBLF will include the demolition of the existing concrete launching ramp, partial removal of the rubble mound jetty (breakwater) and its replacement with a permanent concrete sheet pile bulkhead, and the replacement of the existing floating docks. The rubble will be removed from landside and waterside areas with excavators and/or clamshell bucket crane, and transported by either trucks or barge to off-site locations.

The construction noise impacts associated with the SIBLF improvements are expected to occur over a period of approximately six months beginning in March 2016 and continuing through August 2016. The construction schedule shown on Table 1-1 identifies the anticipated duration of construction activities by phase.

1.2 PURPOSE OF THE NOISE IMPACT ANALYSIS

The purpose of this noise analysis is to evaluate the construction noise impacts associated with the development of the Shelter Island Boat Launching Facility and to recommend noise mitigation measures, if necessary, to minimize the potential Project impacts. This noise study has been prepared to satisfy the City of San Diego noise standards. To assess the noise potential construction noise impacts associated with the SIBLF, the following analysis evaluates the noise levels associated with each phase of construction. In addition, the analysis examines the potential truck traffic noise level increases related to the export of rubble materials.

EXHIBIT 1-A
LOCATION MAP

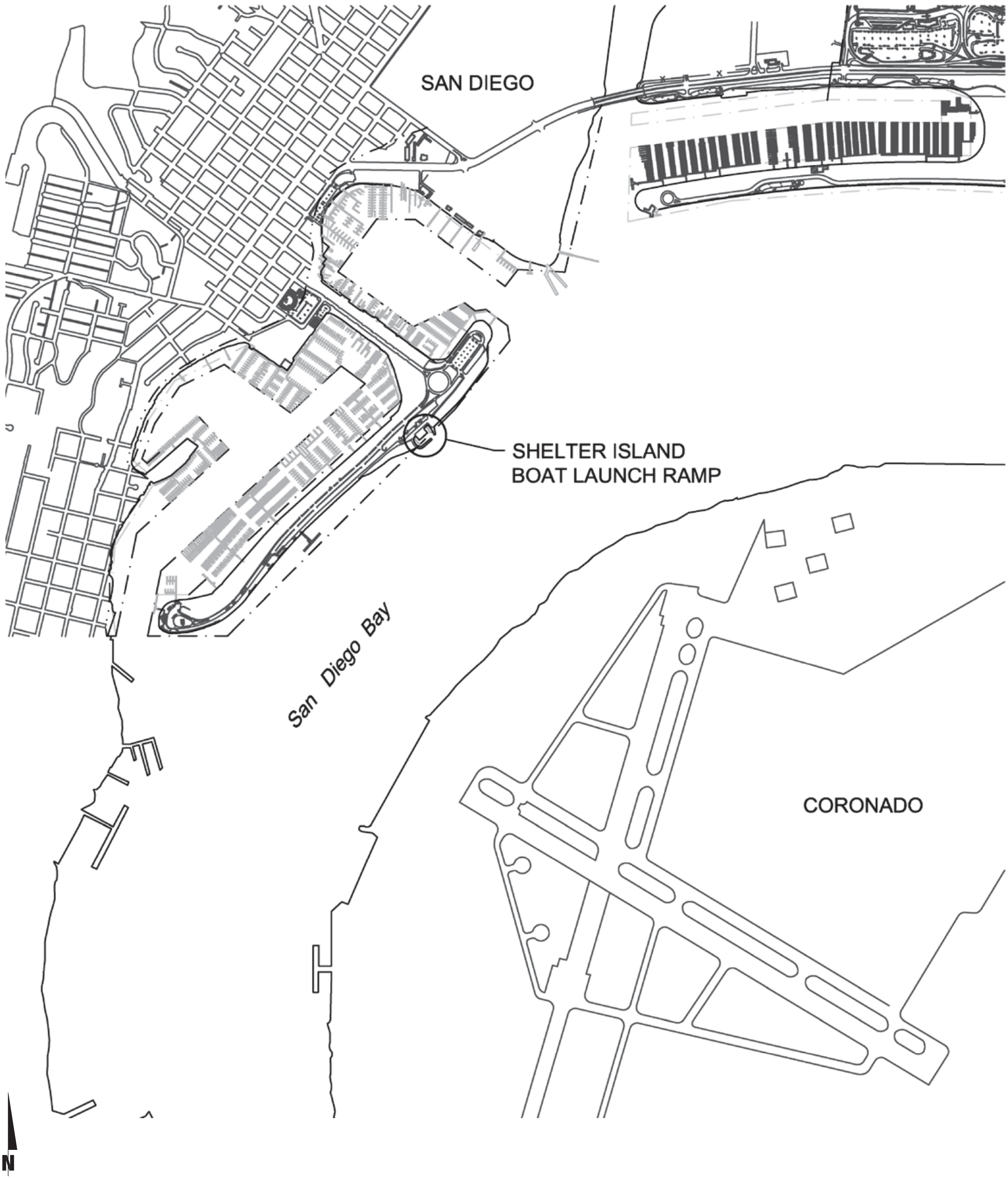
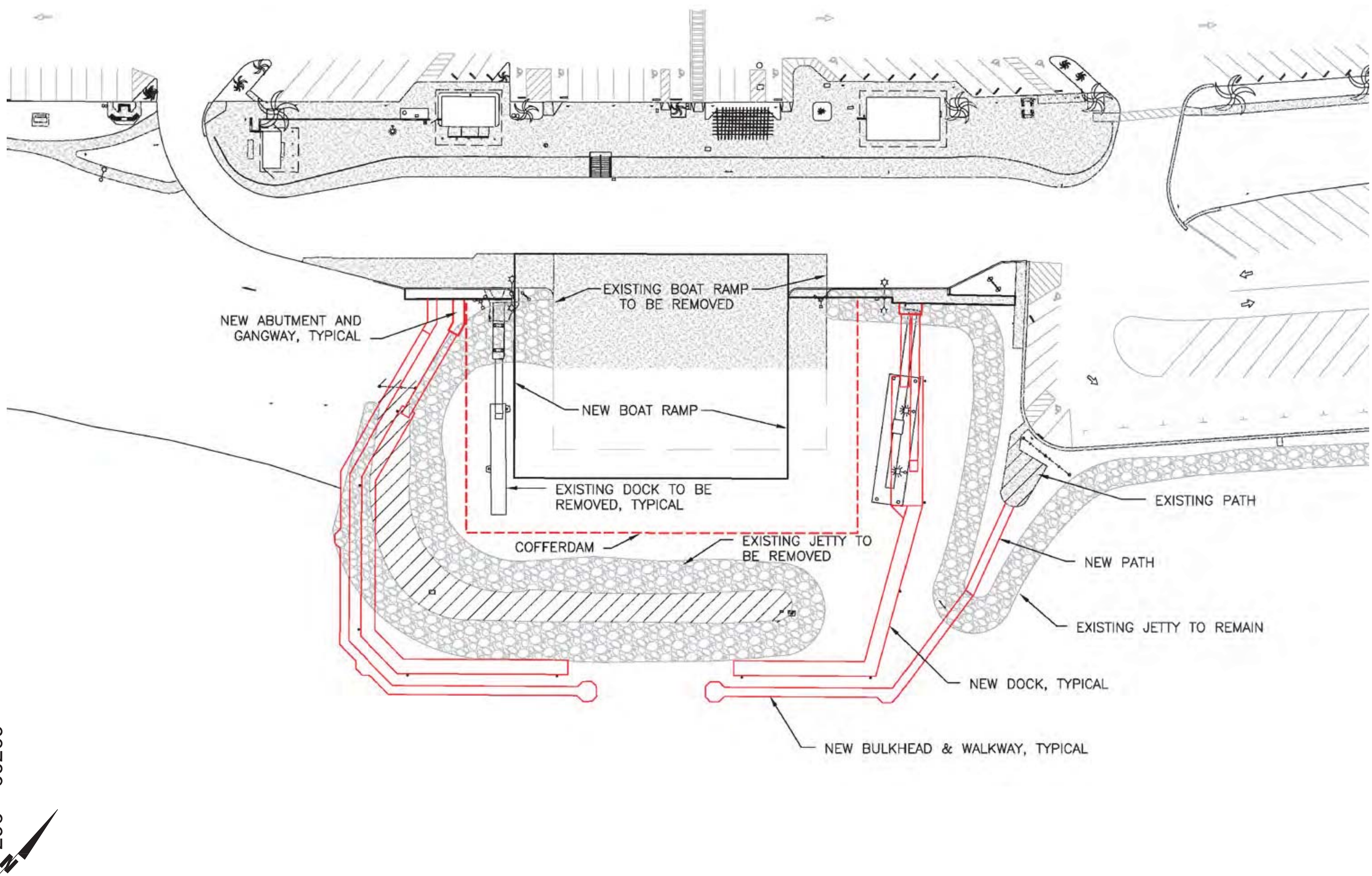


EXHIBIT 1-B
SITE PLAN



T□□□□ 1□1

C□□□□□□□□□□□ S□□□□□□□

Phase	Start Date	End Date	Duration (Days)
Demolition	□/2/2016	□/16/2016	1□
Site Preparation	□/1□/2016	□/□0/2016	1□
□rading	□/1□/2016	□/□/2016	1□0
□ther (Sheet/Batter/□uide piles)	□/20/2016	□/□/2016	10□
□ther (Trenching/Electrical)	□/6/2016	9/□/2016	6□
Paving	□/20/2016	□/□/2016	1□

2.□ NOISE FUNDAMENTALS

□oise has been simply defined as □unwanted sound.□ Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. □oise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad fre□uency noise source by discriminating against very low and very high fre□uencies of the audible spectrum. They are adjusted to reflect only those fre□uencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

2.1 RAN□E OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale fre□uently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. The most common sounds vary between □0 dBA (very □uiet) to 100 dBA (very loud). □ormal conversation at three feet is roughly at 60 dBA, while loud jet engine noises e□uate to 110 dBA at approximately 100 feet, which can cause serious discomfort.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most commonly used figure is the e□uivalent level (Le□). E□uivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The e□uivalent sound level (Le□) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The Le□ noise descriptor is used to describe the hourly stationary source construction related Project noise impacts.

The C□EL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 2□ hours. The time of day corrections re□uire the addition of □ decibels to dBA Le□ sound levels in the evening from □ p.m. to 10 p.m., and the addition of 10 decibels to dBA Le□ sound levels at night between 10 p.m. and □ a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. C□EL does not represent the actual sound level heard at any particular time, but rather represents the total sound exposure. The C□EL noise descriptor is used to describe the transportation related truck traffic noise impacts.

EXHIBIT 2-A

TYPICAL NOISE LEVELS AND THEIR SUBJECTIVE LOUDNESS AND EFFECTS

COMMON OUTDOOR ACTIVITIES	***COMMON INDOOR ACTIVITIES***	***A - WEIGHTED SOUND LEVEL dBA***	***SUBJECTIVE LOUDNESS***	***EFFECTS OF NOISE***
THRESHOLD OF PAIN		140		
NEAR JET ENGINE		130	INTOLERABLE OR DEAFENING	
		120		HEARING LOSS
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100		
GAS LAWN MOWER AT 1m (3 ft)		90	VERY NOISY	
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	SPEECH INTERFERENCE
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		SLEEP DISTURBANCE
QUIET SUBURBAN NIGHTTIME	LIBRARY	30		
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20	FAINT	
	BROADCAST/RECORDING STUDIO	10		NO EFFECT
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0	VERY FAINT	

SOURCE: NOISE TECHNICAL SUPPLEMENT BY CALTRANS

2.□ SOUND PROPA□ATION

□ hen sound propagates over a distance, it changes in level and fre□uency content. The manner in which noise reduces with distance depends on the following factors.

2.□.1 □EOMETRIC SPREADIN□

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. □ighways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. □oise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of □ dB for each doubling of distance from a line source.

2.□.2 □ROUND A□SORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. □oise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.□ dB per doubling of distance is normally assumed. □ hen added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of □.□ dB per doubling of distance from a line source.

2.□.□ ATMOSPHERIC EFFECTS

□eceptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than □00 ft) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). □ther factors such as air temperature, humidity, and turbulence can also have significant effects.

2.□ TRAFFIC NOISE PREDICTION

According to the *Highway Traffic Noise Analysis and Abatement Policy and Guidance,* provided by the Federal □ighway Administration, the level of traffic noise depends on three primary factors□(1) the volume of the traffic, (2) the speed of the traffic, and (□) the vehicle mix within the flow of traffic.

Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and a greater number of trucks. A doubling of the traffic volume, assuming that the speed and vehicle mix do not change, results in a noise level increase of □ dBA. The vehicle mix on a given roadway may also have an effect on community noise levels. As the number of medium and heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise level impacts will increase. Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires on the roadway.

2.□ LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches and residences are more sensitive to noise intrusion than are commercial or industrial activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process.

□.□ REGULATORY SETTING

Local noise guidelines are often based on the broader guidelines established by state and federal agencies. This section describes the regulatory setting for the proposed Shelter Island Boat Launching Facility.

□.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared according to guidelines adopted by the Governor's Office of Planning and Research. The purpose of the Noise Element is to "limit the exposure of the community to excessive noise levels." In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts. Under CEQA, a project has a potentially significant impact if the project exposes people to noise levels in excess of thresholds, which can include standards established in the local general plan or noise ordinance.

□.2 CITY OF SAN DIEGO GENERAL PLAN

The City of San Diego General Plan identifies several policies to minimize the impacts of excessive noise levels throughout the community. The policies included in the General Plan consider land use compatibility and identify specific exterior and interior noise level limits for transportation related noise. To control transportation-related noise sources such as arterial roads, freeways, airport and railroads, the City of San Diego has established noise compatibility guidelines in the General Plan Noise Element for all land use categories. According to the City's *Land Use – Noise Compatibility Guidelines (NE-3)*, noise sensitive land uses include residential uses, hospitals, nursing facilities, intermediate care facilities, child educational facilities, libraries, museums, places of worship, child care facilities, and certain types of passive recreational parks and open space. These noise sensitive land uses are considered *compatible* with exterior noise levels below 60 dBA CNEL and *conditionally compatible* with exterior noise levels below 6□ dBA CNEL. The noise compatibility guidelines are used to assess the long-term traffic noise impacts on nearby land uses. The City of San Diego General Plan Noise Element is included in Appendix □.1.

□.□ CITY OF SAN DIEGO MUNICIPAL CODE STANDARDS

The City of San Diego Municipal Code Section □9.□.0□0□ states that it *shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12-hour period from 7:00 a.m. to 7:00 pm.* The City of San Diego does not identify any noise criteria to control single-event noise level impacts associated with the pile driving activities. The □□

dBA construction noise criteria averages the construction noise level impacts over 12 hours during the daytime. The City of San Diego Municipal Code standards, Article 9.□□□oise Abatement and Control are included in Appendix □.2.

□.□ CE□A SI□NIFICANCE CRITERIA

The following significance criteria are based on guidance provided by Appendix □ of the California Environmental □uality Act (CE□A) □uidelines. For the purposes of this report, noise impacts would be potentially significant if the proposed Project is determined to result in or cause□

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels□

□.□ SI□LF SI□NIFICANCE CRITERIA

Acting as the Lead Agency for the project, the Port of San Diego is responsible for establishing the significance criteria to assess the project noise impacts. The Port of San Diego generally relies on the significance criteria established by the local agency to evaluate the significance of project impacts. Since the SIBLF project is located in the City of San Diego, the following City of San Diego significance criteria has been applied to assess the potential noise impacts associated with the proposed SIBLF project.

□.□1 CONSTRUCTION NOISE

According to the City of San Diego *Significance Determination Thresholds,* temporary construction noise which exceeds □□ dBA Le□ at a sensitive receptor *(property zoned residential)* would be considered significant. Additionally, where temporary construction noise would substantially interfere with normal business communication, or affect sensitive receptors, a significant noise impact may be identified. The City of San Diego Development Services Department significance determination thresholds to support the California Environmental □uality Act (CE□A) are included in Appendix □.□.

□.□2 TRUC□ TRAFFIC

□nder CE□A, consideration must be given to the magnitude of the increase, the existing ambient noise levels and the location of noise-sensitive receptors in order to determine if a noise increase represents a significant adverse environmental effect. The Federal □ighway Administration and Caltrans both identify changes in noise levels of greater than □ dBA as □barely perceptible,□ while changes of □ dBA are considered □readily perceptible.□ In a community situation, the noise exposure is extended over a long time period, and changes in noise levels occur over a period of years. For the purpose of this analysis, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dBA, and □ dBA appears to be appropriate for most people. □ff-site project noise level impacts shall be considered significant if project-generated truck traffic noise would create a □barely perceptible□ □ dBA or greater increase in ambient exterior noise levels. The use of the □ dBA or greater increase is consistent with the City of San Diego *Significance Determination Thresholds* that states the following□*If a project is currently at or exceeds the significant thresholds for traffic noise…and noise levels would result in less than a 3 dB increase, then the impact is not considered significant.*

□.□ E□ISTIN□ EN□IRONMENT

To assess the existing noise level environment, five (□) long-term 2□-hour measurements and five (□) short-term noise measurements were taken at noise sensitive receptor locations in the Project study area. □oise sensitive receptors are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land.

The noise level measurement receptor locations were selected to describe and document the existing noise environment within the project area. Exhibit □-A provides the boundaries of the Project study area and the noise level measurement locations. The noise level measurements were recorded by □rban Crossroads, Inc. on □ednesday, □uly 10, 201□. Appendix □.1 includes study area photos.

□.1 NOISE MEASUREMENT PROCEDURE AND CRITERIA

The long-term 2□-hour noise readings were recorded using five (□) □uest DL Pro data logging Type 2 noise dosimeters. The □uest DL noise dosimeters were calibrated using a □uest □C-10 calibrator. The short-term noise measurements were taken using a Larson-Davis Model □2□ Type 1 (Serial □o. A2629) integrating sound level meter. All short-term measurements were collected for a 1□-minute time period at each receptor location. The Larson Davis Model □2□ sound level meter was calibrated before the monitoring using a Larson-Davis calibrator, Model CAL 1□0.

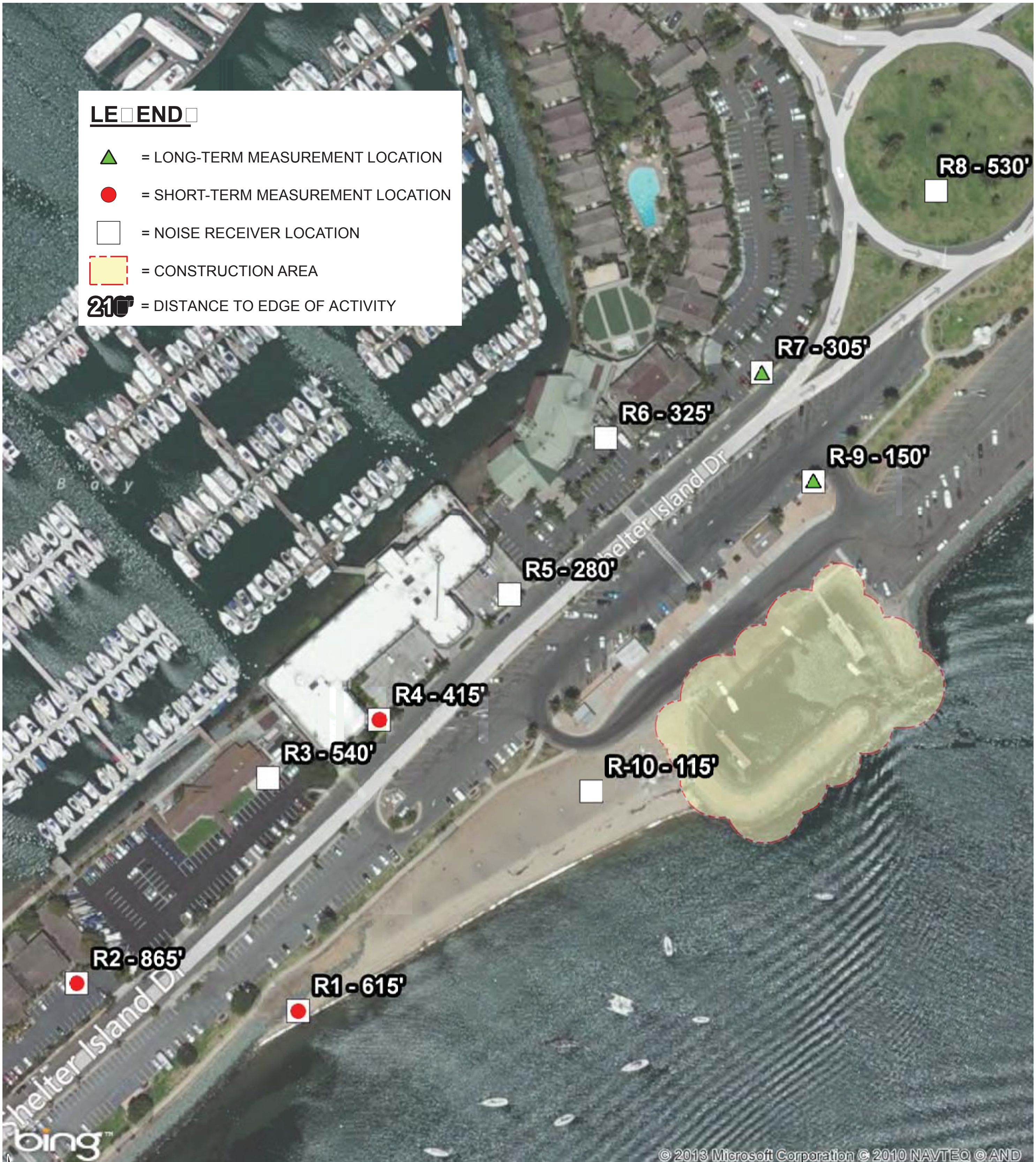
All noise meters were programmed in □fast□mode to record noise levels in □A□weighted form consistent with the sound level definition provided by the City of San Diego in the *Significance Determination Thresholds.* Sound level meters have both a □slow□or □fast□response□□fast□collects and averages the sound pressure over a shorter time period than □slow□making the measurement closer to the actual sound level at any time. As a result, readings taken with □fast□will vary more than those taken with □slow□ response. In addition, the □fast□response provides a better resolution of the instantaneous sound levels. The sound level meters and microphone were e□uipped with a windscreen during all measurements. All noise level measurement e□uipment meets American □ational Standards Institute (A□SI) specifications for sound level meters (Standard S1.□-19□□).

□.2 NOISE MEASUREMENTS

The long-term 2□-hour noise level measurements were generally positioned to describe the long-term traffic noise level impacts while the short-term noise level measurements were used to describe the existing ambient hourly noise levels surrounding the proposed project construction site. Short-term noise level measurements and modeling locations were selected to represent the primary fre□uent outdoor use areas for various land uses within the project area. Since, it is not practical to collect measurements at each individual building or residence, each receptor measurement represents a group of buildings that share acoustical e□uivalence. In other words, the area represented by the receptor shares similar

EXHIBIT 4-A

NOISE MEASUREMENT RECEIVER LOCATIONS



shielding, terrain, and geometric relationship to the reference noise source. □hile receptors represent a location of noise sensitive areas, receivers represent noise modeling locations used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receptor locations allows for a comparison of the before and after project noise levels. It is important to note that the primary noise source for all the reference noise level measurements was the traffic noise from the neighboring roadways, aircraft over flights from the nearby □orth Island □aval Air Station, and background noise from boating activities. Appendix □.2 includes a map book showing the location of the noise level measurements.

□.2.1 LON□□TERM NOISE LE□EL MEASUREMENTS

To describe the off-site transportation related noise impacts, five (□) long-term noise level measurements were collected along the planned truck traffic haul route. According to the *Shelter Island Boat Launch Facility Improvements Focused Construction Traffic Assessment* prepared by □rban Crossroads on □une 2, 201□, construction haul truck trips are expected to travel from the SLBLF construction site on Shelter Island Drive to □osecrans Street and ultimately to the I-□ Freeway. The long-term noise level measurement locations were selected to represent the noise sensitive residential land uses located near truck route.

The results of the long-term noise level measurements are presented in Table □-1. Table □-1 identifies the range of hourly noise levels observed during the daytime hour between □am to 10 pm, the nighttime hours between 10 pm to □am, the construction hours between □am to □pm, and the 2□-hour C□EL. The C□EL noise level measurements with the appropriate time of day corrections produced noise levels ranging from 6□.1 dBA C□EL at location LT-1 to □□.1 dBA C□EL at location LT-□. The actual hourly noise level measurements with the appropriate time of day noise penalties that were used to calculate the C□EL are provided in Appendix □.□.

□.2.2 SHORT□TERM NOISE LE□EL MEASUREMENTS

To describe the noise sensitive receptor locations near the project construction site, short-term ambient noise level measurements were collected at five (□) locations as shown on Exhibit □-A. The short-term noise level measurements describe the existing background ambient noise levels that can be expected during the SIBLF construction hours of □am to □pm. The short-term noise receptor locations describe the existing ambient noise conditions at the neighboring hotels, passive recreational parks, and beaches. As shown on Table □-2, the existing ambient noise conditions near the project construction site range from □9.□ dBA Le□ at ST-□ to 6□.□ dBA Le□ on the beach at ST-□. The short-term noise level measurement worksheets are included in Appendix □.□.

T□□□□ □□1

L□□□□T□□□ □A□ □□□□□□N□□□□ L□□□□M□□□□□□□ □□□□

□eceptor Location[1]	Description	□ourly □oise Level (Le□ dBA)[2]			C□EL
		Daytime (□am to 10pm)	□ighttime (10pm to □am)	Construction (□am to □pm)	
LT-1	Located approximately □□ feet northeast from the restrooms on the median island near the Shelter Island Boat Launching □amp.	□9.2 - 6□.2	□6.2 - □□.□	□9.2 - 6□.2	6□.1
LT-2	Located in the parkway between Southbound Shelter Island Drive and the □umphreys □alf Moon Inn and Suites □otel.	62.□ - 69.9	□9.2 - 6□.□	6□.□ - 69.9	6□.□
LT-□	Adjacent to the □amada □otel located at 1□0□ □osecrans Street.	66.□ - □□.6	□6.2 - □0.9	69.2 - □□.6	□□.2
LT-□	Single-family detached residential located adjacent to □osecrans Street near □ est Bainbridge □oad.	69.□ - □□.□	□□.□ - □2.9	□1.□ - □□.□	□□.1
LT-□	Single-family detached residential located at the corner of □osecrans Street and □ingsley Street.	6□.□ - □2.2	□6.2 - □2.□	69.9 - □2.2	□□.□

[1] See Appendix □-2 for the location of the long-term noise monitoring sites.

[2] □bserved hourly noise levels. The long-term hourly noise level measurements are included in Appendix □.□.

T□□□□ □2

S□□□□T□□□ A□ □□□□□□N□□□□ L□□□□M□□□□□□□□ □□□□[1]

□eceptor Location[2]	Start Time	Duration (Minutes)	Description	□oise Level (dBA)		
				Le□	Lmax	Lmin
ST-1	11□10 AM	1□	Front parking area of Le □ondelet. Six-story residential living building.	□6.□	□1.6	□□.2
ST-2	11□□□ AM	1□	Bay Club □otel room located at 21□1 Shelter Island Drive room facing the Shelter Island Launch □amp	61.□	□□.□	□1.1
ST-□	11□□□ AM	1□	□n the southwest corner of the existing jetty at the Shelter Island Boat Launching □amp	□9.□	6□.□	□2.□
ST-□	□26 PM	1□	First floor hotel room (Building I □oom 161) facing the Shelter Island Boat Launching □amp at the Best □ estern Island Palms.	61.□	□□.□	□0.□
ST-□	□□6 PM	1□	Beach recreation area located west of the launch ramp.	6□.□	□□.1	□□.2

[1] The short-term noise level measurements collected on □ ednesday, □uly 10, 201□ are included in Appendix □.□.

[2] Short-term measurement locations are presented on Exhibit □-A

□.□ NOISE SENSITI□E RECEPTORS

□oise sensitive receptors are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. □oise-sensitive receptors typically include residences, hospitals, schools, libraries and certain types of passive recreational uses. As shown on Exhibit □-A, several hotels are located near Shelter Island Boat Launching Facility across Shelter Island Drive. The □umprey□s □alf Moon Inn and Suite □otel is located approximately □□0 feet from the construction site with the Bay Club □otel located roughly □□0 feet away. A review of the zoning classifications indicates that these nearby hotel properties are zoned as resort and marina land uses and are therefore, not considered a noise sensitive receptor according the City of San Diego Municipal Code. The City of San Diego Municipal Code Section □9.□0□0□ states □*that is shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential"*... The nearest property zoned residential is located over 2,000 feet across the marina, northwest of the SIBLF construction site.

In addition, the City□s □eneral Plan □oise Element identifies residential uses, hospitals, nursing facilities, intermediate care facilities, child educational facilities, libraries, museums, places of worship, child care facilities, and certain types of passive recreational parks and open space as noise sensitive land uses. □hile the neighboring hotel uses are not zoned residential or specifically identified as a noise sensitive land use according the definition provided in the noise element, hotels are considered transient housing and are therefore, a noise sensitive land use during the evening and nighttime hours between □pm and □am when guests would be sleeping. To assess the potential off-site construction noise level impacts at specific locations, ten (10) noise receiver locations were identified as shown on Exhibit □-A. The noise receivers are located approximately 11□ to □6□ feet from the SIBLF construction area. The noise receiver locations include land uses situated near the existing boat launch facility (□10), adjacent to the nearby hotels (□2, □□, □□, □□ and □6), and in the passive recreational areas are described by receiver locations □1, □□, □9, and □10.

□.□ CONSTRUCTION NOISE

This section analyzes potential noise impacts resulting from the construction noise impacts associated with the development of the proposed Shelter Island Boat Launching Facility.

□.1 CONSTRUCTION ACTIVITIES

The proposed construction activities are expected to consist of, maintenance, and replacement of several structures comprising the Shelter Island boat launch ramp and jetty. Specifically, the proposed work consists primarily of the following elements:

1) Demolition of the existing concrete launching ramp, docks and related improvements
2) Construction of a new cast-in-place concrete launch ramp utilizing a temporary steel sheet pile cofferdam to allow the ramp to be constructed in "dry" conditions; the cofferdam will allow the concrete ramp to be constructed and cured before allowing contact with tidal waters; the area behind the cofferdam will be dewatered during the construction period in compliance with regulatory requirements
3) Partial removal of the rubble mound jetty (breakwater) and its replacement with a permanent concrete sheet pile bulkhead to expand the existing boat basin within the jetty footprint; the bulkhead will have a 60-foot wide opening through the breakwater for boat access to the San Diego Bay

To describe the short-term construction noise impacts, the project construction has been divided into six (6) phases of activity. The construction is expected to utilize of a combination of equipment that will vary based on the phase of construction. The equipment will include dozers, tractors, backhoes, cranes, concrete saws, graders, concrete pump trucks and pile drivers. The construction noise levels including the number and mix of construction equipment by construction phase are consistent with the data used to support the construction emissions in the *Shelter Island Boat Launching Facility Air Quality Impact Analysis*. Table 1-1 provides a summary of the planned construction schedule by phase.

□.2 CONSTRUCTION REFERENCE NOISE LEVELS

In January 2006, the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM) that includes a national database of construction equipment reference noise emission levels. The RCNM equipment database, as shown in Appendix □.1, provides a comprehensive list of the noise generating characteristics for specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. The usage factor is a key input variable of the RCNM noise prediction model that is used to calculate the average Leq noise levels based on the Lmax noise levels measured at a distance of □0 feet. Table □-1 identifies the reference noise levels and usage factors used to estimate the construction noise level impacts by phase.

□oise levels generated by the Shelter Island Boat Launching Facility construction e□uipment is expected to range from approximately □□ dBA to 101 dBA Lmax when measured at a distance □0 feet. □owever, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of □□ dBA measured at □0 feet from the noise source to the receptor would be reduced to □2 dBA at 100 feet from the source to the receptor, and would be further reduced to 66 dBA at 200 feet from the source to the receiver.

As shown on Table □-2, the pile driving activities represent the loudest noise source. The planned project construction is expected to utilize a combination of the impact pile drivers and vibratory pile drivers. Impact pile driving is the most commonly used pile driving method. Impact pile drivers are piston-type drivers that use various means to lift a piston (ignition, hydraulics, or steam) to a desired height and drop the piston (via gravity) against the head of the pile in order to drive a certain type of pile in the various substrates to the necessary depth. In some instances a vibratory hammer may be used to drive piles. □ibratory hammers use oscillatory hammers that vibrate the pile, causing the sediment surrounding the pile to li□uefy and allow pile penetration. The vibratory hammer produces sound energy that is spread out over time and is generally 10 to 20 dB lower than impact pile driving. Although this method results in lower level of noise generated during the □driving□ of a pile, it cannot be used in all situations. (ICF □ones □ Stokes, February 2009, pp. □-16)

□.□ CONSTRUCTION NOISE ANALYSIS

□sing the stationary-source □C□M noise prediction model, calculations of the Project construction noise level impacts were completed. Appendix □.2 includes the □C□M construction noise level calculations by e□uipment type for each phase of construction. Table □-2 provides a summary of the cumulative hourly construction noise levels by phase. As shown on Table □-2, at a distance of □0 feet, the cumulative hourly noise levels are expected to range from □2.0 dBA Le□ during the paving construction phase to 9□.□ dBA Le□ during the sheet / batter / guide pile installation (other) phase of construction. □hen compared with the City of San Diego □□ dBA Le□ 12-hour construction noise level limit, the SIBLF levels are expected to extend up to □□□□ feet beyond the project construction area during peak conditions. Exhibit □-A illustrates the □□ dBA Le□ noise contour boundaries for each phase of construction.

To describe the potential short-term construction noise impacts at specific locations in the project study area, ten (10) receivers were selected to represent nearby land use receptors as shown on Exhibit □-A. The noise receiver locations are generally positioned across Shelter Island Drive roughly 11□ to □6□ feet away from the construction activities. As shown on Table □-□, the construction noise levels are expected to range from □□ to 92 dBA Le□ during peak construction activities. The construction noise level analysis shows that the phases of construction that include the use of impact pile drivers are expected to exceed

T□□□□ □□1

C□□□□□□□□□□□ E□□□□□ □□□R□□□□□□□□ N□□□□ L□□□□□[1]

E□uipment	□seage Factor[2]	□eference Noise Level □ □0 Feet (Lmax dBA)
□ubber Tired Dozer	□0□	□9
Tractor/Loader/Backhoe	□0□	□□
Excavator	□0□	□1
Street Sweeper	10□	□2
Paving E□uipment	□0□	□6
Crawler Tractor	□0□	□□
Cranes	16□	□1
Air Compressor	□0□	□□
□enerator Sets	□0□	□1
□ elder	□0□	□□
Concrete/Industrial Saw	20□	90
Pile Driver (□ibratory)	20□	96
Pile Driver (Impact)	20□	101
Concrete Pump Truck	20□	□1
□rader	□0□	□□

[1] Source□F□□ A□s □oadway Construction □oise Model, □anuary 2006.

[2] Estimates the fraction of time each piece of e□uipment is operating at full power during a construction operation.

T□□□□ □2

C□□□□□□□□□□ N□□□□ I□ □□□□ S□□ □ □□□ □□ P□□□□

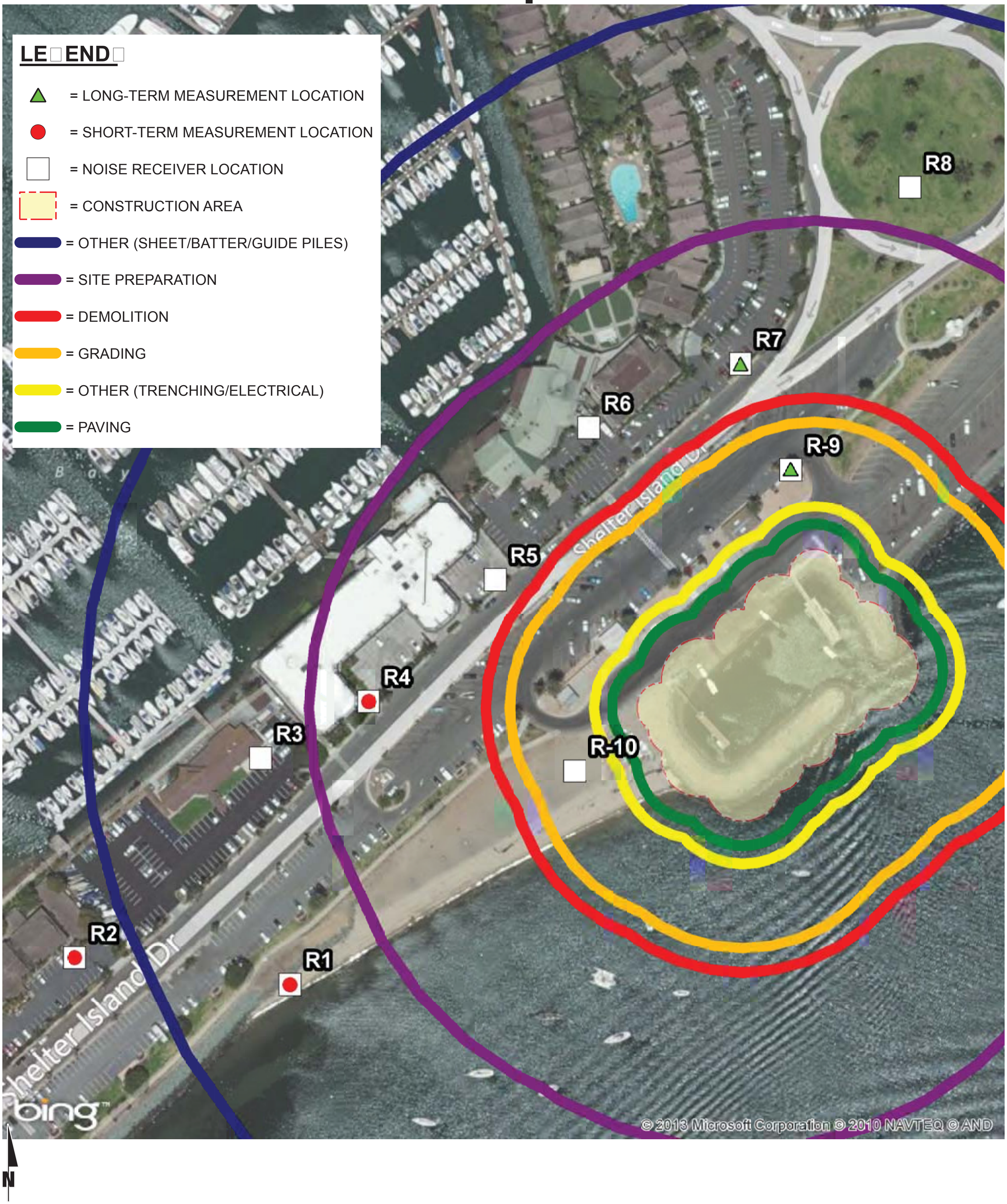
Construction Phase	Cumulative □ourly □oise Levels □0 Feet (Le□ dBA)[1]	Distance to □□ dBA Le□ □oise Contour Boundary (in feet)[2]
Demolition	□□.6	212□
Site Preparation	9□.□	□60□
□rading	□6.0	1□□□
□ther (Sheet/Batter/□uide piles)	9□.□	□□□□
□ther (Trenching/Electrical)	□6.6	60□
Paving	□2.0	□□□
Peak Construction Activitiy	9□.□	□□□□

[1] Construction noise calculations by phase are included in Appendix □.2.

[2] The City of San Diego Municipal Code Section □9.□0□0□ states that is shall be unlawful for any person, including the City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than □□ decibels during the 12-hour period from □00 a.m. to □00 pm.

EXHIBIT 5-A

CONSTRUCTION 75 dBA Leq NOISE CONTOURS BY PHASE



T□□□□ □□□

R□□□□□□□C□□□□□□□□□□ N□□□□ L□□□□□ □□□A L□□□

Construction Phase	□ourly □oise Levels (dBA Le□)[1]									
	□1	□2	□□	□□	□□	□6	□□	□□	□9	□10
Demolition	66	6□	6□	69	□□	□1	□□	6□	□□	□□
Site Preparation	□2	□0	□□	□□	□□	□□	□□	□□	□□	□□
□rading	6□	61	6□	6□	□1	□0	□0	66	□□	□□
□ther (Sheet/Batter/□uide piles)	□□	□□	□□	□□	□□	□□	□□	□□	□□	□**2**
□ther (Trenching/Electrical)	□□	□2	□6	□□	62	60	61	□6	6□	69
Paving	□0	□□	□1	□□	□□	□6	□6	□2	62	6□
Peak Construction Activitiy[2]	□□	□□	□□	□□	□□	□□	□□	□□	□□	□**2**
□oise Sensitive □eceptor□	**Y**□□	□o	□o	□o	□o	□o	□o	**Y**□□	**Y**□□	**Y**□□
Significant Impact□	**Y**□□							**Y**□□	**Y**□□	**Y**□□

[1] Construction noise calculations by phase are included in Appendix □.2.

[2] Estimated construction noise levels during peak operating conditions.

□ Daytime (□am to □pm) noise senstive receptor as defined by the City of San Diego □eneral Plan □oise Element.

□ Significant daytime (□am to □pm) noise impact re□uiring mitigation□ Significant impacts occur only at noise sensitive receiver locations.

the City of San Diego □□ dBA Le□ construction noise level criteria at most of the receiver locations.

□owever, only four of the ten (10) receiver locations (□1, □□, □9 and □10) are considered noise sensitive receptors. As described in Section □.□, the noise sensitive receptors are limited to the passive recreational areas in and around the SIBLF. The nearby hotels are not considered a noise sensitive land use during the daytime (construction) hours between □am and □pm. The summary of receiver construction noise levels shown on Table □-□ indicates that during peak construction activities (Pile Driving), the passive recreational noise receiver locations □1, □□, □9 and □10 will experience a significant short-term construction noise level impact that is expected to exceed the City of San Diego □□ dBA Le□ 12-hour construction noise level criteria.

□.□ CONSTRUCTION NOISE MITI□ATION

Based on the six (6) phases of construction, the noise impacts associated with the SIBLF are expected to create significant noise impacts at receiver locations □1, □□, □9 and □10 during the use of the impact pile drivers. To reduce the noise level impacts at receiver locations □1, □□, □9 and □-10, the project shall implement the following noise mitigation measures.

1. Avoid or reduce noise from impact-type pile driving. The project shall use vibratory-type pile driving techni□ues or other, □uieter methods, such as cast-in-place piles, in place of impact-type pile driving as feasible.
2. Limit noise sensitive receptors in passive recreations area. The project shall restrict the use of all passive recreational areas within a distance of approximately □□□ feet during all pile driving activities. The passive recreational areas represented by receiver locations □□, □9 and □10 and are contained within the □□ dBA Le□ construction noise contour boundaries shown on Exhibit □-A.

□ ith the implementation of these mitigation measures, the proposed SBILF would not result in construction noise levels greater than □□ dBA Le□. Therefore, construction noise impacts would be considered less than significant with mitigation.

□.□ CONSTRUCTION NOISE A□ATEMENT

Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following noise abatement practices would minimize the noise levels produced by the construction e□uipment to the nearby noise receptors.

- During all project site construction, the construction contractors shall e□uip all construction e□uipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers□ standards. The construction contractor shall place all stationary construction e□uipment so that emitted noise is directed away from the noise sensitive receptors nearest the project site.

- The construction contractor shall locate e□uipment staging in areas that will create the greatest distance between construction-related noise sources and noise sensitive receptors nearest the project site during all project construction.
- The construction contractor shall limit haul truck deliveries to the same hours specified for construction e□uipment.

□.□ TRUC□ TRAFFIC

The planned construction of the proposed SIBLF includes the removal of rubble that will be transported by either trucks or barge to off-site locations. The transport of these rubble materials will increase the truck traffic on local streets. Therefore, construction traffic is a potential source of project related off-site transportation noise.

□.1 TRUC□ TRAFFIC NOISE CRITERIA

To assess the potential off-site construction traffic related noise impacts, the 2□-hour C□EL traffic noise contour boundaries for the without and with project conditions are typically compared. □nder CE□A, consideration must be given to the magnitude of the project noise level increase, the existing ambient noise levels and the location of noise-sensitive receptors in order to determine if a noise increase represents a significant adverse environmental impact. Based on the truck traffic significance criteria described in Section □.□.2, in order for a transportation related noise impact to be considered a significant impact, the project traffic must create a noise level increase of greater than □ dBA.

□.2 TRUC□ TRAFFIC

According to the *Shelter Island Boat Launch Facility Improvements Focused Construction Traffic Assessment*, the peak construction related traffic activity was found to be during the partially overlapping grading and site preparation phases of construction. The site preparation phase re□uires approximately □0 haul truck trips over the course of 1□ working days with 6 workers per day. The grading phase re□uires approximately 1,200 haul truck trips over the course of □0 working days with 6 workers per day. As specified by the construction schedule, construction will occur □ hours per day, □ days a week (Monday through Friday). In an effort to more conservatively assess the potential traffic impact of the proposed Project it has been anticipated that haul truck traffic will be spread out evenly throughout the workday with the same number of haul trucks traveling during AM and PM peak hours as during less congested mid-day periods.

Based on the estimated 11 peak hourly truck trips presented on the construction trip generation summary (Table □), the project is expected to add up to □□ daily truck trips during a typical eight (□) hour work day with the potential for up to 1□2 daily truck trips during the twelve (12) daytime hours of construction □am to □pm. A review of the project trip distribution indicates that the trucks will travel from the SIBLF construction site on Shelter Island Drive, □osecrans Street and ultimately the I-□ Freeway.

6.0 TRUCK TRAFFIC NOISE ANALYSIS

To assess the truck traffic noise impacts a vehicle classification count was collected on July 1□, 201□ during typical weekday conditions, to describe the number of vehicles by type on Rosecrans east of Nimitz Boulevard. The vehicle classification count included in Appendix 6.1 provides the hourly distribution percentages of automobile, medium trucks and heavy trucks for input into the FHWA noise prediction model. To quantify the off-site truck traffic noise levels, the FHWA noise prediction model inputs were modified by adding 1□2 trips to the daytime heavy truck category to account for the increase in average daily traffic, as well as the increase in the percentage of daytime heavy truck activities. The truck traffic FHWA noise prediction model inputs and results are included in Appendix 6.2.

The truck traffic noise analysis results shown on Table 6-1 suggest that the SIBLF off-site construction traffic will increase the traffic noise levels by 0.1 dBA CNEL when measured at a distance of 100 feet from the centerline. Based on the traffic noise analysis significance threshold of □ dBA, no significant off-site traffic noise impacts are expected with the project related construction truck traffic. This noise analysis demonstrates that the off-site truck traffic noise impacts will not result in a significant □ dBA or greater overall increase in the 24-hour CNEL's for the noise sensitive land use located along the haul route. In addition, the off-site truck traffic noise impacts are expected to occur outside of the noise sensitive night time hours for noise sensitive land use receptors.

T□□□□ □1

T□□□□ T□□□□□ N□□□□ A□□□□□□

T□□□□□ C□□□□□□□	A□□□□□□ D□□□ T□□□□□ [1]	T□□□□ T□□□□ □□ □□□ □□□	U□□ □□□□□□ E□□□□□□ N□□□□ L□□□□□□□A CNEL□	T□□□□ T□□□□□ N□□□□ L□□□□I□ □□□□ □□□A CNEL□	S□□□□□□□□□ I□ □□□□□ [2]
□o Construction Traffic	□□,□□0	0	6□.1	n/a	n/a
□ ith Construction Traffic	□□,962	1□2	6□.2	0.1	□o

[1] Average daily traffic volume □/1□/201□ on □osecrans East of □imitz Blvd.

[2] A significant impact is considered when noise levels exceed 6□ dBA C□EL and the project creates an increase greater than □ dBA.

APPENDI□ □.1

City of San Diego □oise Element

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Noise Element

Noise Element

Purpose

To protect people living and working in the City of San Diego from excessive noise.

Introduction

Noise at excessive levels can affect our environment and our quality of life. Noise is subjective since it is dependent on the listener's reaction, the time of day, distance between source and receptor, and its tonal characteristics. At excessive levels, people typically perceive noise as being intrusive, annoying, and undesirable.

The most prevalent noise sources in San Diego are from motor vehicle traffic on interstate freeways, state highways, and local major roads generally due to higher traffic volumes and speeds. Aircraft noise is also present in many areas of the City. Rail traffic and industrial and commercial activities contribute to the noise environment.

The City is primarily a developed and urbanized city, and an elevated ambient noise level is a normal part of the urban environment. However, controlling noise at its source to acceptable levels can make a substantial improvement in the quality of life for people living and working in the City. When this is not feasible, the City applies additional measures to limit the effect of noise on future land uses, which include spatial separation, site planning, and building design techniques that address noise exposure and the insulation of buildings to reduce interior noise levels.

The Noise Element provides goals and policies to guide compatible land uses and the incorporation of noise attenuation measures for new uses to protect people living and working in the City from an excessive noise environment. This purpose becomes more relevant as the City continues to grow with infill and mixed-use development consistent with the Land Use Element.

Noise Scales

Noise is usually measured in decibels (dB), because of the great dynamic range of the human ear. Decibels (dB) are based on a logarithmic scale that compresses the wide range in sound pressure levels to a more usable range of numbers. People judge a sound that is 10 dB higher than another sound as being twice as loud; and 20 dB higher four times as loud; and so forth. A-weighted decibels (dBA) measured on a sound level meter use the A-weighted filter, which de-emphasizes the very low, and very high frequency components of the sound, placing greater emphasis on those frequencies within the sensitivity range of the human ear. The A-weighted filter adjusts the scale or "fine-tunes" it for hearing by humans. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Common indoor and outdoor noise levels are listed on Table NE-1.

Community Noise Equivalent Level (CNEL) is the predominant noise rating scale used in California for land use compatibility. The CNEL rating represents the average of equivalent noise levels at a location for a 24-hour period, based on an A-weighted decibel with upward adjustments added to account for increased noise sensitivity in the evening and night periods in order to account for the lower tolerance of individuals to noise during those periods. All noise levels used in the Noise Element are dBA CNEL, unless otherwise indicated.

Urban areas typically have a higher ambient noise level, which is the composite of noise from all normal background noise sources at a given location. Single event noises such as an aircraft flyover can affect the background noise level. Single-Event Noise Exposure Level (SENEL) or Sound Exposure Level (SEL) is a rating scale used to measure single event noises. The SENEL measures the duration between the initial and final times for which the sound level of the single event exceeded the background noise level. It takes into account the maximum noise level (LMax) and the duration of the event.

The amount of time noise exceeds a threshold level is another measure used to analyze single event noises. The threshold can be set at any noise level for instance, 65 or 75 dBA. It typically uses minutes per day that the noise level exceeds the threshold level.

TABLE NE-1 Common Indoor and Outdoor Noise Levels

Noises	Sound Level dBA
Threshold of pain	140
Leaf blower/Car horn	110
Gas lawn mower at 3 feet	100
Diesel truck at 50 feet /Food blender at 3 feet	90
MD 80 Passenger Plane at 1,500 feet	85
Diesel truck at 50 feet at 40 mph	84
Garbage disposal at 3 feet/Motorcycle at 25 feet	80
Car at 25 feet at 65 mph	77
Vacuum cleaner at 10 feet	70
Heavy traffic at 300 feet/Air-conditioner at 100 feet	60
Dishwasher next room	50
Quiet residential area	40
Library	35
Threshold of hearing	0

Regulations

Many regulations, plans, and studies adopted by the state, the Airport Land Use Commission, the military, or the City directly relate to the Noise Element and assist in its implementation as listed on Table NE-2.

TABLE NE-2 Related Regulations and Plans Used to Implement the Noise Element

Regulation	Description
Airport Noise Compatibility Planning (Code of Federal Regulations, Part 150)	Part 150 identifies compatible land uses with various levels of noise exposure to noise by individuals for local jurisdictions to use as guidelines, since the federal government does not have local land use control.
California Environmental Quality Act (CEQA)	CEQA considers exposure to excessive noise an environmental impact. Implementation of CEQA ensures that during the decision-making stage of development, City officials and the public will be informed of any potentially excessive noise levels and available mitigation measures to reduce them to acceptable levels.
California Noise Insulation Standards (California Code of Regulations, Title 24)	Title 24 establishes an interior noise standard of 45 dBA for multiple unit and hotel/motel structures. Acoustical studies must be prepared for proposed multiple unit residential and hotel/motel structures within the Community Noise Equivalent Level (CNEL) noise contours of 60 dBA or greater. The studies must demonstrate that the design of the building will reduce interior noise to 45 dBA CNEL or lower.
California Airport Noise Standards (California Code of Regulations Title 21)	Title 21 establishes that the 65 dbA CNEL is the acceptable level of aircraft noise for persons living near an airport.
Air Installations Compatible Use Zones (AICUZ) Study (US Department of Defense)	The AICUZ study establishes land use strategies and noise and safety recommendations to prevent the encroachment of incompatible land use from degrading the operational capability of military air installations.
Airport Land Use Compatibility Plans (ALUCP) (Public Utilities Code, §21670, et seq.)	The ALUCPs promote compatibility between public use and military airports and the land uses that surround them to the extent that these areas are not already devoted to incompatible land uses. The City is required to modify its land use plans and ordinances to be consistent with the ALUCPs or to take steps to overrule the Airport Land Use Commission (ALUC).
The City of San Diego Noise Abatement and Control Ordinance (Municipal Code Section 59.5.0101 et seq.)	Provides controls for excessive and annoying noise from sources such as refuse vehicles, parking lot sweepers, watercraft, animals, leaf blowers, alarms, loud music, and construction activities.

A. Noise and Land Use Compatibility

Goal

- Consider existing and future noise levels when making land use planning decisions to minimize people's exposure to excessive noise.

Discussion

The Noise Element influences Land Use Element policies since excessive noise affects land uses, specifically, the quality of life of people working and living in the City. The planning of future noise-sensitive land uses should have a sufficient spatial separation or incorporate site design and construction techniques to ensure compatibility with noise-generating uses. Noise-sensitive land uses include, but are not necessarily limited to residential uses, hospitals, nursing facilities, intermediate care facilities, child educational facilities, libraries, museums, places of worship, child care facilities, and certain types of passive recreational parks and open space.

The City uses the Land Use - Noise Compatibility Guidelines shown on Table NE-3 for evaluating land use noise compatibility when reviewing proposed land use development projects. A "compatible" land use indicates that standard construction methods will attenuate exterior noise to an acceptable indoor noise level and people can carry out outdoor activities with minimal noise interference. Evaluation of land use that falls into the "conditionally compatible" noise environment should have an acoustical study. In general, an acoustical study should include, but is not limited to the analysis listed on Table NE-4, Acoustical Study Guidelines, with consideration of the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with speech, sleep, or other activities characteristic of the land use. For land uses indicated as conditionally compatible, structures must be capable of attenuating exterior noise to the indoor noise level as shown on Table NE-3. For land uses indicated as incompatible, new construction should generally not be undertaken. Due to severe noise interference, outdoor activities are unacceptable and for structures, extensive mitigation techniques are required to make the indoor environment acceptable. Refer to Section I for a discussion of typical noise attenuation measures.

Policies

NE-A.1. Separate excessive noise-generating uses from residential and other noise-sensitive land uses with a sufficient spatial buffer of less sensitive uses.

NE-A.2. Assure the appropriateness of proposed developments relative to existing and future noise levels by consulting the guidelines for noise-compatible land use (shown on Table NE-3) to minimize the effects on noise-sensitive land uses.

NE-A.3. Limit future residential and other noise-sensitive land uses in areas exposed to high levels of noise.

NE-A.4. Require an acoustical study consistent with Acoustical Study Guidelines (Table NE-4) for proposed developments in areas where the existing or future noise level exceeds or would exceed the "compatible" noise level thresholds as indicated on the Land Use - Noise Compatibility Guidelines (Table NE-3), so that noise mitigation measures can be included in the project design to meet the noise guidelines.

NE-A.5. Prepare noise studies to address existing and future noise levels from noise sources that are specific to a community when updating community plans.

TABLE NE-3 Land Use - Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
		60	65	70	75
Open Space and Parks and Recreational					
Community & Neighborhood Parks; Passive Recreation					
Regional Parks; Outdoor Spectator Sports, Golf Courses; Athletic Fields; Outdoor Spectator Sports, Water Recreational Facilities; Horse Stables; Park Maint. Facilities					
Agricultural					
Crop Raising & Farming; Aquaculture, Dairies; Horticulture Nurseries & Greenhouses; Animal Raising, Maintain & Keeping; Commercial Stables					
Residential					
Single Units; Mobile Homes; Senior Housing		45			
Multiple Units; Mixed-Use Commercial/Residential; Live Work; Group Living Accommodations **For uses affected by aircraft noise, refer to Policies NE-D.2. & NE-D.3.*		45	45*		
Institutional					
Hospitals; Nursing Facilities; Intermediate Care Facilities; Kindergarten through Grade 12 Educational Facilities; Libraries; Museums; Places of Worship; Child Care Facilities		45			
Vocational or Professional Educational Facilities; Higher Education Institution Facilities (Community or Junior Colleges, Colleges, or Universities)		45	45		
Cemeteries					
Sales					
Building Supplies/Equipment; Food, Beverages & Groceries; Pets & Pet Supplies; Sundries, Pharmaceutical, & Convenience Sales; Wearing Apparel & Accessories			50	50	
Commercial Services					
Building Services; Business Support; Eating & Drinking; Financial Institutions; Assembly & Entertainment; Radio & Television Studios; Golf Course Support			50	50	
Visitor Accommodations		45	45	45	
Offices					
Business & Professional; Government; Medical, Dental & Health Practitioner; Regional & Corporate Headquarters			50	50	

TABLE NE-3 Land Use - Noise Compatibility Guidelines (continued)

Land Use Category	Exterior Noise Exposure (dBA CNEL)				
	60	65	70	75	
Vehicle and Vehicular Equipment Sales and Services Use					
Commercial or Personal Vehicle Repair & Maintenance; Commercial or Personal Vehicle Sales & Rentals; Vehicle Equipment & Supplies Sales & Rentals; Vehicle Parking					
Wholesale, Distribution, Storage Use Category					
Equipment & Materials Storage Yards; Moving & Storage Facilities; Warehouse; Wholesale Distribution					
Industrial					
Heavy Manufacturing; Light Manufacturing; Marine Industry; Trucking & Transportation Terminals; Mining & Extractive Industries					
Research & Development				50	

	Compatible	Indoor Uses	Standard construction methods should attenuate exterior noise to an acceptable indoor noise level. Refer to Section I.
		Outdoor Uses	Activities associated with the land use may be carried out.
	Conditionally Compatible	Indoor Uses	Building structure must attenuate exterior noise to the indoor noise level indicated by the number for occupied areas. Refer to Section I.
		Outdoor Uses	Feasible noise mitigation techniques should be analyzed and incorporated to make the outdoor activities acceptable. Refer to Section I.
	Incompatible	Indoor Uses	New construction should not be undertaken.
		Outdoor Uses	Severe noise interference makes outdoor activities unacceptable.

TABLE NE-4 Acoustical Study Guidelines

An acoustical study should include, but is not limited to the following analysis:
Provide noise level measurements to describe existing local conditions and the predominant noise sources.
Measure existing single event noise levels (SENEL, SEL, or Time Above) within airport influence areas.
Estimate existing and projected noise levels (CNEL) and compare them to levels on Table NE-2.
Recommend appropriate mitigation measures to achieve acceptable noise levels on Table NE-2.
Estimate noise exposure levels with recommended mitigation measures.
Describe a post-project assessment to evaluate the effectiveness of the proposed mitigation measures.

B. Motor Vehicle Traffic Noise

Goal

- ♦ Minimal excessive motor vehicle traffic noise on residential and other noise-sensitive land uses.

Discussion

Motor vehicle traffic noise is a major contributor of noise within the City. Excessive noise levels along arterial roads, interstate freeways, and state highways affect much of the urban environment. Traffic noise level is dependent upon traffic volume, speed, flow, vehicle mix, pavement type and condition, the use of barriers, as well as distance to the receptor.

Local roadway design features and traffic management and calming techniques can minimize noise from traffic speed and frequent vehicle acceleration and deceleration, and innovative roadway paving material can further reduce traffic noise. Vehicles equipped with a properly functioning muffler system help to limit excessive exhaust noise. Future use of hybrid transit buses could help to reduce noise along mixed-use transit corridors.

At higher speeds, typically on freeways, highways and primary arterials, the noise from tire/pavement interaction can be greater than from vehicle exhaust and engine noise. The use of lower noise paving surfaces can reduce tire/pavement interaction noise. For noise-sensitive land uses adjacent to freeways and highways, these uses should be buffered from excessive noise levels by intervening, less sensitive, industrial-commercial uses or shielded by sound walls or landscaped berms. The City can, however, influence daily traffic volumes and reduce peak-hour traffic by promoting alternative transportation modes and integration of mixed-use infill development. Although not generally considered compatible, the City conditionally allows multiple unit and mixed-use residential uses up to 75 dBA CNEL in areas affected primarily by motor vehicle traffic noise with existing residential uses. Any future residential use above the 70 dBA CNEL must include noise attenuation measures to ensure an interior noise level of 45 dBA CNEL and be located in an area where a community plan allows multiple unit and mixed-use residential uses.

Policies

NE-B.1. Encourage noise-compatible land uses and site planning adjoining existing and future highways and freeways.

NE-B.2. Consider traffic calming design, traffic control measures, and low-noise pavement surfaces that minimize motor vehicle traffic noise (see also Mobility Element, Policy ME–C.5 regarding traffic calming).

NE-B.3. Require noise reducing site design, and/or traffic control measures for new development in areas of high noise to ensure that the mitigated levels meet acceptable decibel limits.

NE-B.4. Require new development to provide facilities which support the use of alternative transportation modes such as walking, bicycling, carpooling and, where applicable, transit to reduce peak-hour traffic.

NE-B.5. Designate local truck routes to reduce truck traffic in noise-sensitive land uses areas.

NE-B.6. Work with Caltrans to landscape freeway-highway rights-of-way buffers and install low noise pavement surfaces, berms, and noise barriers to mitigate state freeway and highway traffic noise.

NE-B.7. Promote the use of berms, landscaping, setbacks, and architectural design where appropriate and effective, rather than conventional wall barriers to enhance aesthetics.

NE-B.8. Enforce the state vehicle code to ensure that motor vehicles are equipped with a functioning muffler and are not producing excessive noise levels.

C. Trolley and Train Noise

Goal

- ♦ Minimal excessive fixed rail-related noise on residential and other noise-sensitive land uses.

Discussion

Daily traffic from passenger and freight train and trolley operations produces noise that may disrupt adjacent noise-sensitive uses. Trains can generate high, yet relatively brief, intermittent noise events. The interaction of the steel wheels and rails is a major component of train noise. Factors that influence the overall rail noise include the train speed, train horns, type of engine, track conditions, use of concrete cross ties and welded track, the intermittent nature of train events, time of day, and sound walls or other barriers. When operating in residential areas, trains are required to travel at a reduced speed to minimize noise.

Federal regulations require trains to sound their horns at all roadway-rail grade crossings and the warning sound of train horns is a common sound experienced by communities near the rail corridor. In an effort to minimize excess train horn noise, the federal government allows local jurisdictions to establish train horn "quiet zones." This requires the implementation of supplementary and alternative safety measures to compensate for the loss of the train horn usage.

The state is planning for high-speed rail service that would connect the San Diego region to other regions in the state. Air turbulence noise generated from high-speed train traffic may affect noise-sensitive uses along the potential rail corridors.

Policies

NE-C.1. Use site planning to help minimize exposure of noise sensitive uses to rail corridor and trolley line noise.

NE-C.2. Work with the San Diego Association of Governments (SANDAG), Caltrans, Metropolitan Transit System (MTS), California High-Speed Rail Authority, and passenger and freight rail operators to install noise attenuation features to minimize impacts to adjacent residential or other noise-sensitive uses. Such features include rail and wheel maintenance, grade separation along existing and future rail corridors, and other means.

NE-C.3. Establish train horn "quiet zones" consistent with the federal regulations, where applicable.

NE-C.4. Work with SANDAG, Caltrans, MTS, and passenger and freight rail operators to install grade separation at existing roadway-rail grade crossings as a noise and safety measure.

D. Aircraft Noise

Goal

- Minimal excessive aircraft-related noise on residential and other noise-sensitive land uses.

Discussion

Aircraft noise primarily affects communities within an airport influence area. The noise impact or the perceived annoyance depends upon the noise volume, length of the noise event and the time of day. In general, aircraft noise varies with the type and size of the aircraft, the power the aircraft is using, and the altitude or distance of the aircraft from the receptor. Another variable affecting the overall impact of noise is a perceived increase in aircraft noise at night. The City evaluates the potential aircraft noise impacts on noise sensitive land uses when considering the siting or expansion of airports, heliports, and helistops/helipads as addressed in the Land Use Element.

Aircraft noise is one of the factors that the state-required Airport Land Use Compatibility Plan addresses with established policies for land use compatibility for each public use airport and military air installation. The Airport Land Use Compatibility Plan, as discussed in the Land Use Element, incorporates the California Airport Noise Standards that establishes the 65-dBA CNEL as the boundary for the normally acceptable level of aircraft noise for noise-sensitive land uses including residential uses near airports. The City implements the noise policies contained in the compatibility plans through development regulations and zoning ordinances.

Since CNEL represents averaged noise exposure over a 24-hour period, there can be single event noise levels that may exceed the reported CNEL. Although there is no single event standard for aircraft noise exposure, the measurement of the duration and maximum noise levels during single event noises can assist in evaluating potential affects on future noise sensitive land uses.

Uses that have outdoor areas exposed to high levels of aircraft noise cannot mitigate noise levels to an acceptable level due to overflights. Noise-sensitive uses that have outdoor areas used daily by the occupants, such as schools for children and child care centers, are incompatible in areas that exceed the 65 dBA CNEL since mitigation measures cannot reduce exposure to outdoor play areas from prolonged periods of high aircraft noise.

San Diego International Airport (SDIA)

San Diego International Airport (SDIA) at Lindbergh Field is the commercial air carrier airport serving the region located in the City's urban center and is adjacent to downtown. Although various industrial, commercial, and residential uses surround the airport, residential is the primary use and the most affected by the airport. Primarily commercial air carrier aircraft with a limited number of general aviation corporate jet aircraft use SDIA. Normally, aircraft arrive from the east and depart to the west. Noise from aircraft taking off and climbing affect more areas west or adjacent to SDIA, whereas noise from aircraft approaching and landing affects fewer areas east of the airport. Commercial aircraft noise has been declining due to advances in engine technology. However, noise will affect more areas as operations at SDIA increase in the future.

The SDIA requires a variance from the California Airport Noise Standards in order to operate with noise in excess of the 65 dBA CNEL affecting residential uses. As the airport operator, the San Diego County Regional Airport Authority has implemented monitoring and mitigation measures to minimize aircraft noise affecting residential areas. The SDIA prohibits most late night takeoffs to help limit noise impacts. As a mitigation measure, the Quieter Home Program retrofits affected homes to reduce interior noise levels to an acceptable level. The variance requires that the Airport Authority obtain avigation easements for new residential uses and other noise sensitive uses above the 60 dBA CNEL and for participating homes in the Quieter Home Program.

Communities surrounding SDIA contain existing and planned areas for residential uses including higher-density residential uses. Higher-density residential structures use construction materials that can mitigate higher exterior noise levels to acceptable levels. Higher-density residential uses also contain limited outdoor areas, which limit the length of outdoor exposure to higher noise levels. Given the geographic extent of the areas above the 65 dBA CNEL within the SDIA airport influence area and the desire to maintain and enhance the character of these neighborhoods, the City conditionally allows future single unit, multiple unit, and mixed-use residential uses in the areas above the 65 dBA CNEL. Although not generally considered compatible with aircraft noise, the City conditionally allows multiple unit and mixed-use residential uses above the 65 dBA CNEL only in areas with existing residential uses, and single unit residential uses only on existing single unit lots. Any future residential use above the 65 dBA CNEL must include noise attenuation measures to ensure an interior noise level of 45 dBA CNEL, provision of an avigation easement, and be located in an area where a community plan and the Airport Land Use Compatibility Plan allow residential uses.

Marine Corps Air Station (MCAS) Miramar

MCAS Miramar operates a mixture of jet fighter, transport, and helicopter aircraft. Noise from military air installations presents different noise issues compared to civilian airports. Military readiness requires constant training. Aircraft training includes touch and goes (takeoffs and landings with a close-in circuit around the airport), aircraft carrier simulated landings, practice instrument approaches, and normal departures to and arrivals from other installations or training areas. As a result, noise can affect more areas than from civilian airports. Helicopter noise can be an annoyance since helicopter noise events last longer and pulsate.

As indicated by the Air Installations Compatibility Use Zones (AICUZ) study, adjacent industrial and commercial uses are compatible with MCAS Miramar's noise levels. Noise from MCAS Miramar affects residential areas in surrounding communities. To minimize aircraft noise impact on residential areas, the Marine Corps implements noise abatement and monitoring programs as described in the AICUZ study.

Brown Field and Montgomery Field

Noise levels from Brown Field and Montgomery Field municipal airports are not as extensive as the noise levels from SDIA and MCAS Miramar. Typically, the smaller general aviation aircraft, both propeller and jet aircraft operate from Brown and Montgomery Fields.

Due to the length of its runways, Montgomery Field cannot accommodate all types of general aviation aircraft. Noise-compatible commercial and industrial uses are adjacent to the airport. Aircraft noise affects residential areas in surrounding communities. To minimize the impact on surrounding residential areas, Montgomery Field has a noise-monitoring program to assess aircraft noise and regulations, including a nighttime noise limits and a weight limit for aircraft using the airport.

General aviation propeller and jet aircraft, as well as law enforcement and military aircraft, use Brown Field. Noise-compatible open space and industrial uses are primarily adjacent to Brown Field. Aircraft noise affects residential uses to the west of the airport.

Airports Outside of the City

Aircraft noise from airports outside of the City is also less extensive than noise from SDIA and MCAS Miramar. Military aircraft operations at Naval Air Station (NAS) North Island and Naval Outlying Field (NOLF) Imperial Beach primarily use the airspace over the Pacific Ocean and the San Diego Bay. The primary traffic pattern for helicopters training at NOLF Imperial Beach is along the Tijuana River Valley and then offshore. Overflight noise from general aviation aircraft operating at Gillespie Field has the potential to affect residential areas in the City west of the airport. Aircraft noise from commercial air carrier operations at the Tijuana International Airport in Mexico primarily affect open space and industrial uses adjacent to the international border in the Otay Mesa area.

Helicopter Operations

The noise levels associated with operations at a heliport or helipad/helistop depend upon the flight path, the helicopter types used, the number of operations, and the time of day. Helicopter activity from military helicopters, private, police, fire/rescue, medical, and news/traffic monitoring helicopters contribute to the general noise environment in the City. In particular, low-flying helicopters are a source of noise complaints in the City, especially at night. Within the City, most helicopters operate from existing airports. Emergency medical or public safety helicopters primarily use the few certified off-airport heliports.

Policies

NE-D.1. Encourage noise-compatible land use within airport influence areas in accordance with federal and state noise standards and guidelines.

NE-D.2. Limit future residential uses within airport influence areas to the 65 dBA CNEL airport noise contour, except for multiple-unit, mixed-use, and live work residential uses within the San Diego International Airport influence area in areas with existing residential uses and where a community plan and the Airport Land Use Compatibility Plan allow future residential uses.

NE-D.3. Ensure that future multiple-unit, mixed-use, and live work residential uses within the San Diego International Airport influence area that are located greater than the 65 dBA CNEL airport noise contour are located in areas with existing residential uses and where a community plan and Airport Land Use Compatibility Plan allow future residential uses.

a. Limit the amount of outdoor areas subject to exposure above the 65 dBA CNEL; and;

b. Provide noise attenuation to ensure an interior noise level that does not exceed 45 dBA CNEL.

NE-D.4. Discourage outdoor uses in areas where people could be exposed to prolonged periods of high aircraft noise levels greater than the 65 dBA CNEL airport noise contour.

NE-D.5. Minimize excessive aircraft noise from aircraft operating at Montgomery Field to surrounding residential areas.

a. Implement a noise-monitoring program to assess aircraft noise.

b. Implement nighttime aircraft noise limits and a weight limit for aircraft using the airport.

NE-D.6. Encourage civilian and military airport operators, to the extent practical, to monitor aircraft noise, implement noise-reducing operation measures, and promote pilot awareness of where aircraft noise affects noise-sensitive land uses.

E. Commercial and Mixed-Use Activity Noise

Goal

- Minimal exposure of residential and other noise-sensitive land uses to excessive commercial and mixed-use related noise.

Discussion

Noise generated by ground floor commercial operations, maintenance, truck deliveries, and vehicular and pedestrian traffic can affect adjacent and aboveground floor residential areas. Noise attenuation methods in mixed-use buildings are essential to minimize excessive noise associated with nonresidential uses. Day and night commercial/entertainment activities and special and sporting events in the Downtown and other mixed residential/commercial-use areas located citywide can generate urban noise throughout the year. The City requires bars and nightclubs over five thousand square feet to minimize excessive noise to surrounding uses by limiting their hours of operation. The City's noise ordinance also limits noise levels to 65 dBA during the day and 60 dBA during the night generated on-site by commercial uses to minimize the effect of noise on adjacent sensitive land uses.

Policies

NE-E.1. Encourage the design and construction of commercial and mixed-use structures with noise attenuation methods to minimize excessive noise to residential and other noise-sensitive land uses.

NE-E.2. Encourage mixed-use developments to locate loading areas, parking lots, driveways, trash enclosures, mechanical equipment, and other noisier components away from the residential component of the development.

NE-E.3. Encourage daytime truck deliveries to commercial uses abutting residential uses and other noise-sensitive land uses to minimize excessive nighttime noise unless there is no feasible alternative or there are overriding transportation benefits by scheduling deliveries at other hours.

NE-E.4. Encourage commercial/entertainment uses to utilize operational measures that minimize excessive noise where it affects abutting residential and other noise-sensitive uses.

NE-E.5. Implement night and daytime on-site noise level limits to address noise generated by commercial uses where it affects abutting residential and other noise-sensitive uses.

NE-E.6. Encourage disclosure of potential noise problems for mixed-use and residential developments adjacent to commercial/entertainment uses at the time of sale. This would include notification of noise from related activities such as music, delivery vehicles, pedestrian and vehicular traffic, and other urban noise that may affect them.

F. Industrial Activity Noise

Goal

- ♦ Minimal exposure of residential and other noise-sensitive land uses to excessive industrial-related noise.

Discussion

Industrial land uses have the potential to be a noise source. The degree of noise generated by industrial uses is dependent upon various factors, including type of industrial activity, hours of operation, and the location relative to other land uses. Outdoor truck activity, air compressors, and generators are potential noise sources associated with industrial use that can interfere with noise-sensitive uses, which include residential uses. The City enforces the Noise Abatement and Control ordinance, which limits noise levels to 75 dBA generated on-site by industrial uses to minimize the effect of excessive industrial-related noise. Although not generally considered compatible, the City conditionally allows industrial uses except for research and development up to the 80 dBA CNEL in areas where community plans allow for industrial uses, surrounding industrial uses exist, and existing noise levels exceed 75 dBA CNEL, but ensure that industrial uses do not generate noise levels above 75 dBA.

Policies

NE-F.1. Provide for sufficient spatial separation between industrial uses and residential and other noise-sensitive uses. This would include utilizing other feasible mitigation measures to reduce the noise source, such as noise attenuation methods, interrupting the noise path, or insulating the receptor to minimize the exposure of noise-sensitive uses to excessive industrial-related noise.

NE-F.2. Encourage the design and construction of industrial development to minimize excessive off-site noise impacts to residential and other noise-sensitive uses.

NE-F.3. Encourage industrial uses to utilize operation measures that minimize excessive noise where it affects abutting residential and other noise-sensitive uses.

NE-F.4. Encourage daytime truck deliveries to industrial uses abutting residential uses and other noise-sensitive land uses to minimize excessive nighttime noise unless there is no feasible alternative or there are overriding transportation benefits by scheduling deliveries at other hours.

G. Construction, Refuse Vehicles, Parking Lot Sweepers, and Public Activity Noise

Goal

- ♦ Minimal exposure of residential and other noise-sensitive land uses to excessive construction, refuse vehicles, parking lot sweeper-related noise and public noise.

Discussion

Construction, refuse vehicle, and parking lot sweeper activity in all land use areas will temporarily elevate noise levels. The City recognizes that construction, refuse vehicle, and parking lot sweeper activities are necessary and noise control of these activities is limited. In an urban environment, excessive public noise such as barking dogs, leaf blowers, loud music, or car alarms can be disturbing and annoying. The City enforces the Noise Abatement and Control Ordinance, which addresses and limits excessive noise from these activities.

Policies

NE-G.1. Implement limits on the hours of operation for non-emergency construction and refuse vehicle and parking lot sweeper activity in residential areas and areas abutting residential areas.

NE-G.2. Implement limits on excessive public noises that a person could reasonably consider disturbing and/or annoying in residential areas and areas abutting residential areas.

H. Event Noise

Goal

- Balance the effects of noise associated with events with the benefits of the events.

Discussion

Events can enhance the lifestyle and provide benefits to the City's residents through the creation of unique venues for expression and entertainment. Events have the potential to generate noise within the communities where they are being held. This includes normal events at the ballpark and stadium as well as special events on City streets or parks. The noise levels for these activities are highly variable because the number of events occurring and the noise levels experienced from the events can fluctuate, especially for special events. The City enforces the Special Event Ordinance, which addresses and seeks to limit excessive noise from special events.

Policies

NE-H.1. Coordinate special events with event promoters and organizers to minimize the effects of noise on adjacent residential uses to the degree feasible.

NE-H.2. Ensure that the future residential and other noise-sensitive land uses adjacent to the ballpark and stadium are compatible with event noise levels.

I. Typical Noise Attenuation Methods

Goal

- Attenuate the effect of noise on future residential and other noise-sensitive land uses by applying feasible noise mitigation measures.

Discussion

Noise impacts can typically be abated by four basic methods: reducing the sound level of the noise generator, interrupting the noise path between the source and receiver, increasing the distance between the source and receiver, and insulating the receiver (building material and construction methods). All of the methods help to reduce interior noise levels, but only the first three help to reduce outside noise levels with the exception of aircraft noise. Tables NE-5 and NE-6 contain a list of the potential noise mitigation methods.

Reducing the Source Noise

Structure, vehicle, engine design or the use of mufflers may successfully quiet certain noise sources. Although the City has little direct control over noise produced by vehicles because state and federal noise regulations pre-empt local regulations, the most efficient and effective means of abating noise from transportation systems is to reduce the noise at the source. Noise generated by aircraft, motor vehicles, and trains, for example, may be abated through improved engine design. Traffic calming and traffic management techniques and the use of low-noise road pavement surfaces can help to reduce traffic noise from motor vehicles. Noise generated by land uses, such as industrial uses, may be abated through site design, structure design and construction, quieter machinery, and the limiting of noise-producing operations. This method most directly assigns the responsibility to the generator of the noise. Table NE-6 identifies potential methods to reduce noise generation at the source.

Interrupting the Noise Path

Strategically placing walls and/or landscaped berms, utilizing natural land and/or built forms or a combination of two or more of these methods, between the noise source and the receptor may minimize noise. Generally, effective noise shielding requires a continuous, solid barrier with a mass which is large enough to block the line of sight between source and receiver. Variations may be appropriate in individual cases based on distance, nature, and orientation of buildings behind the barrier, and a number of other factors. Garages or other structures can help to shield residential units and outdoor living areas from non-aircraft noise. The shape and orientation of buildings can also help to avoid reflecting the noise from a building surface to adjacent noise-sensitive buildings. Sound walls are the least preferable method due to the aesthetic concerns. Table NE-6 identifies potential methods to interrupt the noise path between the source and the receptor.

Separating the Noise Source

Spatial separation or isolation of the noise source from the potential receiver may minimize the effects of noise. Site planning techniques that incorporate spatial buffers along freeways, for example, may reduce the noise level affecting adjacent noise-sensitive land uses. Developing noise-compatible commercial or industrial uses in these buffer areas may also help to interrupt the noise path. Due to overflights, sufficient isolation of aircraft noise is impractical. Table NE-6 identifies potential site planning methods that can be used to separate noise sources from noise-sensitive uses.

Insulating the Noise Receiver

Acoustical structures, enclosures, or construction techniques can help to abate the noise problem by insulating the receiver. The proper design and construction of buildings can help to reduce interior noise levels. Nearby noise sources should be recognized in determining the location of doors, windows, and vent openings. Sound-rated windows (extra thick or multi-paned), doors and wall construction materials and insulation are also effective as specified in CCR Title 24 in reducing interior noise levels. The difference in sound (noise) levels from the exterior to the interior of a structure indicates the sound transmitted loss through the window, door, or wall. A Sound Transmission Class (STC) rating specifies the noise level reduction that windows, doors, wall construction materials, and insulation provide. For example, if the exterior of a structure is exposed to 75 dBA and 45 dBA is measured on the interior of the structure, then a reduction of 30 dBA is achieved. Typically, higher STC ratings indicate greater interior noise reductions.

The use of proper construction methods should make certain that doors and windows are fitted properly; openings sealed; joints caulked; and plumbing constructed to ensure adequate insulation from structural members. Sound-rated doors and windows will have little effect if left open. This may require installation of air conditioning for adequate ventilation. Table NE-3 indicates the acceptable interior noise level for land use types. Table NE-5 depicts potential noise mitigation methods to insulate the noise receiver.

Policies

NE-I.1. Require noise attenuation measures to reduce the noise to an acceptable noise level for proposed developments to ensure an acceptable interior noise level, as appropriate, in accordance with California's noise insulation standards (CCR Title 24) and Airport Land Use Compatibly Plans.

NE-I.2. Apply CCR Title 24 noise attenuation measures requirements to reduce the noise to an acceptable noise level for proposed single-family, mobile homes, senior housing, and all other types of residential uses not addressed by CCR Title 24 to ensure an acceptable interior noise level, as appropriate.

NE-I.3. Consider noise attenuation measures and techniques addressed by the Noise Element, as well as other feasible attenuation measures not addressed as potential mitigation measures, to reduce the effect of noise on future residential and other noise-sensitive land uses to an acceptable noise level.

NE-I.4. Support state regulation streamlining to allow standardized noise attenuation building and construction materials as an option to current requirements for acoustical evaluation.

TABLE NE-5 Typical Noise Attenuation Methods to Insulate the Noise Receiver

Noise Level Reduction	Typical Mitigation Methods
15-20 dBA	*Mitigation 1, 2, and 3* 1. Air conditioning or mechanical ventilation. 2. Double-paned glass. 3. Solid core doors with weather stripping and seals.
20-25 dBA	*Mitigation 1, 2, and 3 plus* 4. Stucco or brick veneer exterior walls or wood siding w/one-half inch thick fiberboard underlayer. 5. Glass portions of windows/doors not to exceed 20 percent. 6. Exterior vents facing noise source shall be baffled.
25-30 dBA	*Mitigation 1 through 6 plus* 7. Interior sheetrock of exterior wall attached to studs by resilient channels or double walls. 8. Window assemblies, doors, wall construction materials, and insulation shall have a lab-tested STC rating of 30 or greater.

TABLE NE-6 Potential Noise Attenuation Methods

Reducing the Source Noise*
Traffic Noise
Traffic Calming/Traffic Management Techniques
Low-Noise Road Pavement Surfaces
Commercial and Industrial Noise
Sound insulation of buildings, for walls, windows, doors, opening, ventilations etc.
Screens and Enclosures
Silencers, attenuators, or mufflers in connection with rotating machinery and ducts/pipes leading to and from building
Limiting of noise-producing operations
*Interrupted the Noise Path**
Landscaped Berms
Natural Land Forms
Noise-Compatible Structures/Buildings
Landscaping/Vegetation
Walls
*Separating the Noise Source**
Provide distance buffer between the noise source and the noise-sensitive use
Locate noise-compatible uses such as vehicle parking, open spaces, or commercial uses between the noise source and the noise-sensitive areas
Insulate the Noise Receiver
Refer to Table NE-5

*These methods are not applicable for aircraft noise

<u>APPENDIX 3.2</u>

City of San Diego Municipal Code

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Article 9.5: Noise Abatement and Control

Division 4: Limits

("Noise Level Limits, Standards and Control"
added 9–18–1973 by O–11122 N.S.)
(Retitled to "Limits" on 9–22–1976 by O–11916 N.S.)

§59.5.0401 Sound Level Limits

(a) It shall be unlawful for any person to cause noise by any means to the extent that the one–hour average sound level exceeds the applicable limit given in the following table, at any location in the City of San Diego on or beyond the boundaries of the property on which the noise is produced. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person.

TABLE OF APPLICABLE LIMITS

Land Use	Time of Day	One-Hour Average Sound Level (decibels)
1. Single Family Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	50 45 40
2. Multi-Family Residential (Up to a maximum density of 1/2000)	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	55 50 45
3. All other Residential	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	60 55 50
4. Commercial	7 a.m. to 7 p.m. 7 p.m. to 10 p.m. 10 p.m. to 7 a.m.	65 60 60
5. Industrial or Agricultural	any time	75

(b) The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. Permissible construction noise level limits shall be governed by Sections 59.5.0404 of this article.

(c) Fixed–location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of Part A. of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located.

(d) This section does not apply to firework displays authorized by permit from the Fire Department.

(e) This section does not apply to noise generated by helicopters at heliports or helistops authorized by a conditional use permit, nor to any roller coaster operated on City–owned parkland.

(Amended 9–11–1989 by O–17337 N.S.)
(Amended 11-28-2005 by O-19446 N.S.; effective 2-9-2006.)

§59.5.0402 Motor Vehicles

(a) Off–Highway

(1) Except as otherwise provided for in this article, it shall be unlawful to operate any motor vehicle of any type on any site, other than on a public street or highway as defined in the California Vehicle Code, in any manner so as to cause noise in excess of those noise levels permitted for on– highway motor vehicles as specified in the table for "45 mile– per–hour or less speed limits" contained in Section 23130 of the California Vehicle Code, and as corrected for distances set forth in subsection A.2. below.

(2) Corrections

The maximum noise level as the off–highway vehicle passes may be measured at a distance of other than fifty (50) feet from the center line of travel, provided the measurement is further adjusted by adding algebraically the applicable correction as follows:

Distance (Feet)	Correction (decibels)
25	-6
28	-5
32	-4
35	-3
40	-2
45	-1
50 (preferred distance)	0
56	+1
63	+2
70	+3
80	+4
90	+5
100	+6

(3) A measured noise level thus corrected shall be deemed in violation of this section if it exceeds the applicable noise–level limit as specified above.

(b) Nothing in this section shall apply to authorized emergency vehicles when being used in emergency situations, including the blowing of sirens and/or horns.

("Motor Vehicles" renumbered from Sec. 59.5.0403 on 9–22–1976 by O–11916 N.S.)

§59.5.0403 Watercraft

Violations for excessive noise of watercraft operating in waters under the jurisdiction of The City of San Diego shall be prosecuted under applicable provisions of the California Harbors and Navigation Code. Permits issued by The City of San Diego for the operation of watercraft not in compliance with noise criteria of the Harbors and Navigation Code shall be reviewed and approved by the Administrator prior to issuance.

("Watercraft" renumbered from Sec. 59.5.0407 and amended 9–22–1976 by O–11916 N.S.)

§59.5.0404 Construction Noise

(a) It shall be unlawful for any person, between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, to erect, construct, demolish, excavate for, alter or repair any building or structure in such a manner as to create disturbing, excessive or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator. In granting such permit, the Administrator shall consider whether the construction noise in the vicinity of the proposed work site would be less objectionable at night than during the daytime because of different population densities or different neighboring activities; whether obstruction and interference with traffic particularly on streets of major importance, would be less objectionable at night than during the daytime; whether the type of work to be performed emits noises at such a low level as to not cause significant disturbances in the vicinity of the work site; the character and nature of the neighborhood of the proposed work site; whether great economic hardship would occur if the work were spread over a longer time; whether proposed night work is in the general public interest; and he shall prescribe such conditions, working times, types of construction equipment to be used, and permissible noise levels as he deems to be required in the public interest.

(b) Except as provided in subsection C. hereof, it shall be unlawful for any person, including The City of San Diego, to conduct any construction activity so as to cause, at or beyond the property lines of any property zoned residential, an average sound level greater than 75 decibels during the 12–hour period from 7:00 a.m. to 7:00 p.m.

(c) The provisions of subsection B. of this section shall not apply to construction equipment used in connection with emergency work, provided the Administrator is notified within 48 hours after commencement of work.

(Amended 1–3–1984 by O–16100 N.S.)

§59.5.0406 Refuse Vehicles and Parking Lot Sweepers

No person shall operate or permit to be operated a refuse compacting, processing, or collection vehicle between the hours of 7:00 p.m. to 6:00 a.m. or a parking lot sweeper between the hours of 7:00 p.m. to 7:00 a.m. in any residential area unless a permit has been applied for and granted by the Administrator.

("Refuse Vehicles" added 9–18–1973 by O–11122 N.S.; amended 9–22–1976 by O–11916 N.S.)

(Amended 6-9-2010 by O-19960 N.S.; effective 7-9-2010.)

<u>APPENDIX 3.3</u>

City of San Diego Significance Determination Thresholds

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California Environmental Quality Act

Significance Determination Thresholds

Development Services Department

City of San Diego
Development Services
Land Development Review Division
(619) 446-5460

JANUARY 2011*

***Note:** Development Services Department staff periodically revises sections of the thresholds in response to CEQA case law, and changes in federal, state, and local regulations. Staff also periodically provides updated information and clarification and direction for environmental analysts.

K. NOISE

Noise is defined as unwanted or objectionable sound. Noise levels compatible with a person‘s life, health and enjoyment of property are regulated by Local, State, and Federal regulations, including the City of San Diego Progress Guide and General Plan, City Noise Abatement and Control Ordinance, California Noise Insulation Standards (Title 24), the State Public Utilities Code regulating airports, and other regulations. A direct and/or indirect noise impact should be evaluated in relation to applicable City standards, particularly, the City of San Diego Progress Guide and General Plan (Transportation Element). The following significance thresholds are in accordance with the City‘s Progress Guide and General Plan (Transportation Element) Land Use Compatibility with Annual Community Noise Equivalent Levels (CNEL).

Measurement of sound involves three variables, (1) magnitude; (2) frequency; and (3) duration. Noise levels in the City of San Diego are expressed and compared as dB (A) CNEL.

Definitions

The following definitions shall have the same meaning as defined in the Section 59.5.0102 of the City of San Diego Municipal Code:

A-Weighting
As in decibel A-weighting (dB [A]). Represents the frequency characteristics of the average human ear for various sound intensities. An A-Weight sound filters out lower frequencies, and provides a good indicator of the annoyance potential of a noise.

Average Sound Level
A sound level typical of the sound levels at a certain place during a given period of time, averaged by the general rule of combination for sound levels, said general rule being set forth in American National Standard Specifications for Sound Level Meters 1.4-1971. Average sound level is also called equivalent continuous sound level. (L_{eq})

Community Noise Equivalent Level (CNEL)
An average sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m., and after addition of ten (10) decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

CNEL recognizes that noise annoyance is related to duration, how often the noise is present, how long it persists, and when it occurs.

Decibel (dB)
A unit measure of sound (noise) level.

Just as feet is used to measure distances, decibels are used to measure sound (noise) levels. The decibel is defined as 10 times the common logarithm of the ratio of two amounts of sound power.

The human ear can hear sounds from less than 10 dB to over 100 dB (sounds which are 100,000 times greater that the faintest sounds). Table K-1 shows the approximate relationship between sound level changes and peoples judgment of the relative loudness of the change.

Table K-1
RELATIVE LOUDNESS

Sound Level Change	Acoustic Energy Change	Relative Loudness
0 dB	0	Reference Point
3 dB	50 %	Perceptible Change
10 dB	90 %	Twice as Loud
20 dB	99 %	Four Times as Loud
30 dB	99.9 %	Eight Times as Loud
40 dB	99.99 %	Sixteen Times as Loud

Source: Miller 1989 pg. 1-6

Noise Level
The same as sound level. The terms may be used interchangeably.

Sound Level
In decibels, that quantity measured with a sound level meter as defined herein, by use of the ―A” frequency weighting and ―fast” time averaging unless some other time averaging is specified.

Sound Level Meter
An instrument for the measurement of sound, including a microphone, an amplifier, an attenuator, networks at least for standardized frequency weighting A, and an indicating instrument having at least the standardized dynamic characteristic ―fast,” as specified in American National Standard Specification for Sound Level Meters S1. 4-1971 or its successor.

INITIAL STUDY CHECKLIST QUESTIONS

The following questions are from the City‘s Initial Study Checklist and are used to provide guidance to determine potential significant impacts related to Noise:

Would the project:

1. Result or create a significant increase in the existing ambient noise levels?

2. Exposure of people to noise levels which exceed the City's adopted noise ordinance or are incompatible with Table K-4?

3. Exposure of people to current or future transportation noise levels which exceed standards established in the Transportation Element of the General Plan or an adopted airport Comprehensive Land Use Plan?

4. Result in land uses which are not compatible with aircraft noise levels as defined by an adopted airport Comprehensive Land Use Plan (CLUP)?

SIGNIFICANCE THRESHOLDS

1. Interior and Exterior Noise Impacts from Traffic Generated Noise (Table K-2 below provides the general thresholds of significance for uses affected by traffic noise.)

Table K-2
TRAFFIC NOISE SIGNIFICANCE THRESHOLDS
(db(A) CNEL)

Structure or Proposed Use that would be impacted by Traffic Noise	Interior Space	Exterior Useable Space [22]	General Indication of Potential Significance
Single-family detached	45 dB	65 Db	Structure or outdoor useable area[23] is < 50 feet from the center of the closest (outside) lane on a street with existing or future ADTs > 7500 [24]
Multi-family, schools, libraries, hospitals, day care, hotels, motels, parks, convalescent homes.	- Development Services Department (DSD) ensures 45 dB pursuant to Title 24	65 dB	
Offices, Churches, Business, Professional Uses	n/a	70 dB	Structure or outdoor usable area is < 50 feet from the center of the closest lane on a street with existing or future ADTs > 20,000
Commercial, Retail, Industrial, Outdoor Spectator Sports Uses	n/a	75 dB	Structure or outdoor usable area is < 50 feet from the center of the closest lane on a street with existing or future ADTs > 40,000

Source: 1) City of San Diego Acoustical Report Guidelines (December 2003) and 2) City of San Diego Progress Guide and General Plan (Transportation Element)

2. HUD-Funded projects and Noise

   If a project is receiving U.S. Department of Housing and Urban Development (HUD) funding, noise analysis and mitigation must be in accordance with the HUD Noise Guidebook[25] Minimum attenuation requirements are prescribed in Title 24 of the Code of

[22] If a project is currently at or exceeds the significance thresholds for traffic noise described above and noise levels would result in less than a 3 dB increase, then the impact is not considered significant.

[23] Exterior usable areas do not include residential front yards or balconies, unless the areas such as balconies are part of the required usable open space calculation for multi-family units.

[24] Traffic counts are available from:

- San Diego Regional Association of Governments (SANDAG) Regional Economic Development Information
- System (**REDI**): http://cart.sandag.cog.ca.us/REDI/
- **SANDAG Traffic Forecast Information Center**: http://pele.sandag.org/trfic.html

[25] http://www.hud.gov/offices/cpd/energyenviron/environment/resources/guidebooks/noise/index.cfm

Federal Regulations[26] (24 CFR 51.104(a)) which are the HUD Environmental Criteria and Standards.

3. Airport Noise Impacts

If the project is proposed within the Airport Environs Overlay Zone (AEOZ) as defined in Chapter 13, Article 2, Division 3 of the San Diego Municipal Code, the potential exterior noise impacts from aircraft noise would not constitute a significant environmental impact.

However, interior noise impacts will be regulated by the requirement for residential development within the AEOZ to reduce interior noise levels attributable to airport noise to 45 dB Community Noise Equivalent Level (CNEL). Interior noise levels for new construction of multi-family units are addressed by the Building Development Review Division (BDR) of the City's Development Services Department (DSD) and do not need to be mitigated through conditions in the environment report, but the BDR requirements should be noted. BDR requires additional insulation and upgraded building materials so that interior noise levels do \not exceed 45 dB(A) CNEL. The requirements for an acoustical testing are defined in the City of San Diego Municipal Code, Chapter 13, Article 2, Division 3, §132.0308, ―Acoustical Testing of Interior Noise Levels."

Requirements for noise studies are found in the Municipal Code at Chapter 13, Article 2, Division 3, §132.0308. This section of the municipal code applies to ―development" as defined at, § 113.0103 to include ―constructing, reconstructing, converting, establishing, altering, maintaining, relocating, demolishing, using, or enlarging any building, structure, improvement, lot, or premises."

Remodels and additions to single-family and multi-family residences subject to airport noise levels above 65 dB (A) CNEL ordinarily would not be considered a significant issue and a noise study would not be required for the purposes of CEQA analysis. However, new construction of hospitals, schools, day care centers, or other sensitive uses subject to airport noise levels in excess of 65 dB(A) CNEL would be considered a significant issue and a noise study would be required that could recommend measures to mitigate potential noise impacts to a level below significance. Table K-3 below addresses the general impacts from airport noise thresholds.

[26] http://www.access.gpo.gov/nara/cfr/cfr-table-search.html#page1

Table K-3
IMPACTS FROM AIRPORT NOISE

Structure or Proposed Use that would be impacted by Airport Noise	Regulation
Structure within an AEOZ	Exterior noise is one factor in determining land use compatibility. See Table K-4 and the applicable Comprehensive Land Use Plan (CLUP).
New Single Family and Multi-family	Building Development Review Division (BDR) of Development Services Department (DSD) ensures 45 dB interior noise levels. Discuss Airport noise impact & BDR requirements (insulation and upgraded building materials to ensure 45 dB(A) CNEL) in environmental document See also **§ 132.0309 Requirement for Avigation Easement**
Remodels and additions to existing single and multi-family	Noise study & mitigation **not required** for airport noise > 65 dB(A) CNEL. See also **§ 132.0309 Requirement for Avigation Easement**. For development within the 60 dB CNEL contour of Lindbergh Field the applicant must demonstrate that indoor noise levels that are attributable to airport operations shall not exceed 45 dB. Refer to § 132.0306 of the Municipal Code.
New construction of hospitals, schools, day care centers or other sensitive uses	Noise study and mitigation **required** for airport noise > 65 dB(A) CNEL. See also § **132.0309 Requirement for Avigation Easement.**

4. Noise from Adjacent Stationary Uses (Noise Generators)

   A project which would generate noise levels at the property line which exceed the City's Noise Ordinance Standards is considered potentially significant (such as potentially a carwash or projects operating generators or noisy equipment).

   If a non-residential use, such as a commercial, industrial or school use, is proposed to abut an existing residential use, the decibel level at the property line should be the arithmetic mean of the decibel levels allowed for each use as set forth in Section 59.5.0401 of the Municipal Code. Although the noise level above could be consistent with the City's Noise Ordinance Standards, a noise level above 65 dB (A) CNEL at the residential property line could be considered a significant environmental impact.

1. Impacts to Sensitive Wildlife

   Noise mitigation may be required for significant noise impacts to certain avian species during their breeding season, depending upon the location of the project such as in or adjacent to an MHPA, whether or not the project is occupied by the California gnatcatcher, least Bell's vireo, southern willow flycatcher, least tern, cactus wren, tricolored blackbird or western snowy plover, and whether or not noise levels from the project, including construction during the breeding season of these species would exceed 60dB(A) or existing ambient noise level if above 60dB(A). In addition, please note that significant noise impacts to the California gnatcatcher are only analyzed if the project is within an MHPA; there are no restrictions for the gnatcatcher outside the MHPA any time of year. Please see Biological Resources Section, Step 2, Note (f).

6. Temporary Construction Noise

Temporary construction noise which exceeds 75 dB (A) L_{eq} at a sensitive receptor would be considered significant. Construction noise levels measured at or beyond the property lines of any property zoned residential shall not exceed an average sound level greater than 75-decibles (dB) during the 12-hour period from 7:00 a.m. to 7:00 p.m. In addition, construction activity is prohibited between the hours of 7:00 p.m. of any day and 7:00 a.m. of the following day, or on legal holidays as specified in Section 21.04 of the San Diego Municipal Code, with exception of Columbus Day and Washington's Birthday, or on Sundays, that would create disturbing, excessive, or offensive noise unless a permit has been applied for and granted beforehand by the Noise Abatement and Control Administrator, in conformance with San Diego Municipal Code Section 59.5.0404.

Additionally, where temporary construction noise would substantially interfere with normal business communication, or affect sensitive receptors, such as day care facilities, a significant noise impact may be identified.

7. Noise/Land Use Compatibility

Noise is one factor to be considered in determining whether a land use is compatible. Land use compatibility noise factors are presented in Table K-4. Compatible land uses are shaded. Incompatible land uses are unshaded. The transition zone between compatible and incompatible should be evaluated by the environmental planner to determine whether the use would be acceptable based on all available information and the extent to which the noise from the proposed project would affect the surrounding uses.

[illegible]

[illegible] D[illegible] N[illegible]

	Land Use	Annual Community Noise Equivalent Level in Decibels					
		50	55	60	65	70	75
1	Outdoor amphitheaters						
2	Schools, libraries						
3	Nature preserves, wildlife preserves						
4	Residential single-family, multi-family, mobile homes, transient housing						
5	Retirement homes, intermediate care facilities, convalescent homes						
6	Hospitals						
7	Parks, playgrounds						
8	Office buildings, business and professional						
9	Auditoriums, concert halls, indoor arenas, churches						
10	Riding stables, water recreation facilities						
11	outdoor spectator sports, golf courses						
12	livestock farming, animal breeding						
13	Commercial-retail, shopping centers, restaurants, movie theaters						
14	Commercial-wholesale, industrial manufacturing, utilities						
15	Agriculture (except livestock), extractive industry, farming						
16	Cemeteries						

APPENDIX □.□

Study Area Photos

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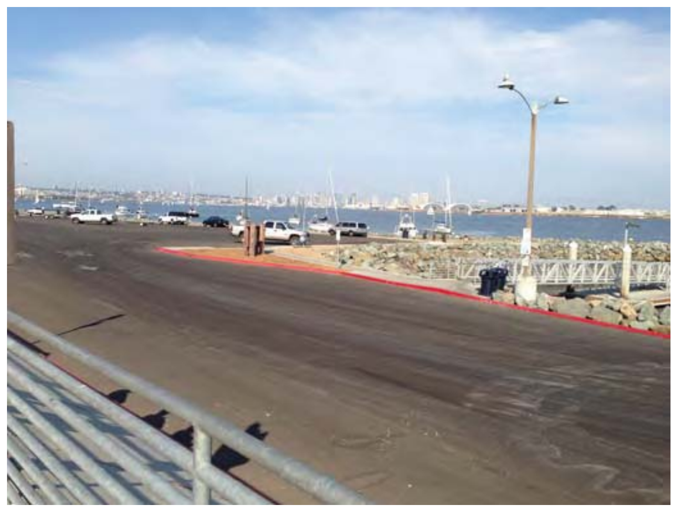
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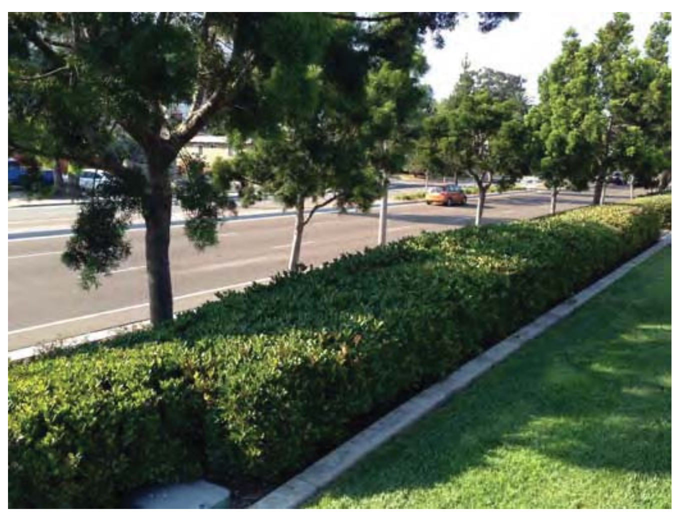

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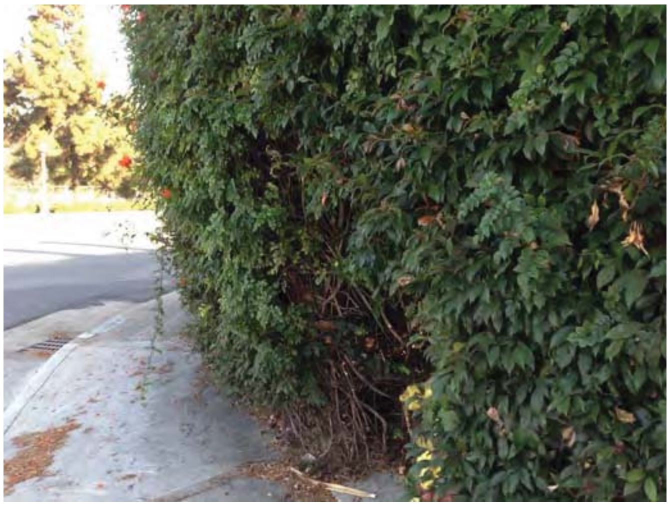

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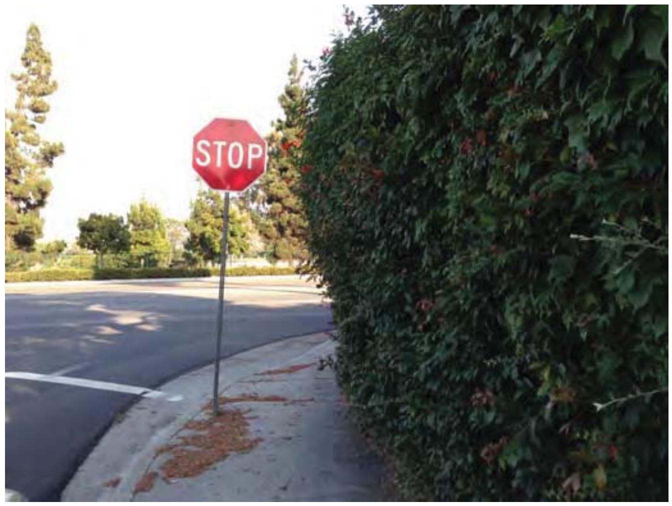

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7/10/2013 8:27:40 PM

ST-3 IMG_0235.JPG
7/10/2013 8:27:42 PM


ST-3 IMG_0236.JPG
7/10/2013 8:35:11 PM


ST-3 IMG_0237.JPG
7/10/2013 8:35:11 PM


ST-3 IMG_0239.JPG
7/10/2013 8:35:11 PM


ST-3 IMG_0240.JPG
7/10/2013 8:35:12 PM


ST-3 IMG_0241.JPG
7/10/2013 8:35:12 PM


ST-3 IMG_0242.JPG
7/10/2013 8:35:12 PM

ST-3 IMG_0244.JPG
7/10/2013 8:35:13 PM

IMG_0245.JPG
7/10/2013 8:35:13 PM

IMG_0246.JPG
7/10/2013 8:35:13 PM

IMG_0247.JPG
7/10/2013 8:35:14 PM

IMG_0248.JPG
7/10/2013 8:35:14 PM

IMG_0249.JPG
7/10/2013 8:35:14 PM

ST-4 IMG_0250.JPG
7/10/2013 8:35:14 PM

ST-4 IMG_0251.JPG
7/10/2013 8:35:15 PM

ST-4 IMG_0252.JPG
7/10/2013 8:35:15 PM

ST-4 IMG_0253.JPG
7/10/2013 8:35:15 PM

ST-4 IMG_0254.JPG
7/10/2013 8:35:16 PM

ST-4 IMG_0255.JPG
7/10/2013 8:35:16 PM

ST-4 IMG_0257.JPG
7/10/2013 8:35:18 PM

ST-4 IMG_0258.JPG
7/10/2013 8:35:18 PM

ST-5 IMG_0259.JPG
7/10/2013 8:35:18 PM

ST-5 IMG_0260.JPG
7/10/2013 8:35:18 PM

ST-5 IMG_0261.JPG
7/10/2013 8:35:19 PM

ST-5 IMG_0262.JPG
7/10/2013 8:35:19 PM

ST-5 IMG_0263.JPG
7/10/2013 8:35:19 PM

ST-5 IMG_0264.JPG
7/10/2013 8:35:19 PM

IMG_0268.JPG
7/10/2013 8:35:31 PM

IMG_0269.JPG
7/10/2013 8:35:31 PM

IMG_0270.JPG
7/10/2013 8:35:32 PM

IMG_0271.JPG
7/10/2013 8:35:32 PM

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APPENDIX .2

Noise Level Measurement Mapbook

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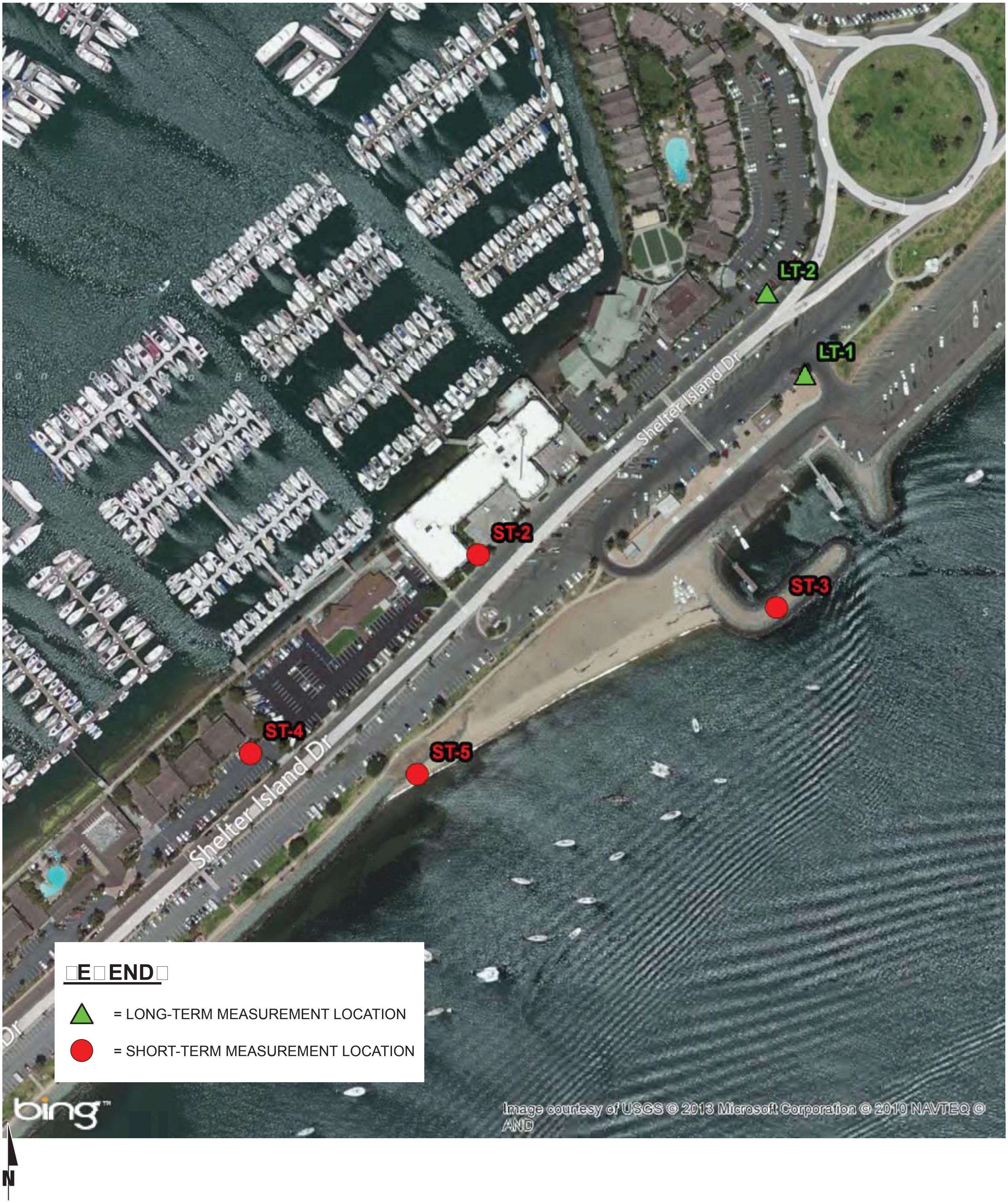
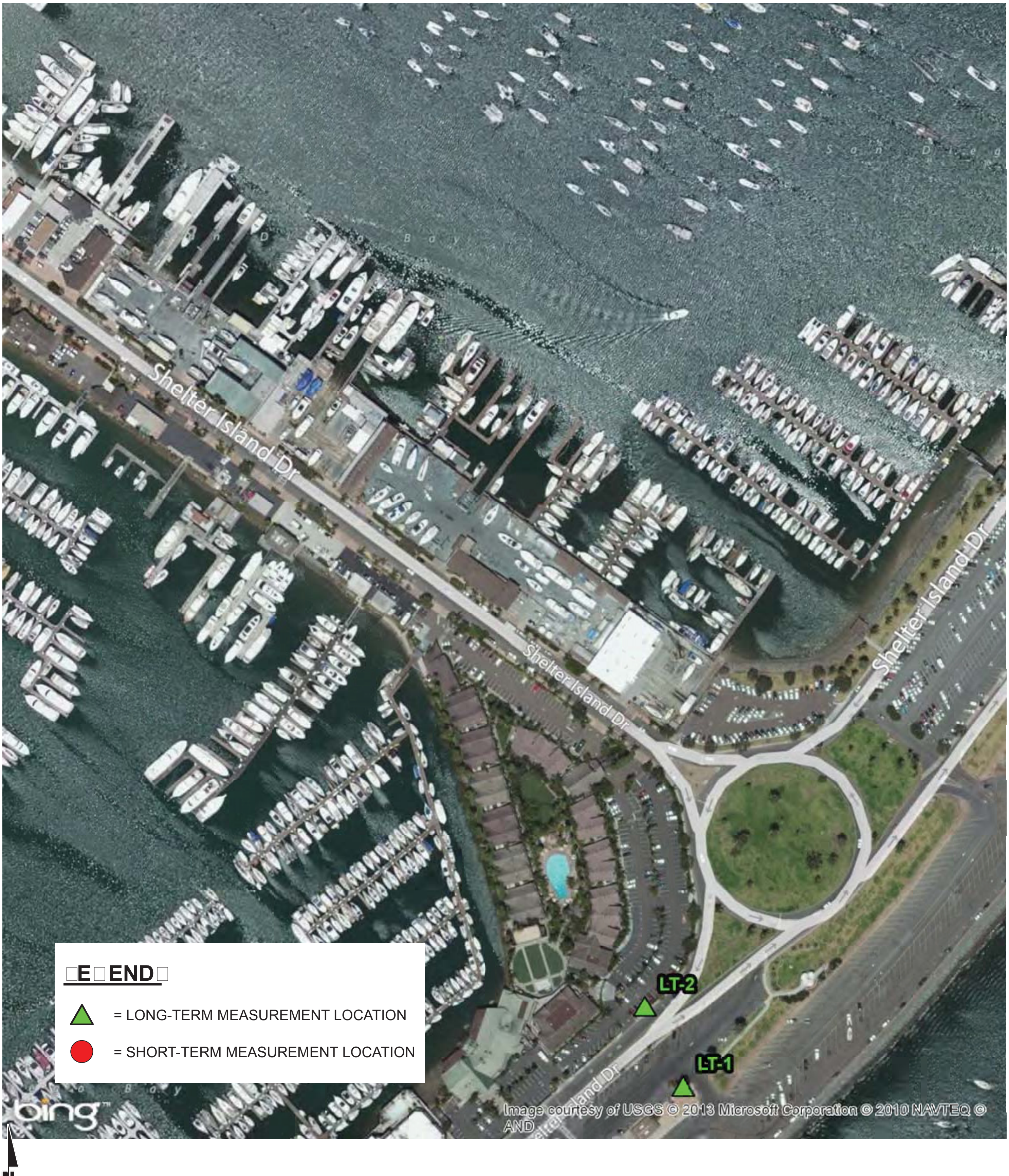
KEY MAP
NOISE LEVEL MEASUREMENT LOCATIONS

Shelter Island Boat Launching Ramp Construction Noise Impact Analysis
City of San Diego, CA (JN - 07895:keymap.mxd)

NOISE LEVEL MEASUREMENT LOCATIONS



NOISE LEVEL MEASUREMENT LOCATIONS

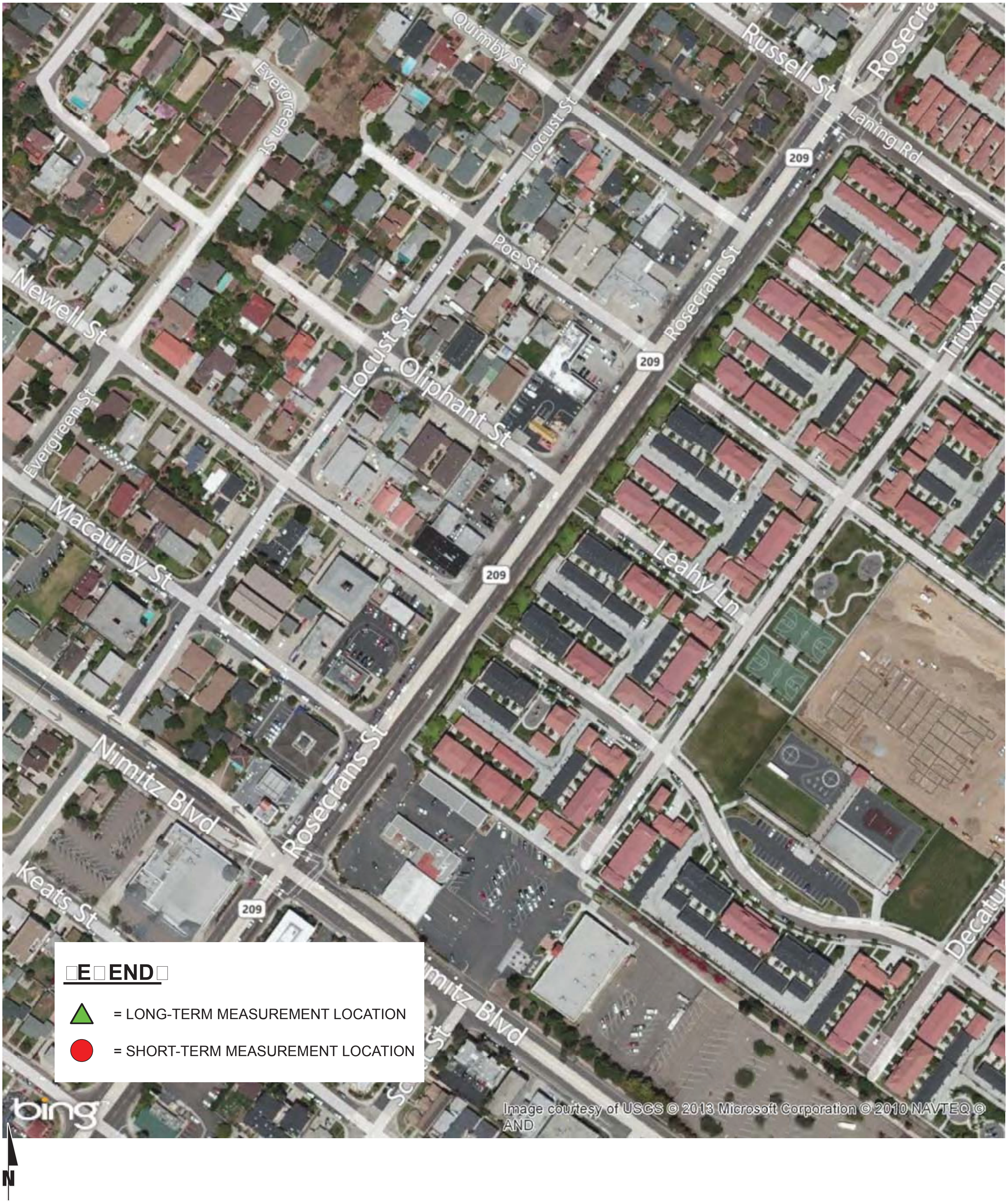


NOISE LEVEL MEASUREMENT LOCATIONS

NOISE LEVEL MEASUREMENT LOCATIONS

N

NOISE LEVEL MEASUREMENT LOCATIONS



NOISE LEVEL MEASUREMENT LOCATIONS

N

Shelter Island Boat Launching Ramp Construction Noise Impact Analysis
City of San Diego, CA (JN - 07895:basemap.mxd)

URBAN CROSSROADS

NOISE LEVEL MEASUREMENT LOCATIONS

NOISE LEVEL MEASUREMENT LOCATIONS

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APPENDIX □.3

Long-Term Noise Level Measurement Worksheets

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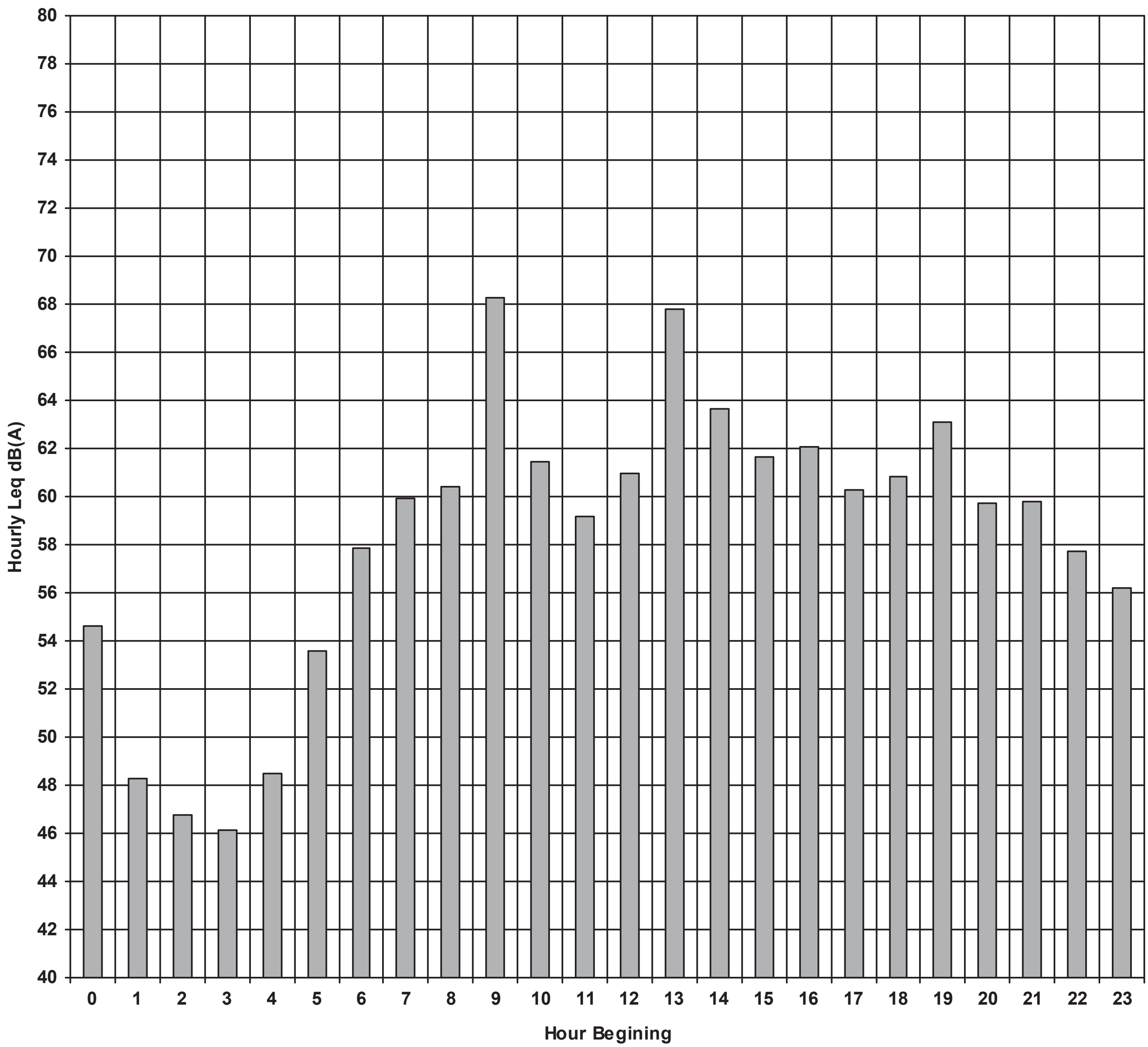
24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L1
Analyst: B. Lawson
Description: SIBLR Median Island northeast of restrooms
Start Date: Wednesday, July 10, 2013

Hourly Leq dB(A) Readings (unadjusted)



Measured Peak Noise Hour: 9

Measured Peak Hour dBA Leq: 68.2

Tuesday, July 16, 2013

24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L1
Analyst: B. Lawson
Description: SIBLR Median Island northeast of restrooms
Start Date: Wednesday, July 10, 2013

Leq To CNEL Noise Calculations

Noise Hour	Hourly Leq	CNEL Penalty	Adjusted Hourly Leq
0	54.6	10	64.6
1	48.3	10	58.3
2	46.8	10	56.8
3	46.2	10	56.2
4	48.5	10	58.5
5	53.6	10	63.6
6	57.8	10	67.8
7	59.9	0	59.9
8	60.4	0	60.4
9	68.2	0	68.2
10	61.5	0	61.5
11	59.2	0	59.2
12	61.0	0	61.0
13	67.8	0	67.8
14	63.7	0	63.7
15	61.7	0	61.7
16	62.1	0	62.1
17	60.3	0	60.3
18	60.8	0	60.8
19	63.1	5	68.1
20	59.7	5	64.7
21	59.8	5	64.8
22	57.7	10	67.7
23	56.2	10	66.2

Calculated CNEL: 64.1

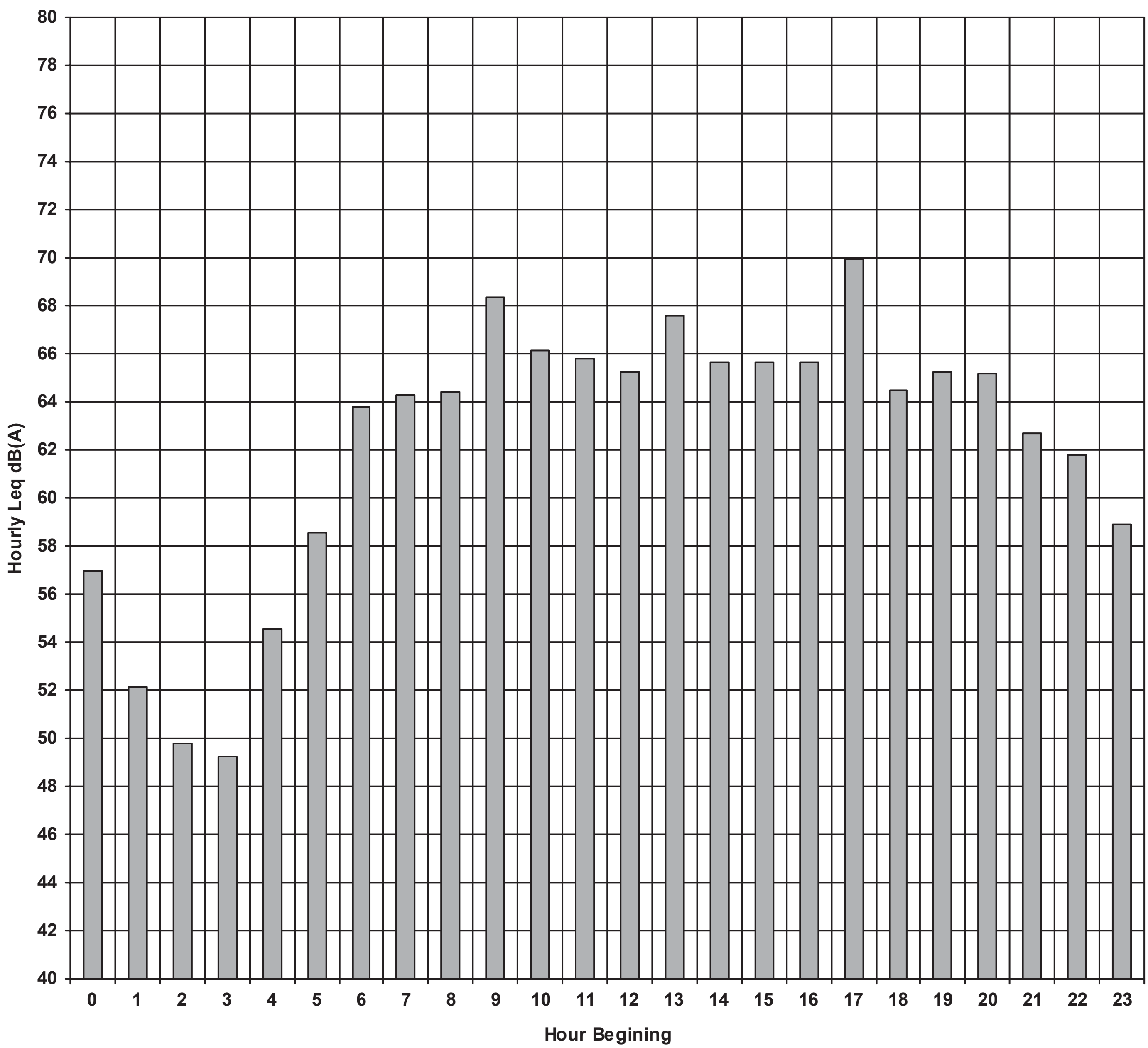
Evening Hours

Nighttime Hours

24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L2
Analyst: B. Lawson
Description: Parkway adjacent to SB Shelter Island Drive
Start Date: Wednesday, July 10, 2013

Hourly Leq dB(A) Readings (unadjusted)



Measured Peak Noise Hour: 17

Measured Peak Hour dBA Leq: 69.9

24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L2
Analyst: B. Lawson
Description: Parkway adjacent to SB Shelter Island Drive
Start Date: Wednesday, July 10, 2013

Leq To CNEL Noise Calculations

Noise Hour	Hourly Leq	CNEL Penalty	Adjusted Hourly Leq
0	57.0	10	67.0
1	52.2	10	62.2
2	49.8	10	59.8
3	49.2	10	59.2
4	54.5	10	64.5
5	58.6	10	68.6
6	63.8	10	73.8
7	64.3	0	64.3
8	64.4	0	64.4
9	68.3	0	68.3
10	66.2	0	66.2
11	65.8	0	65.8
12	65.2	0	65.2
13	67.6	0	67.6
14	65.7	0	65.7
15	65.7	0	65.7
16	65.6	0	65.6
17	69.9	0	69.9
18	64.5	0	64.5
19	65.3	5	70.3
20	65.2	5	70.2
21	62.7	5	67.7
22	61.8	10	71.8
23	58.9	10	68.9

Calculated CNEL: 67.8

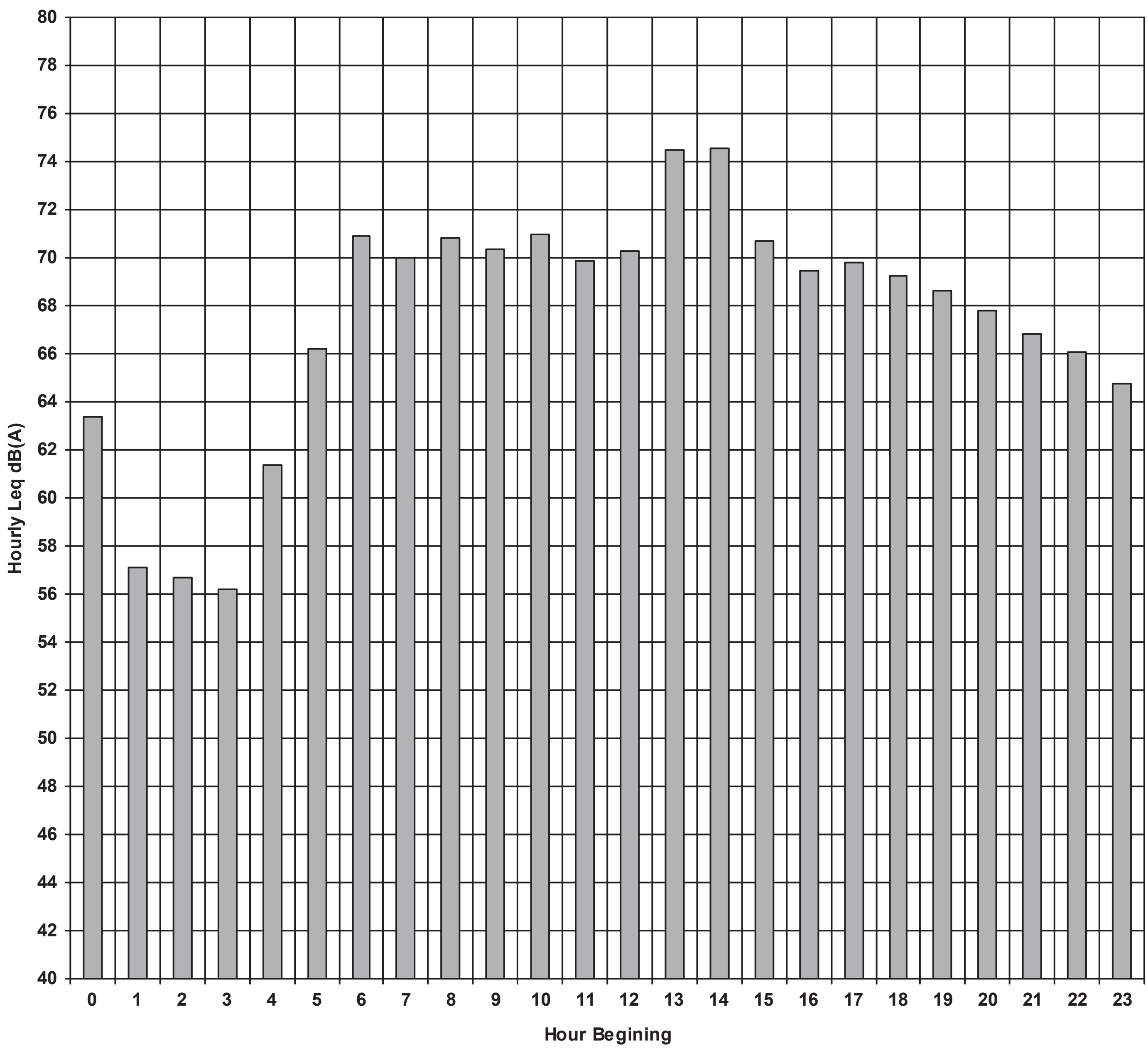
Evening Hours

Nighttime Hours

24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L3
Analyst: B. Lawson
Description: Ramada, 1403 Rosecrans Street
Start Date: Wednesday, July 10, 2013

Hourly Leq dB(A) Readings (unadjusted)



Measured Peak Noise Hour: 14

Measured Peak Hour dBA Leq: 74.6

Tuesday, July 16, 2013

24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L3
Analyst: B. Lawson
Description: Ramada, 1403 Rosecrans Street
Start Date: Wednesday, July 10, 2013

Leq To CNEL Noise Calculations

Noise Hour	Hourly Leq	CNEL Penalty	Adjusted Hourly Leq
0	63.4	10	73.4
1	57.1	10	67.1
2	56.7	10	66.7
3	56.2	10	66.2
4	61.4	10	71.4
5	66.2	10	76.2
6	70.9	10	80.9
7	70.0	0	70.0
8	70.9	0	70.9
9	70.4	0	70.4
10	70.9	0	70.9
11	69.8	0	69.8
12	70.3	0	70.3
13	74.5	0	74.5
14	74.6	0	74.6
15	70.7	0	70.7
16	69.4	0	69.4
17	69.8	0	69.8
18	69.2	0	69.2
19	68.7	5	73.7
20	67.8	5	72.8
21	66.8	5	71.8
22	66.1	10	76.1
23	64.8	10	74.8

Calculated CNEL: 73.2

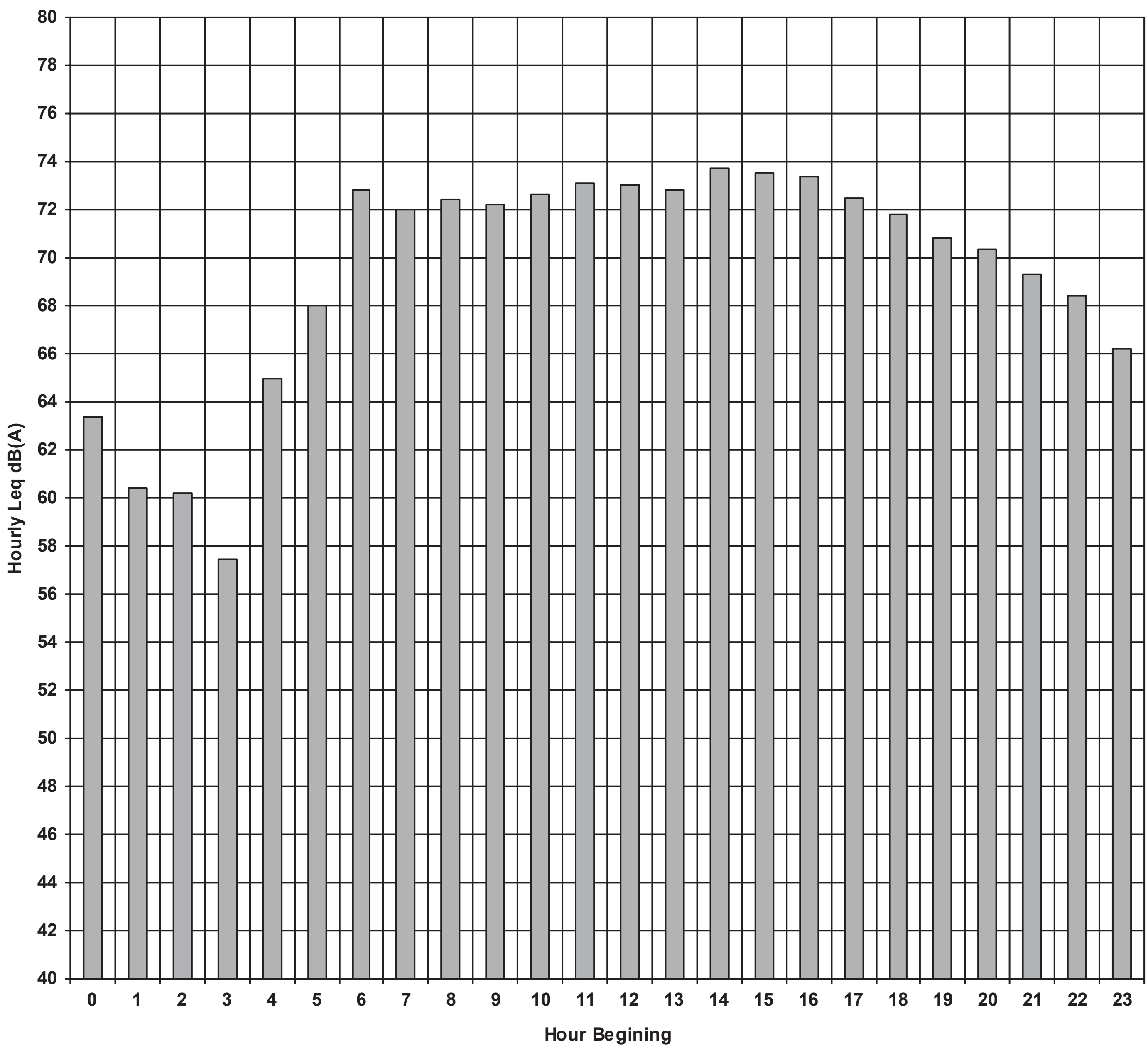
Evening Hours

Nighttime Hours

24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L4
Analyst: B. Lawson
Description: Residential near W Bainbridge Road
Start Date: Wednesday, July 10, 2013

Hourly Leq dB(A) Readings (unadjusted)



Tuesday, July 16, 2013

24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L4
Analyst: B. Lawson
Description: Residential near W Bainbridge Road
Start Date: Wednesday, July 10, 2013

Leq To CNEL Noise Calculations			
Noise Hour	***Hourly Leq***	***CNEL Penalty***	***Adjusted Hourly Leq***
0	63.3	10	73.3
1	60.4	10	70.4
2	60.2	10	70.2
3	57.4	10	67.4
4	64.9	10	74.9
5	68.0	10	78.0
6	72.9	10	82.9
7	72.0	0	72.0
8	72.4	0	72.4
9	72.2	0	72.2
10	72.6	0	72.6
11	73.1	0	73.1
12	73.0	0	73.0
13	72.8	0	72.8
14	73.7	0	73.7
15	73.5	0	73.5
16	73.4	0	73.4
17	72.5	0	72.5
18	71.8	0	71.8
19	70.8	5	75.8
20	70.3	5	75.3
21	69.3	5	74.3
22	68.4	10	78.4
23	66.2	10	76.2

Calculated CNEL: 75.1

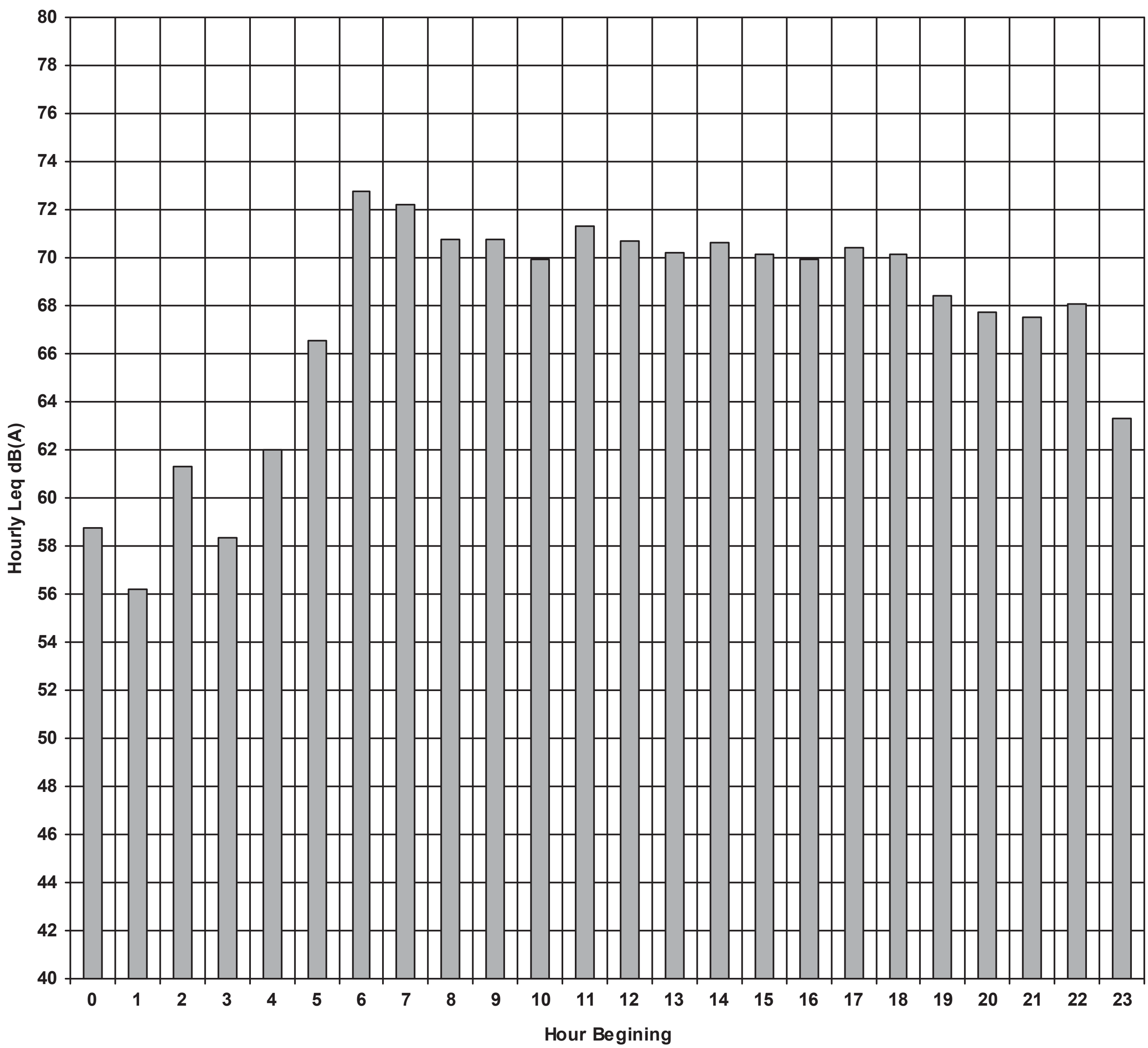
Evening Hours

Nighttime Hours

24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L5
Analyst: B. Lawson
Description: Residential near Kingsley Street.
Start Date: Wednesday, July 10, 2013

Hourly Leq dB(A) Readings (unadjusted)



Tuesday, July 16, 2013

24-Hour Noise Level Measurement Summary - v20130414

Project Name: Shelter Island Boat Launch Facility
Job Number: 7895
Location #: L5
Analyst: B. Lawson
Description: Residential near Kingsley Street.
Start Date: Wednesday, July 10, 2013

Leq To CNEL Noise Calculations

Noise Hour	***Hourly Leq***	***CNEL Penalty***	***Adjusted Hourly Leq***
0	58.8	10	68.8
1	56.2	10	66.2
2	61.3	10	71.3
3	58.4	10	68.4
4	62.0	10	72.0
5	66.5	10	76.5
6	72.8	10	82.8
7	72.2	0	72.2
8	70.7	0	70.7
9	70.7	0	70.7
10	70.0	0	70.0
11	71.3	0	71.3
12	70.7	0	70.7
13	70.2	0	70.2
14	70.6	0	70.6
15	70.2	0	70.2
16	69.9	0	69.9
17	70.4	0	70.4
18	70.1	0	70.1
19	68.4	5	73.4
20	67.7	5	72.7
21	67.5	5	72.5
22	68.1	10	78.1
23	63.3	10	73.3

Calculated CNEL: 73.7

Evening Hours

Nighttime Hours

APPENDIX 4.4

Short-Term Noise Level Measurement Worksheets

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File Translated: U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST1_001.slmdl
Model/Serial Number: 824 / A2629
Firmware/Software Revs: 4.290 / 3.120
Name: Urban Crossroads
Descr1: 41 Corporate Park, Suite 300
Descr2: Irvine, CA 92606
Setup/Setup Descr: uc.ssa / UcNorm
Location: ST-1
Note1:
Note2:

Overall Any Data
Start Time: 10-Jul-2013 11:12:00
Elapsed Time: 00:15:00.6

	A Weight	C Weight	Flat
Leq:	56.7 dBA	73.1 dBC	74.1 dBF
SEL:	86.3 dBA	102.6 dBC	103.7 dBF
Peak:	88.4 dBA	98.9 dBC	99.7 dBF
	10-Jul-2013 11:17:43	10-Jul-2013 11:20:11	10-Jul-2013 11:20:11
Lmax (slow):	71.6 dBA	89.8 dBC	90.3 dBF
	10-Jul-2013 11:15:12	10-Jul-2013 11:20:06	10-Jul-2013 11:20:06
Lmin (slow):	47.2 dBA	63.8 dBC	65.6 dBF
	10-Jul-2013 11:12:21	10-Jul-2013 11:25:43	10-Jul-2013 11:15:40
Lmax (fast):	74.3 dBA	93.1 dBC	93.6 dBF
	10-Jul-2013 11:20:12	10-Jul-2013 11:20:11	10-Jul-2013 11:20:11
Lmin (fast):	46.2 dBA	62.4 dBC	64.1 dBF
	10-Jul-2013 11:15:57	10-Jul-2013 11:12:23	10-Jul-2013 11:13:19
Lmax (impulse):	77.2 dBA	94.0 dBC	94.4 dBF
	10-Jul-2013 11:20:12	10-Jul-2013 11:20:11	10-Jul-2013 11:20:11
Lmin (impulse):	46.9 dBA	64.3 dBC	66.7 dBF
	10-Jul-2013 11:12:21	10-Jul-2013 11:25:39	10-Jul-2013 11:15:40

Spectra

Date	Time	Run Time
10-Jul-2013	11:12:00	00:15:00.6

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	-5.6		---		-6.8		630	45.4		56.1		34.2	
16.0	6.9	12.8	6.0	---	-9.8	-3.8	800	46.3		52.7		34.4	
20.0	11.4		3.4		-9.8		1000	48.7	51.8	53.5	58.2	33.5	38.5
25.0	19.2		15.3		-9.8		1250	45.2		54.0		33.2	
31.5	22.2	29.2	28.8	36.5	10.6	15.4	1600	44.7		55.0		31.8	
40.0	27.6		35.7		13.6		2000	43.1	48.2	53.1	59.8	31.2	35.8
50.0	34.0		46.2		22.7		2500	42.0		56.3		29.9	
63.0	43.3	47.0	58.9	64.3	25.8	31.5	3150	40.4		61.1		27.0	
80.0	44.2		62.7		29.3		4000	39.0	43.7	61.7	64.5	24.0	29.7
100	43.8		65.7		29.8		5000	36.7		45.2		22.8	
125	44.1	48.1	64.3	68.8	33.7	36.7	6300	33.0		42.1		19.6	
160	41.9		60.4		31.5		8000	29.9	37.8	44.3	46.9	18.8	24.2
200	42.2		57.6		32.7		10000	34.8		37.3		19.7	
250	42.4	47.1	54.0	60.6	33.2	37.6	12500	27.0		33.3		16.9	
315	42.3		54.9		32.5		16000	26.2	32.0	29.9	35.4	20.7	25.6
400	42.7		56.7		32.6		20000	28.2		25.5		23.0	
500	44.6	49.1	59.6	62.5	32.7	38.0							

File Translated: U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST1_001.slmdl
Model/Serial Number: 824 / A2629

Overall Spectral Ln's

Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00	Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00
12.5	15.4	15.4	15.4	15.4	15.4	15.4	630	53.4	48.9	45.4	40.9	36.4	33.9
16.0	15.4	15.4	15.4	15.4	15.4	15.4	800	57.9	52.4	47.4	41.9	37.4	35.4
20.0	21.4	15.4	15.4	15.4	15.4	15.4	1000	114.4	52.9	48.9	42.4	36.9	34.4
25.0	27.9	24.9	15.4	15.4	15.4	15.4	1250	69.9	50.9	45.4	41.4	36.4	33.9
31.5	29.9	25.4	20.9	18.4	15.4	15.4	1600	52.4	47.9	43.4	39.9	34.9	31.9
40.0	36.9	30.4	25.4	22.9	20.4	17.4	2000	65.4	49.9	42.4	38.9	33.9	31.9
50.0	40.4	37.4	32.4	28.9	25.9	23.9	2500	50.9	44.9	40.4	37.4	32.4	29.9
63.0	53.4	43.4	35.9	32.9	30.4	28.4	3150	63.4	46.4	39.4	35.9	29.9	27.4
80.0	55.4	43.4	37.4	34.9	32.4	29.9	4000	47.4	41.4	36.9	31.9	27.4	23.9
100	52.4	44.4	39.9	36.4	33.4	31.4	5000	45.4	40.4	35.4	29.9	25.4	22.9
125	52.9	45.9	41.9	40.4	38.9	36.9	6300	41.4	35.9	31.4	26.4	21.9	18.9
160	50.4	45.4	40.4	37.9	34.9	32.4	8000	38.9	32.4	27.4	23.9	20.4	18.9
200	53.4	45.9	40.9	38.4	34.9	32.9	10000	35.9	28.4	24.4	21.9	20.4	19.9
250	52.4	46.4	41.9	38.4	34.9	33.4	12500	28.9	22.4	19.4	17.9	17.4	16.9
315	51.9	45.4	41.4	38.4	34.9	32.9	16000	25.4	22.9	21.4	20.9	20.9	20.9
400	49.9	46.9	41.9	37.9	34.4	32.4	20000	27.4	23.9	23.4	23.4	22.9	22.9
500	53.4	48.4	43.4	38.9	34.9	28.9							

Ln Start Level: 15 dB

L2.00	65.6 dBA	L25.00	55.6 dBA	L90.00	48.4 dBA
L8.00	59.8 dBA	L50.00	52.2 dBA	L99.00	47.2 dBA

Detector: Fast
Weighting: A

SPL Exceedance Level 1:	85.0 dB	Exceeded:	0 times
SPL Exceedance level 2:	120 dB	Exceeded:	0 times
Peak-1 Exceedance Level:	105 dB	Exceeded:	0 times
Peak-2 Exceedance Level:	100 dB	Exceeded:	0 times

Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Current Any Data
Start Time: 10-Jul-2013 11:12:00
Elapsed Time: 00:15:00.6

	A Weight	C Weight	Flat
Leq:	56.7 dBA	73.1 dBC	74.1 dBF
SEL:	86.3 dBA	102.6 dBC	103.7 dBF
Peak:	88.4 dBA	98.9 dBC	99.7 dBF
	10-Jul-2013 11:17:43	10-Jul-2013 11:20:11	10-Jul-2013 11:20:11
Lmax (slow):	71.6 dBA	89.8 dBC	90.3 dBF
	10-Jul-2013 11:15:12	10-Jul-2013 11:20:06	10-Jul-2013 11:20:06
Lmin (slow):	47.2 dBA	63.8 dBC	65.6 dBF
	10-Jul-2013 11:12:21	10-Jul-2013 11:25:43	10-Jul-2013 11:15:40
Lmax (fast):	74.3 dBA	93.1 dBC	93.6 dBF
	10-Jul-2013 11:20:12	10-Jul-2013 11:20:11	10-Jul-2013 11:20:11
Lmin (fast):	46.2 dBA	62.4 dBC	64.1 dBF
	10-Jul-2013 11:15:57	10-Jul-2013 11:12:23	10-Jul-2013 11:13:19
Lmax (impulse):	77.2 dBA	94.0 dBC	94.4 dBF
	10-Jul-2013 11:20:12	10-Jul-2013 11:20:11	10-Jul-2013 11:20:11
Lmin (impulse):	46.9 dBA	64.3 dBC	66.7 dBF
	10-Jul-2013 11:12:21	10-Jul-2013 11:25:39	10-Jul-2013 11:15:40

Calibrated:	10-Jul-2013 16:24:43	Offset:	-44.5 dB
Checked:	10-Jul-2013 16:24:43	Level:	113.8 dB
Calibrator	not set	Level:	114.0 dB
Cal Records Count:	6		

Interval Records:	Disabled	Number Interval Records:	0
History Records:	Enabled	Number History Records:	17
Run/Stop Records:		Number Run/Stop Records:	2

File Translated: U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST2.slmdl
Model/Serial Number: 824 / A2629
Firmware/Software Revs: 4.290 / 3.120
Name: Urban Crossroads
Descr1: 41 Corporate Park, Suite 300
Descr2: Irvine, CA 92606
Setup/Setup Descr: uc.ssa / UcNorm
Location: ST-2
Note1:
Note2:

Overall Any Data
Start Time: 10-Jul-2013 11:36:30
Elapsed Time: 00:15:31.6

	A Weight	C Weight	Flat
Leq:	61.4 dBA	72.9 dBC	74.2 dBF
SEL:	91.1 dBA	102.6 dBC	103.8 dBF
Peak:	95.6 dBA	97.0 dBC	99.0 dBF
	10-Jul-2013 11:41:40	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53
Lmax (slow):	75.7 dBA	82.1 dBC	83.7 dBF
	10-Jul-2013 11:50:53	10-Jul-2013 11:41:03	10-Jul-2013 11:50:53
Lmin (slow):	51.1 dBA	66.5 dBC	67.9 dBF
	10-Jul-2013 11:39:38	10-Jul-2013 11:39:38	10-Jul-2013 11:39:38
Lmax (fast):	79.2 dBA	85.8 dBC	87.8 dBF
	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53
Lmin (fast):	50.7 dBA	65.4 dBC	66.6 dBF
	10-Jul-2013 11:39:37	10-Jul-2013 11:39:37	10-Jul-2013 11:39:37
Lmax (impulse):	80.9 dBA	87.8 dBC	90.5 dBF
	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53
Lmin (impulse):	51.0 dBA	67.6 dBC	68.7 dBF
	10-Jul-2013 11:39:37	10-Jul-2013 11:39:38	10-Jul-2013 11:39:38

Spectra

Date	Time	Run Time
10-Jul-2013	11:36:30	00:15:31.6

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	-6.3		---		-6.8		630	51.1		65.5		38.9	
16.0	9.4	17.0	18.7	---	-9.8	-3.8	800	52.9		64.9		37.5	
20.0	16.1		29.0		-9.8		1000	53.1	57.6	65.9	70.2	36.0	41.0
25.0	13.6		31.8		-9.8		1250	52.3		65.5		34.9	
31.5	25.1	32.9	31.0	39.8	15.2	22.3	1600	51.1		64.4		35.0	
40.0	32.1		38.3		21.3		2000	49.0	54.1	65.9	70.0	34.0	38.6
50.0	34.9		37.7		25.8		2500	46.9		65.2		31.9	
63.0	40.0	45.1	52.5	53.3	31.1	37.0	3150	45.8		65.7		28.9	
80.0	42.9		44.8		35.2		4000	41.7	47.8	60.3	67.5	26.1	31.6
100	40.8		47.1		33.5		5000	39.0		59.2		24.0	
125	44.0	49.1	51.4	59.8	35.5	40.7	6300	36.8		54.0		20.1	
160	46.5		58.9		37.7		8000	32.8	38.8	50.0	55.9	19.5	24.5
200	45.0		57.3		37.0		10000	29.1		45.8		19.7	
250	46.8	51.0	56.9	63.4	37.1	42.4	12500	26.5		39.7		17.1	
315	46.7		60.7		38.6		16000	27.9	32.0	33.6	40.9	20.6	25.6
400	48.2		61.8		39.4		20000	27.2		28.3		23.0	
500	50.2	54.8	66.1	69.6	39.0	43.9							

File Translated: U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST2.slmdl
Model/Serial Number: 824 / A2629

Overall Spectral Ln's

Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00	Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00
12.5	0.0	0.0	0.0	0.0	0.0	0.0	630	57.5	55.0	51.5	47.5	42.0	40.0
16.0	0.0	0.0	0.0	0.0	0.0	0.0	800	59.5	57.0	54.0	49.5	41.0	39.5
20.0	23.5	20.5	0.0	0.0	0.0	0.0	1000	59.0	57.5	54.5	49.5	40.5	38.0
25.0	19.0	15.0	0.0	0.0	0.0	0.0	1250	58.5	56.5	53.5	49.0	39.5	37.0
31.5	30.5	27.5	25.5	23.5	19.5	17.0	1600	57.5	55.0	52.0	47.5	38.5	36.0
40.0	39.5	36.0	32.0	28.0	24.5	22.5	2000	56.0	52.5	48.5	44.0	36.5	34.0
50.0	43.0	37.5	33.5	31.0	29.0	27.0	2500	54.5	50.0	45.0	41.0	34.0	32.0
63.0	48.0	43.0	39.0	37.0	34.0	32.5	3150	53.5	47.0	42.5	38.0	31.0	29.0
80.0	48.5	46.5	43.0	40.5	37.5	36.0	4000	50.0	44.0	39.0	35.5	29.0	26.5
100	48.0	43.5	40.5	38.5	36.0	34.5	5000	47.5	40.5	36.0	32.0	26.0	24.0
125	50.5	47.5	42.5	40.0	37.5	36.0	6300	44.5	38.0	33.0	28.5	22.0	20.5
160	54.0	50.0	46.0	43.0	40.0	38.5	8000	40.5	34.5	29.5	25.5	20.5	19.5
200	51.5	48.0	44.5	42.5	40.0	38.0	10000	36.0	30.0	26.0	23.0	20.0	20.0
250	52.5	48.5	45.5	43.5	40.5	38.5	12500	31.5	25.0	20.5	18.5	17.5	17.0
315	53.0	49.0	46.5	44.0	41.0	40.0	16000	29.5	24.0	22.0	21.5	21.0	21.0
400	54.5	51.5	48.0	45.0	41.5	40.0	20000	25.5	23.5	23.5	23.5	23.0	23.0
500	56.0	53.0	50.0	46.0	41.5	40.0							

Ln Start Level: 15 dB

L2.00	67.9 dBA	L25.00	61.9 dBA	L90.00	52.9 dBA
L8.00	65.3 dBA	L50.00	57.7 dBA	L99.00	51.5 dBA

Detector: Fast
Weighting: A
SPL Exceedance Level 1: 85.0 dB Exceeded: 0 times
SPL Exceedance level 2: 120 dB Exceeded: 0 times
Peak-1 Exceedance Level: 105 dB Exceeded: 0 times
Peak-2 Exceedance Level: 100 dB Exceeded: 0 times
Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Current Any Data
Start Time: 10-Jul-2013 11:36:30
Elapsed Time: 00:15:31.6

	A Weight	C Weight	Flat
Leq:	61.4 dBA	72.9 dBC	74.2 dBF
SEL:	91.1 dBA	102.6 dBC	103.8 dBF
Peak:	95.6 dBA	97.0 dBC	99.0 dBF
	10-Jul-2013 11:41:40	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53
Lmax (slow):	75.7 dBA	82.1 dBC	83.7 dBF
	10-Jul-2013 11:50:53	10-Jul-2013 11:41:03	10-Jul-2013 11:50:53
Lmin (slow):	51.1 dBA	66.5 dBC	67.9 dBF
	10-Jul-2013 11:39:38	10-Jul-2013 11:39:38	10-Jul-2013 11:39:38
Lmax (fast):	79.2 dBA	85.8 dBC	87.8 dBF
	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53
Lmin (fast):	50.7 dBA	65.4 dBC	66.6 dBF
	10-Jul-2013 11:39:37	10-Jul-2013 11:39:37	10-Jul-2013 11:39:37
Lmax (impulse):	80.9 dBA	87.8 dBC	90.5 dBF
	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53	10-Jul-2013 11:50:53
Lmin (impulse):	51.0 dBA	67.6 dBC	68.7 dBF
	10-Jul-2013 11:39:37	10-Jul-2013 11:39:38	10-Jul-2013 11:39:38

Calibrated: 10-Jul-2013 16:24:43 Offset: -44.5 dB
Checked: 10-Jul-2013 16:24:43 Level: 113.8 dB
Calibrator not set Level: 114.0 dB
Cal Records Count: 0

Interval Records: Disabled Number Interval Records: 0
History Records: Enabled Number History Records: 17
Run/Stop Records: Number Run/Stop Records: 2

File Translated:	U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST3.slmdl
Model/Serial Number:	824 / A2629
Firmware/Software Revs:	4.290 / 3.120
Name:	Urban Crossroads
Descr1:	41 Corporate Park, Suite 300
Descr2:	Irvine, CA 92606
Setup/Setup Descr:	uc.ssa / UcNorm
Location:	ST-3
Note1:	
Note2:	

Overall Any Data
Start Time: 10-Jul-2013 11:54:36
Elapsed Time: 00:16:56.1

	A Weight	C Weight	Flat
Leq:	59.7 dBA	76.7 dBC	77.5 dBF
SEL:	89.7 dBA	106.8 dBC	107.6 dBF
Peak:	88.0 dBA	93.4 dBC	93.7 dBF
	10-Jul-2013 12:02:03	10-Jul-2013 11:55:49	10-Jul-2013 11:58:43
Lmax (slow):	67.8 dBA	85.6 dBC	86.1 dBF
	10-Jul-2013 11:54:36	10-Jul-2013 11:54:36	10-Jul-2013 11:54:36
Lmin (slow):	52.8 dBA	69.0 dBC	70.7 dBF
	10-Jul-2013 12:06:44	10-Jul-2013 12:04:00	10-Jul-2013 12:04:00
Lmax (fast):	69.6 dBA	85.8 dBC	86.1 dBF
	10-Jul-2013 11:56:50	10-Jul-2013 11:58:43	10-Jul-2013 11:58:43
Lmin (fast):	52.1 dBA	67.5 dBC	68.8 dBF
	10-Jul-2013 12:06:44	10-Jul-2013 12:04:16	10-Jul-2013 12:04:16
Lmax (impulse):	71.8 dBA	87.3 dBC	87.6 dBF
	10-Jul-2013 11:56:50	10-Jul-2013 11:58:43	10-Jul-2013 11:58:43
Lmin (impulse):	52.6 dBA	70.0 dBC	71.7 dBF
	10-Jul-2013 12:03:59	10-Jul-2013 12:03:59	10-Jul-2013 12:07:21

Spectra

Date	Time	Run Time
10-Jul-2013	11:54:36	00:16:56.1

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	-2.3		---		-6.8		630	45.7		54.3		39.2	
16.0	11.0	15.5	---	---	-9.8	-3.8	800	46.1		47.3		39.6	
20.0	13.5		10.2		-9.8		1000	46.2	51.2	49.7	60.6	39.7	44.8
25.0	16.2		17.0		-0.8		1250	46.9		60.0		40.8	
31.5	23.8	32.0	24.3	31.8	16.1	19.8	1600	46.7		54.2		40.3	
40.0	31.1		30.8		17.3		2000	45.1	50.3	48.0	56.1	39.7	44.3
50.0	36.6		41.6		28.1		2500	44.6		48.9		38.2	
63.0	41.8	49.3	41.7	52.7	31.6	39.3	3150	43.5		43.9		36.2	
80.0	48.2		52.0		38.1		4000	41.9	46.8	40.5	46.0	33.8	39.0
100	52.5		59.3		37.6		5000	40.2		35.8		31.1	
125	52.4	56.3	58.8	62.3	40.1	44.6	6300	37.8		31.0		27.9	
160	48.5		49.3		41.2		8000	35.0	40.1	28.0	33.4	24.7	30.3
200	44.6		44.6		35.6		10000	30.5		24.8		22.3	
250	44.2	48.7	43.5	48.2	36.9	40.8	12500	27.5		19.6		18.1	
315	42.8		41.8		35.3		16000	26.6	31.9	21.9	26.9	21.1	26.0
400	43.5		43.7		36.5		20000	27.1		23.9		23.2	
500	44.3	49.4	48.3	55.6	37.9	42.8							

File Translated: U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST3.slmdl
Model/Serial Number: 824 / A2629

Overall Spectral Ln's

Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00	Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00
12.5	0.0	0.0	0.0	0.0	0.0	0.0	630	51.0	48.0	46.0	44.5	41.5	40.0
16.0	17.0	0.0	0.0	0.0	0.0	0.0	800	50.5	48.0	46.5	45.0	43.0	40.5
20.0	19.0	16.5	0.0	0.0	0.0	0.0	1000	50.5	48.5	46.5	45.0	43.0	41.5
25.0	21.5	18.5	15.5	0.0	0.0	0.0	1250	52.5	49.0	47.0	45.5	43.0	41.5
31.5	27.5	26.0	24.0	22.5	20.0	18.0	1600	53.0	49.0	46.5	45.0	42.5	41.0
40.0	38.5	33.5	30.0	27.5	24.5	23.5	2000	51.0	47.5	45.5	43.5	41.5	40.5
50.0	43.0	41.5	37.0	32.5	30.0	29.0	2500	50.5	47.5	45.0	42.5	40.0	39.0
63.0	48.5	46.0	42.0	38.5	34.5	32.5	3150	49.5	46.5	44.0	41.5	38.5	37.0
80.0	56.5	52.0	48.5	44.5	40.5	39.0	4000	49.0	45.0	42.0	39.0	36.0	34.5
100	60.0	58.5	50.5	44.5	40.5	38.5	5000	48.5	43.5	40.0	36.5	33.5	32.0
125	61.0	57.5	51.5	45.0	42.5	41.0	6300	47.0	40.0	37.0	33.5	30.0	28.5
160	55.5	51.5	48.5	46.5	43.5	42.5	8000	43.5	37.0	33.5	30.5	27.0	25.5
200	50.0	48.0	45.0	43.0	39.5	38.0	10000	38.0	32.5	29.0	26.5	24.0	23.0
250	50.5	47.0	44.5	42.5	39.5	37.5	12500	33.0	27.0	23.0	20.5	19.0	18.5
315	47.5	45.5	43.0	41.5	39.0	37.0	16000	27.5	23.5	22.0	21.5	21.5	21.0
400	48.0	46.5	44.0	42.5	38.5	37.0	20000	25.0	24.0	23.5	23.5	23.5	23.0
500	49.5	47.5	44.5	43.0	40.0	38.5							

Ln Start Level: 15 dB

L2.00	65.3 dBA	L25.00	60.6 dBA	L90.00	54.6 dBA
L8.00	63.5 dBA	L50.00	57.6 dBA	L99.00	53.2 dBA

Detector: Fast
Weighting: A
SPL Exceedance Level 1: 85.0 dB Exceeded: 0 times
SPL Exceedance level 2: 120 dB Exceeded: 0 times
Peak-1 Exceedance Level: 105 dB Exceeded: 0 times
Peak-2 Exceedance Level: 100 dB Exceeded: 0 times
Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Current Any Data
Start Time: 10-Jul-2013 11:54:36
Elapsed Time: 00:16:56.1

	A Weight	C Weight	Flat
Leq:	59.7 dBA	76.7 dBC	77.5 dBF
SEL:	89.7 dBA	106.8 dBC	107.6 dBF
Peak:	88.0 dBA	93.4 dBC	93.7 dBF
	10-Jul-2013 12:02:03	10-Jul-2013 11:55:49	10-Jul-2013 11:58:43
Lmax (slow):	67.8 dBA	85.6 dBC	86.1 dBF
	10-Jul-2013 11:54:36	10-Jul-2013 11:54:36	10-Jul-2013 11:54:36
Lmin (slow):	52.8 dBA	69.0 dBC	70.7 dBF
	10-Jul-2013 12:06:44	10-Jul-2013 12:04:00	10-Jul-2013 12:04:00
Lmax (fast):	69.6 dBA	85.8 dBC	86.1 dBF
	10-Jul-2013 11:56:50	10-Jul-2013 11:58:43	10-Jul-2013 11:58:43
Lmin (fast):	52.1 dBA	67.5 dBC	68.8 dBF
	10-Jul-2013 12:06:44	10-Jul-2013 12:04:16	10-Jul-2013 12:04:16
Lmax (impulse):	71.8 dBA	87.3 dBC	87.6 dBF
	10-Jul-2013 11:56:50	10-Jul-2013 11:58:43	10-Jul-2013 11:58:43
Lmin (impulse):	52.6 dBA	70.0 dBC	71.7 dBF
	10-Jul-2013 12:03:59	10-Jul-2013 12:03:59	10-Jul-2013 12:07:21

Calibrated: 10-Jul-2013 16:24:43 Offset: -44.5 dB
Checked: 10-Jul-2013 16:24:43 Level: 113.8 dB
Calibrator not set Level: 114.0 dB
Cal Records Count: 0

Interval Records: Disabled Number Interval Records: 0
History Records: Enabled Number History Records: 18
Run/Stop Records: Number Run/Stop Records: 2

File Translated: U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST4.slmdl
Model/Serial Number: 824 / A2629
Firmware/Software Revs: 4.290 / 3.120
Name: Urban Crossroads
Descr1: 41 Corporate Park, Suite 300
Descr2: Irvine, CA 92606
Setup/Setup Descr: uc.ssa / UcNorm
Location: ST-4
Note1:
Note2:

Overall Any Data
Start Time: 10-Jul-2013 16:28:48
Elapsed Time: 00:15:00.6

	A Weight	C Weight	Flat
Leq:	61.3 dBA	76.4 dBC	77.9 dBF
SEL:	90.9 dBA	106.0 dBC	107.5 dBF
Peak:	95.8 dBA	100.7 dBC	103.1 dBF
	10-Jul-2013 16:30:59	10-Jul-2013 16:31:06	10-Jul-2013 16:31:06
Lmax (slow):	74.7 dBA	87.8 dBC	89.0 dBF
	10-Jul-2013 16:40:06	10-Jul-2013 16:40:05	10-Jul-2013 16:40:05
Lmin (slow):	50.7 dBA	68.1 dBC	69.6 dBF
	10-Jul-2013 16:31:36	10-Jul-2013 16:31:42	10-Jul-2013 16:31:42
Lmax (fast):	76.2 dBA	88.8 dBC	90.2 dBF
	10-Jul-2013 16:40:05	10-Jul-2013 16:40:05	10-Jul-2013 16:31:04
Lmin (fast):	49.0 dBA	67.0 dBC	68.4 dBF
	10-Jul-2013 16:31:37	10-Jul-2013 16:31:42	10-Jul-2013 16:31:42
Lmax (impulse):	77.4 dBA	92.2 dBC	93.8 dBF
	10-Jul-2013 16:40:05	10-Jul-2013 16:31:06	10-Jul-2013 16:31:06
Lmin (impulse):	50.9 dBA	69.0 dBC	70.3 dBF
	10-Jul-2013 16:31:34	10-Jul-2013 16:31:42	10-Jul-2013 16:31:42

Spectra

Date	Time	Run Time
10-Jul-2013	16:28:48	00:15:00.6

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	-4.0		---		-6.6		630	52.5		68.3		36.7	
16.0	14.3	22.2	10.6	---	-9.6	-3.6	800	51.7		65.2		36.8	
20.0	21.4		29.5		-9.6		1000	50.6	55.4	63.3	68.4	35.5	40.6
25.0	19.5		25.3		-6.6		1250	49.4		61.7		34.9	
31.5	28.6	38.8	28.4	52.9	20.1	25.3	1600	48.3		62.6		33.5	
40.0	38.3		52.9		23.7		2000	46.2	51.4	59.8	65.1	32.3	37.2
50.0	34.6		37.5		27.3		2500	44.7		56.7		31.3	
63.0	41.3	48.2	54.4	56.7	33.4	38.9	3150	42.3		52.9		29.4	
80.0	46.9		52.7		37.0		4000	39.0	44.6	47.2	54.1	26.4	32.1
100	48.2		55.2		37.1		5000	35.9		40.1		24.9	
125	46.7	52.4	53.0	60.9	38.1	43.3	6300	33.2		33.2		21.4	
160	47.9		58.5		39.8		8000	30.4	35.9	29.1	35.1	20.4	25.5
200	48.3		62.0		37.9		10000	28.5		25.5		20.4	
250	47.5	52.9	62.4	67.5	36.7	42.0	12500	26.5		21.6		17.6	
315	48.5		63.5		37.1		16000	26.5	31.5	22.8	27.8	21.3	26.2
400	50.7		65.7		36.9		20000	27.2		24.2		23.5	
500	52.2	56.6	68.6	72.5	36.7	41.5							

File Translated: U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST4.slmdl
Model/Serial Number: 824 / A2629

Overall Spectral Ln's

Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00	Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00
12.5	0.0	0.0	0.0	0.0	0.0	0.0	630	63.7	53.2	47.7	44.7	41.7	38.2
16.0	21.7	17.7	0.0	0.0	0.0	0.0	800	62.2	54.2	49.2	45.2	40.7	37.7
20.0	28.7	26.2	21.7	15.7	0.0	0.0	1000	62.2	54.2	49.2	45.2	40.7	36.7
25.0	25.2	23.2	20.2	16.7	0.0	0.0	1250	60.7	52.7	48.2	44.7	40.2	36.7
31.5	33.2	31.7	29.2	27.2	23.7	21.7	1600	57.7	50.7	46.7	43.2	39.2	35.2
40.0	47.2	42.7	36.2	31.7	27.2	25.2	2000	57.2	49.7	44.7	41.7	37.2	33.7
50.0	40.7	37.7	34.7	32.7	30.2	28.7	2500	54.7	47.2	42.2	39.2	35.2	31.7
63.0	48.2	45.2	40.7	38.7	35.7	34.2	3150	52.2	45.7	40.2	37.2	32.7	29.7
80.0	53.7	50.2	47.2	44.2	39.7	38.2	4000	46.7	42.2	37.7	36.2	30.2	27.2
100	55.7	52.7	47.7	44.7	40.7	38.2	5000	42.7	38.2	35.2	33.7	27.7	25.2
125	52.2	51.2	47.7	44.2	40.2	38.7	6300	40.7	35.2	31.7	30.2	24.2	21.7
160	54.7	50.7	48.2	45.2	41.7	40.2	8000	37.7	31.2	28.2	26.7	22.2	20.7
200	55.2	51.7	48.2	45.2	40.7	38.2	10000	33.7	28.2	24.7	23.7	20.7	20.2
250	56.2	51.2	46.2	43.7	40.2	38.2	12500	27.2	23.2	20.2	19.2	18.2	17.7
315	56.7	52.7	47.2	43.7	40.7	38.2	16000	24.7	22.7	21.7	21.7	21.2	21.2
400	60.7	52.2	48.2	45.2	41.2	38.2	20000	24.2	23.7	23.7	23.7	23.7	23.2
500	62.7	53.7	47.2	44.2	40.7	38.2							

Ln Start Level: 15 dB

L2.00	71.0 dBA	L25.00	59.9 dBA	L90.00	54.0 dBA
L8.00	63.7 dBA	L50.00	57.4 dBA	L99.00	50.8 dBA

Detector: Fast
Weighting: A

SPL Exceedance Level 1:	85.0 dB	Exceeded:	0 times
SPL Exceedance level 2:	120 dB	Exceeded:	0 times
Peak-1 Exceedance Level:	105 dB	Exceeded:	0 times
Peak-2 Exceedance Level:	100 dB	Exceeded:	0 times

Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Current Any Data
Start Time: 10-Jul-2013 16:28:48
Elapsed Time: 00:15:00.6

	A Weight	C Weight	Flat
Leq:	61.3 dBA	76.4 dBC	77.9 dBF
SEL:	90.9 dBA	106.0 dBC	107.5 dBF
Peak:	95.8 dBA	100.7 dBC	103.1 dBF
	10-Jul-2013 16:30:59	10-Jul-2013 16:31:06	10-Jul-2013 16:31:06
Lmax (slow):	74.7 dBA	87.8 dBC	89.0 dBF
	10-Jul-2013 16:40:06	10-Jul-2013 16:40:05	10-Jul-2013 16:40:05
Lmin (slow):	50.7 dBA	68.1 dBC	69.6 dBF
	10-Jul-2013 16:31:36	10-Jul-2013 16:31:42	10-Jul-2013 16:31:42
Lmax (fast):	76.2 dBA	88.8 dBC	90.2 dBF
	10-Jul-2013 16:40:05	10-Jul-2013 16:40:05	10-Jul-2013 16:31:04
Lmin (fast):	49.0 dBA	67.0 dBC	68.4 dBF
	10-Jul-2013 16:31:37	10-Jul-2013 16:31:42	10-Jul-2013 16:31:42
Lmax (impulse):	77.4 dBA	92.2 dBC	93.8 dBF
	10-Jul-2013 16:40:05	10-Jul-2013 16:31:06	10-Jul-2013 16:31:06
Lmin (impulse):	50.9 dBA	69.0 dBC	70.3 dBF
	10-Jul-2013 16:31:34	10-Jul-2013 16:31:42	10-Jul-2013 16:31:42

Calibrated:	10-Jul-2013 16:24:43	Offset:	-44.3 dB
Checked:	10-Jul-2013 16:24:43	Level:	114.0 dB
Calibrator	not set	Level:	114.0 dB
Cal Records Count:	1		

Interval Records:	Disabled	Number Interval Records:	0
History Records:	Enabled	Number History Records:	17
Run/Stop Records:		Number Run/Stop Records:	2

File Translated: U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST5.slmdl
Model/Serial Number: 824 / A2629
Firmware/Software Revs: 4.290 / 3.120
Name: Urban Crossroads
Descr1: 41 Corporate Park, Suite 300
Descr2: Irvine, CA 92606
Setup/Setup Descr: uc.ssa / UcNorm
Location: ST-5
Note1:
Note2:

Overall Any Data
Start Time: 10-Jul-2013 16:47:07
Elapsed Time: 00:15:00.6

	A Weight	C Weight	Flat
Leq:	63.3 dBA	75.5 dBC	77.2 dBF
SEL:	92.8 dBA	105.0 dBC	106.8 dBF
Peak:	95.3 dBA	97.7 dBC	99.1 dBF
	10-Jul-2013 16:51:19	10-Jul-2013 16:58:35	10-Jul-2013 16:58:41
Lmax (slow):	75.1 dBA	85.7 dBC	88.9 dBF
	10-Jul-2013 16:58:46	10-Jul-2013 16:58:46	10-Jul-2013 16:58:46
Lmin (slow):	54.2 dBA	70.7 dBC	72.5 dBF
	10-Jul-2013 17:02:40	10-Jul-2013 17:02:29	10-Jul-2013 17:02:29
Lmax (fast):	76.0 dBA	86.6 dBC	90.0 dBF
	10-Jul-2013 16:58:46	10-Jul-2013 16:58:46	10-Jul-2013 16:58:44
Lmin (fast):	52.3 dBA	69.2 dBC	70.8 dBF
	10-Jul-2013 17:02:42	10-Jul-2013 17:02:29	10-Jul-2013 17:02:29
Lmax (impulse):	77.3 dBA	87.8 dBC	90.9 dBF
	10-Jul-2013 16:51:22	10-Jul-2013 16:58:42	10-Jul-2013 16:58:46
Lmin (impulse):	54.3 dBA	71.6 dBC	73.3 dBF
	10-Jul-2013 17:02:39	10-Jul-2013 17:02:29	10-Jul-2013 16:53:05

Spectra

Date	Time	Run Time
10-Jul-2013	16:47:07	00:15:00.6

Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1	Hz	Leq1/3	Leq1/1	Max1/3	Max1/1	Min1/3	Min1/1
12.5	-6.3		---		-9.6		630	52.1		64.0		41.0	
16.0	18.3	22.1	34.3	---	-9.6	-3.6	800	53.0		67.9		41.6	
20.0	19.8		34.1		-6.6		1000	52.9	57.8	62.3	70.0	42.6	47.0
25.0	17.2		22.0		-0.6		1250	53.1		63.5		42.4	
31.5	28.9	33.8	36.9	41.2	20.3	22.7	1600	52.9		61.7		41.6	
40.0	32.0		39.1		18.9		2000	52.5	57.1	61.6	66.5	41.2	45.6
50.0	34.5		40.1		28.6		2500	51.5		62.0		39.5	
63.0	41.0	46.6	45.2	56.8	33.5	39.2	3150	50.1		61.0		38.0	
80.0	44.8		56.4		37.3		4000	47.9	53.1	55.8	62.5	36.0	41.1
100	47.2		53.1		39.9		5000	45.8		51.3		34.1	
125	48.9	52.5	53.8	59.1	37.3	43.6	6300	43.6		48.4		31.5	
160	46.8		55.6		38.9		8000	40.8	46.0	45.1	50.6	28.8	34.0
200	47.9		53.0		39.6		10000	36.7		41.1		25.3	
250	48.9	53.4	56.8	64.8	39.2	43.3	12500	32.5		36.7		19.7	
315	49.1		63.7		35.8		16000	29.1	35.0	31.6	38.2	22.0	26.9
400	51.1		67.2		36.5		20000	27.7		26.9		23.7	
500	51.7	56.4	67.6	71.3	39.8	44.2							

File Translated: U:\UcJobs_07600-08000_07800\07895\measurements\07895_ST5.slmdl
Model/Serial Number: 824 / A2629

Overall Spectral Ln's

Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00	Hz	L2.00	L8.00	L25.00	L50.00	L90.00	L99.00
12.5	0.0	0.0	0.0	0.0	0.0	0.0	630	59.2	55.7	51.7	49.2	44.7	42.2
16.0	23.7	20.7	17.7	15.2	0.0	0.0	800	60.2	56.2	52.7	49.7	45.2	43.2
20.0	27.7	22.7	17.2	0.0	0.0	0.0	1000	59.7	56.7	52.7	50.2	45.2	43.2
25.0	23.2	19.2	16.7	0.0	0.0	0.0	1250	59.7	57.2	53.2	50.7	45.2	43.2
31.5	34.2	31.7	29.2	27.2	24.2	22.2	1600	59.7	57.2	53.2	50.7	45.2	42.7
40.0	38.7	34.2	30.7	28.2	25.7	24.2	2000	58.7	56.7	53.2	50.2	44.2	42.2
50.0	39.2	36.2	34.7	33.2	31.2	29.7	2500	58.2	55.7	51.7	49.2	43.2	40.7
63.0	47.2	43.7	41.2	38.7	36.2	34.7	3150	56.7	54.2	50.7	47.7	41.7	39.2
80.0	51.2	47.2	44.2	42.7	40.2	38.7	4000	54.2	51.7	48.7	45.7	39.7	36.7
100	54.2	49.7	46.2	44.2	42.2	40.7	5000	51.7	49.7	46.7	43.7	37.2	34.7
125	55.2	52.2	49.7	46.2	43.2	41.7	6300	49.7	47.7	44.2	41.2	35.2	32.7
160	52.7	48.7	46.7	45.2	42.7	41.2	8000	46.7	44.7	41.2	38.2	32.7	29.7
200	56.2	49.7	46.7	45.2	43.2	40.2	10000	42.7	40.7	37.2	34.2	28.7	26.2
250	56.7	51.7	48.2	46.2	43.2	40.7	12500	38.2	35.7	32.2	29.2	23.7	20.7
315	55.7	52.2	48.7	45.7	42.7	40.2	16000	32.7	30.7	27.7	25.7	22.7	22.2
400	56.2	54.2	50.2	47.2	43.2	41.2	20000	27.7	26.2	24.7	24.2	23.7	23.7
500	58.2	54.2	50.7	47.7	43.7	41.2							

Ln Start Level: 15 dB

L2.00	70.3 dBA	L25.00	63.4 dBA	L90.00	57.1 dBA
L8.00	67.1 dBA	L50.00	60.7 dBA	L99.00	54.5 dBA

Detector: Fast
Weighting: A
SPL Exceedance Level 1: 85.0 dB Exceeded: 0 times
SPL Exceedance level 2: 120 dB Exceeded: 0 times
Peak-1 Exceedance Level: 105 dB Exceeded: 0 times
Peak-2 Exceedance Level: 100 dB Exceeded: 0 times
Hysteresis: 2
Overloaded: 0 time(s)
Paused: 0 times for 00:00:00.0

Current Any Data
Start Time: 10-Jul-2013 16:47:07
Elapsed Time: 00:15:00.6

	A Weight	C Weight	Flat
Leq:	63.3 dBA	75.5 dBC	77.2 dBF
SEL:	92.8 dBA	105.0 dBC	106.8 dBF
Peak:	95.3 dBA	97.7 dBC	99.1 dBF
	10-Jul-2013 16:51:19	10-Jul-2013 16:58:35	10-Jul-2013 16:58:41
Lmax (slow):	75.1 dBA	85.7 dBC	88.9 dBF
	10-Jul-2013 16:58:46	10-Jul-2013 16:58:46	10-Jul-2013 16:58:46
Lmin (slow):	54.2 dBA	70.7 dBC	72.5 dBF
	10-Jul-2013 17:02:40	10-Jul-2013 17:02:29	10-Jul-2013 17:02:29
Lmax (fast):	76.0 dBA	86.6 dBC	90.0 dBF
	10-Jul-2013 16:58:46	10-Jul-2013 16:58:46	10-Jul-2013 16:58:44
Lmin (fast):	52.3 dBA	69.2 dBC	70.8 dBF
	10-Jul-2013 17:02:42	10-Jul-2013 17:02:29	10-Jul-2013 17:02:29
Lmax (impulse):	77.3 dBA	87.8 dBC	90.9 dBF
	10-Jul-2013 16:51:22	10-Jul-2013 16:58:42	10-Jul-2013 16:58:46
Lmin (impulse):	54.3 dBA	71.6 dBC	73.3 dBF
	10-Jul-2013 17:02:39	10-Jul-2013 17:02:29	10-Jul-2013 16:53:05

Calibrated: 10-Jul-2013 16:24:43 Offset: -44.3 dB
Checked: 10-Jul-2013 16:24:43 Level: 114.0 dB
Calibrator not set Level: 114.0 dB
Cal Records Count: 0

Interval Records: Disabled Number Interval Records: 0
History Records: Enabled Number History Records: 20
Run/Stop Records: Number Run/Stop Records: 6

APPENDIX 5.1

□□NM □□oa□□a□ □onstru□tion Noise Mo□el□□ata□ase

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U.S. Department
of Transportation

**Federal Highway
Administration**

FHWA
Roadway Construction Noise Model
User's Guide

FHWA-HEP-05-054
DOT-VNTSC-FHWA-05-01

Final Report
January 2006

Prepared for
U.S. Department of Transportation
Federal Highway Administration
Office of Natural and Human Environment
Washington, DC 20590

Prepared by
U.S. Department of Transportation
Research and Innovative Technology Administration
John A. Volpe National Transportation Systems Center
Acoustics Facility
Cambridge, MA 02142

Table 1. CA/T equipment noise emissions and acoustical usage factors database.

CA/T Noise Emission Reference Levels and Usage Factors					
filename: EQUIPLST.xls					
revised: 7/26/05		Acoustical	Spec 721.560	Actual Measured	No. of Actual
	Impact	Use Factor	Lmax @ 50ft	Lmax @ 50ft	Data Samples
Equipment Description	Device ?	(%)	(dBA, slow)	(dBA, slow)	(Count)
				(samples averaged)	
All Other Equipment > 5 HP	No	50	85	-- N/A --	0
Auger Drill Rig	No	20	85	84	36
Backhoe	No	40	80	78	372
Bar Bender	No	20	80	-- N/A --	0
Blasting	Yes	-- N/A --	94	-- N/A --	0
Boring Jack Power Unit	No	50	80	83	1
Chain Saw	No	20	85	84	46
Clam Shovel (dropping)	Yes	20	93	87	4
Compactor (ground)	No	20	80	83	57
Compressor (air)	No	40	80	78	18
Concrete Batch Plant	No	15	83	-- N/A --	0
Concrete Mixer Truck	No	40	85	79	40
Concrete Pump Truck	No	20	82	81	30
Concrete Saw	No	20	90	90	55
Crane	No	16	85	81	405
Dozer	No	40	85	82	55
Drill Rig Truck	No	20	84	79	22
Drum Mixer	No	50	80	80	1
Dump Truck	No	40	84	76	31
Excavator	No	40	85	81	170
Flat Bed Truck	No	40	84	74	4
Front End Loader	No	40	80	79	96
Generator	No	50	82	81	19
Generator (<25KVA, VMS signs)	No	50	70	73	74
Gradall	No	40	85	83	70
Grader	No	40	85	-- N/A --	0
Grapple (on backhoe)	No	40	85	87	1
Horizontal Boring Hydr. Jack	No	25	80	82	6
Hydra Break Ram	Yes	10	90	-- N/A --	0
Impact Pile Driver	Yes	20	95	101	11
Jackhammer	Yes	20	85	89	133
Man Lift	No	20	85	75	23
Mounted Impact Hammer (hoe ram)	Yes	20	90	90	212
Pavement Scarafier	No	20	85	90	2
Paver	No	50	85	77	9
Pickup Truck	No	40	55	75	1
Pneumatic Tools	No	50	85	85	90
Pumps	No	50	77	81	17
Refrigerator Unit	No	100	82	73	3
Rivit Buster/chipping gun	Yes	20	85	79	19
Rock Drill	No	20	85	81	3
Roller	No	20	85	80	16
Sand Blasting (Single Nozzle)	No	20	85	96	9
Scraper	No	40	85	84	12
Shears (on backhoe)	No	40	85	96	5
Slurry Plant	No	100	78	78	1
Slurry Trenching Machine	No	50	82	80	75
Soil Mix Drill Rig	No	50	80	-- N/A --	0
Tractor	No	40	84	-- N/A --	0
Vacuum Excavator (Vac-truck)	No	40	85	85	149
Vacuum Street Sweeper	No	10	80	82	19
Ventilation Fan	No	100	85	79	13
Vibrating Hopper	No	50	85	87	1
Vibratory Concrete Mixer	No	20	80	80	1
Vibratory Pile Driver	No	20	95	101	44
Warning Horn	No	5	85	83	12
Welder / Torch	No	40	73	74	5

APPENDIX 5.2

□□NM □onstru□tion Noise □nal□sis Worksheets □□□hase

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Table A-1

Demolition Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Rubber Tired Dozer	1	40%	3.2	79.0	75.0
Tractor/Loader/Backhoe	1	40%	3.2	78.0	74.0
Excavator	1	40%	3.2	81.0	77.0
Street Sweeper	1	10%	0.8	82.0	72.0
Crawler Tractor	2	40%	3.2	84.0	83.0
Cranes	1	16%	1.3	81.0	73.0
Air Compressor	1	40%	3.2	78.0	74.0
Concrete/Industrial Saw	1	20%	1.6	90.0	83.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					87.6

Receiver Location[4]	Distance To Receiver (In Feet)[5]	Noise Level Reduction Due To Distance (dBA)	Construction Noise Level (Leq dBA)
R1	615'	-21.8	65.8
R2	865'	-24.8	62.8
R3	540'	-20.7	66.9
R4	415'	-18.4	69.2
R5	280'	-15.0	72.6
R6	325'	-16.3	71.3
R7	305'	-15.7	71.8
R8	530'	-20.5	67.0
R9	150'	-9.5	78.0
R10	115'	-7.2	80.3

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 4-A

[5] Distance from the nearest point of construction activity to the nearest Receiver.

Table A-2

Site Preparation Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Cranes	1	16%	1.3	81.0	73.0
Generator Sets	2	50%	4.0	81.0	81.0
Welder	1	40%	3.2	74.0	70.0
Pile Driver (Impact)	1	20%	1.6	101.0	94.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					94.3

Receiver Location[4]	Distance To Receiver (In Feet)[5]	Noise Level Reduction Due To Distance (dBA)	Construction Noise Level (Leq dBA)
R1	615'	-21.8	72.5
R2	865'	-24.8	69.5
R3	540'	-20.7	73.6
R4	415'	-18.4	75.9
R5	280'	-15.0	79.3
R6	325'	-16.3	78.0
R7	305'	-15.7	78.6
R8	530'	-20.5	73.8
R9	150'	-9.5	84.7
R10	115'	-7.2	87.0

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 4-A

[5] Distance from the nearest point of construction activity to the nearest Receiver.

Table A-3

Grading Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Rubber Tired Dozer	1	40%	3.2	79.0	75.0
Crawler Tractor	2	40%	3.2	84.0	83.0
Cranes	2	16%	1.3	81.0	76.1
Grader	1	40%	3.2	85.0	81.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					86.0

Receiver Location[4]	Distance To Receiver (In Feet)[5]	Noise Level Reduction Due To Distance (dBA)	Construction Noise Level (Leq dBA)
R1	615'	-21.8	64.2
R2	865'	-24.8	61.3
R3	540'	-20.7	65.3
R4	415'	-18.4	67.6
R5	280'	-15.0	71.1
R6	325'	-16.3	69.8
R7	305'	-15.7	70.3
R8	530'	-20.5	65.5
R9	150'	-9.5	76.5
R10	115'	-7.2	78.8

1 Source: FHWA's Roadway Construction Noise Model, January 2006.

2 Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

3 Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

4 Receiver locations are presented on Exhibit 4-A

5 Distance from the nearest point of construction activity to the nearest Receiver.

Table A-4

Other - Sheet/Batter/Guide Piles Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Cranes	3	16%	1.3	81.0	77.8
Pile Driver (Impact)	3	20%	1.6	101.0	98.8
Concrete Pump Truck	1	20%	1.6	81.0	74.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					98.8

Receiver Location[4]	Distance To Receiver (In Feet)[5]	Noise Level Reduction Due To Distance (dBA)	Construction Noise Level (Leq dBA)
R1	615'	-21.8	77.0
R2	865'	-24.8	74.1
R3	540'	-20.7	78.2
R4	415'	-18.4	80.4
R5	280'	-15.0	83.9
R6	325'	-16.3	82.6
R7	305'	-15.7	83.1
R8	530'	-20.5	78.3
R9	150'	-9.5	89.3
R10	115'	-7.2	91.6

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 4-A

[5] Distance from the nearest point of construction activity to the nearest Receiver.

Table A-5

Other - Trenching/Electrical Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Tractor/Loader/Backhoe	1	40%	3.2	78.0	74.0
Cranes	1	16%	1.3	81.0	73.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					76.6

Receiver Location[4]	Distance To Receiver (In Feet)[5]	Noise Level Reduction Due To Distance (dBA)	Construction Noise Level (Leq dBA)
R1	615'	-21.8	54.8
R2	865'	-24.8	51.8
R3	540'	-20.7	55.9
R4	415'	-18.4	58.2
R5	280'	-15.0	61.6
R6	325'	-16.3	60.3
R7	305'	-15.7	60.9
R8	530'	-20.5	56.1
R9	150'	-9.5	67.0
R10	115'	-7.2	69.3

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 4-A

[5] Distance from the nearest point of construction activity to the nearest Receiver.

Table A-6

Paving Construction Noise Levels[1]

Equipment Type	Quantity	Usage Factor[2]	Hours Of Operation[3]	Reference Noise Level @ 50 Feet (Lmax dBA)	Cumulative Level @ 50 Feet (Leq dBA)
Paving Equipment	1	40%	3.2	76.0	72.0
Cumulative Hourly Noise Levels 50 Feet (Leq dBA)					72.0

Receiver Location[4]	Distance To Receiver (In Feet)[5]	Noise Level Reduction Due To Distance (dBA)	Construction Noise Level (Leq dBA)
R1	615'	-21.8	50.2
R2	865'	-24.8	47.3
R3	540'	-20.7	51.4
R4	415'	-18.4	53.6
R5	280'	-15.0	57.1
R6	325'	-16.3	55.8
R7	305'	-15.7	56.3
R8	530'	-20.5	51.5
R9	150'	-9.5	62.5
R10	115'	-7.2	64.8

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.

[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.

[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.

[4] Receiver locations are presented on Exhibit 4-A

[5] Distance from the nearest point of construction activity to the nearest Receiver.

<u>APPENDIX 6.1</u>

Vehicle Classification Counts

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Counts Unlimited, Inc
PO Box 1178
Corona, CA 92787
(951) 268-6268

City of San Diego
Rosecrans Street
E/ Nimitz Boulevard
24 Hour Directional Classification Count
Eastbound

SDCROENI
Site Code: 051-13263
Date Start: 10-Jul-13
Date End: 10-Jul-13

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/10/13	1	105	21	1	6	0	0	0	0	0	0	0	0	134
01:00	0	58	8	0	3	0	0	1	0	0	0	0	0	70
02:00	0	29	3	1	1	1	0	1	0	0	0	0	0	36
03:00	0	27	8	0	4	2	0	0	0	0	0	0	0	41
04:00	0	65	10	0	8	0	0	1	2	0	0	0	0	86
05:00	1	170	42	2	12	1	0	3	2	0	0	0	0	233
06:00	4	315	82	5	23	0	0	1	1	0	0	0	0	431
07:00	2	633	121	6	23	1	0	3	**10**	0	0	0	0	799
08:00	**5**	707	170	**8**	35	2	0	8	5	0	0	0	0	940
09:00	4	812	192	7	61	**5**	0	3	7	**1**	**1**	0	0	1093
10:00	5	850	**227**	7	**68**	2	0	2	4	0	0	0	**1**	1166
11:00	4	**1055**	209	8	59	1	0	**9**	3	0	0	0	0	**1348**
12 PM	4	1013	218	6	58	4	0	5	**7**	**1**	0	0	**1**	1317
13:00	12	1008	218	**10**	53	2	0	5	1	0	0	0	0	1309
14:00	15	1091	259	10	59	**6**	0	6	1	1	**1**	0	0	1449
15:00	**19**	1314	**283**	10	**65**	1	0	**13**	3	0	0	0	0	**1708**
16:00	11	**1355**	229	4	39	0	0	8	2	0	1	0	0	1649
17:00	9	1152	172	2	33	1	0	3	2	0	1	0	0	1375
18:00	6	849	155	2	37	0	0	2	1	0	0	0	0	1052
19:00	5	649	122	6	22	0	0	6	4	0	0	0	0	814
20:00	1	636	110	3	11	0	0	2	1	0	0	0	0	764
21:00	3	586	77	5	22	0	0	0	0	0	0	0	0	693
22:00	11	547	63	2	12	0	0	0	0	0	0	0	0	635
23:00	0	302	39	1	3	0	0	1	0	0	0	0	0	346
Total	122	15328	3038	106	717	29	0	83	56	3	4	0	2	19488
Percent	0.6%	78.7%	15.6%	0.5%	3.7%	0.1%	0.0%	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	11:00	10:00	08:00	10:00	09:00		11:00	07:00	09:00	09:00		10:00	11:00
Vol.	5	1055	227	8	68	5		9	10	1	1		1	1348
PM Peak	15:00	16:00	15:00	13:00	15:00	14:00		15:00	12:00	12:00	14:00		12:00	15:00
Vol.	19	1355	283	10	65	6		13	7	1	1		1	1708
Grand Total	122	15328	3038	106	717	29	0	83	56	3	4	0	2	19488
Percent	0.6%	78.7%	15.6%	0.5%	3.7%	0.1%	0.0%	0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	

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Corona, CA 92787
(951) 268-6268

City of San Diego
Rosecrans Street
E/ Nimitz Boulevard
24 Hour Directional Classification Count
Westbound

SDCROENI
Site Code: 051-13263
Date Start: 10-Jul-13
Date End: 10-Jul-13

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/10/13	2	74	13	0	2	0	1	1	0	0	0	0	0	93
01:00	1	49	8	0	1	1	0	0	1	0	0	0	0	61
02:00	1	35	4	0	0	0	0	0	1	0	0	0	0	41
03:00	0	41	1	0	2	0	0	0	4	0	0	0	0	48
04:00	0	87	19	2	9	0	0	0	0	0	0	0	0	117
05:00	3	338	111	4	24	0	0	4	3	0	0	0	0	487
06:00	**12**	782	**204**	**11**	41	**3**	**2**	6	**7**	0	0	0	0	1068
07:00	2	**852**	192	10	49	3	0	4	5	0	**1**	0	0	**1118**
08:00	4	687	180	10	21	3	0	5	1	0	0	0	0	911
09:00	4	595	190	7	39	1	0	5	2	0	0	0	0	843
10:00	6	705	204	4	**56**	2	0	5	2	0	0	0	0	984
11:00	6	827	180	3	50	1	2	**8**	6	**2**	0	0	0	1085
12 PM	**16**	790	**193**	9	**37**	**2**	0	**16**	2	0	1	0	**1**	1067
13:00	11	645	115	7	26	1	0	12	2	0	1	0	0	820
14:00	6	826	179	**12**	29	0	0	7	1	0	0	0	0	1060
15:00	6	**922**	158	7	29	1	0	4	1	0	0	0	0	**1128**
16:00	5	687	114	7	20	1	0	13	2	**3**	1	0	0	853
17:00	7	821	120	9	20	1	0	16	1	0	**3**	0	1	999
18:00	5	877	136	3	19	0	0	7	**4**	1	1	0	0	1053
19:00	5	679	127	5	7	0	0	1	0	0	0	0	0	824
20:00	1	564	102	2	9	0	0	2	0	0	0	0	0	680
21:00	3	370	64	4	13	0	0	1	0	0	0	0	0	455
22:00	0	273	42	2	6	2	0	0	0	0	0	0	0	325
23:00	1	175	39	2	2	2	0	0	0	0	0	0	1	222
Total	107	12701	2695	120	511	24	5	117	45	6	8	0	3	16342
Percent	0.7%	77.7%	16.5%	0.7%	3.1%	0.1%	0.0%	0.7%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	07:00	06:00	06:00	10:00	06:00	06:00	11:00	06:00	11:00	07:00			07:00
Vol.	12	852	204	11	56	3	2	8	7	2	1			1118
PM Peak	12:00	15:00	12:00	14:00	12:00	12:00		12:00	18:00	16:00	17:00		12:00	15:00
Vol.	16	922	193	12	37	2		16	4	3	3		1	1128
Grand Total	107	12701	2695	120	511	24	5	117	45	6	8	0	3	16342
Percent	0.7%	77.7%	16.5%	0.7%	3.1%	0.1%	0.0%	0.7%	0.3%	0.0%	0.0%	0.0%	0.0%	

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City of San Diego
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E/ Nimitz Boulevard
24 Hour Directional Classification Count
Eastbound, Westbound

SDCROENI
Site Code: 051-13263
Date Start: 10-Jul-13
Date End: 10-Jul-13

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
07/10/13	3	179	34	1	8	0	1	1	0	0	0	0	0	227
01:00	1	107	16	0	4	1	0	1	1	0	0	0	0	131
02:00	1	64	7	1	1	1	0	1	1	0	0	0	0	77
03:00	0	68	9	0	6	2	0	0	4	0	0	0	0	89
04:00	0	152	29	2	17	0	0	1	2	0	0	0	0	203
05:00	4	508	153	6	36	1	0	7	5	0	0	0	0	720
06:00	**16**	1097	286	16	64	3	**2**	7	8	0	0	0	0	1499
07:00	4	1485	313	16	72	4	0	7	**15**	0	**1**	0	0	1917
08:00	9	1394	350	**18**	56	5	0	13	6	0	0	0	0	1851
09:00	8	1407	382	14	100	**6**	0	8	9	1	1	0	0	1936
10:00	11	1555	**431**	11	**124**	4	0	7	6	0	0	0	**1**	2150
11:00	10	**1882**	389	11	109	2	2	**17**	9	**2**	0	0	0	**2433**
12 PM	20	1803	411	15	**95**	**6**	0	**21**	**9**	1	1	0	**2**	2384
13:00	23	1653	333	17	79	3	0	17	3	0	1	0	0	2129
14:00	21	1917	438	**22**	88	6	0	13	2	1	1	0	0	2509
15:00	**25**	**2236**	**441**	17	94	2	0	17	4	0	0	0	0	**2836**
16:00	16	2042	343	11	59	1	0	21	4	**3**	2	0	0	2502
17:00	16	1973	292	11	53	2	0	19	3	0	**4**	0	1	2374
18:00	11	1726	291	5	56	0	0	9	5	1	1	0	0	2105
19:00	10	1328	249	11	29	0	0	7	4	0	0	0	0	1638
20:00	2	1200	212	5	20	0	0	4	1	0	0	0	0	1444
21:00	6	956	141	9	35	0	0	1	0	0	0	0	0	1148
22:00	11	820	105	4	18	2	0	0	0	0	0	0	0	960
23:00	1	477	78	3	5	2	0	1	0	0	0	0	1	568
Total	229	28029	5733	226	1228	53	5	200	101	9	12	0	5	35830
Percent	0.6%	78.2%	16.0%	0.6%	3.4%	0.1%	0.0%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	
AM Peak	06:00	11:00	10:00	08:00	10:00	09:00	06:00	11:00	07:00	11:00	07:00		10:00	11:00
Vol.	16	1882	431	18	124	6	2	17	15	2	1		1	2433
PM Peak	15:00	15:00	15:00	14:00	12:00	12:00		12:00	12:00	16:00	17:00		12:00	15:00
Vol.	25	2236	441	22	95	6		21	9	3	4		2	2836
Grand Total	229	28029	5733	226	1228	53	5	200	101	9	12	0	5	35830
Percent	0.6%	78.2%	16.0%	0.6%	3.4%	0.1%	0.0%	0.6%	0.3%	0.0%	0.0%	0.0%	0.0%	

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APPENDIX 6.2

Truck Traffic FHWA Noise Prediction Model Worksheets

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Appendix 6.2

Vehicle Mix

Traffic Condition	Truck Trips (two-way)	Time Period	Hours	Daily Traffic Volume				Vehicle Percentages		
				Auto	Medium Trucks	Heavy Trucks	Total	Auto	Medium Trucks	Heavy Trucks
No Construction Traffic	0	Day (D)	12	25,661	1,153	312	27,126	75.49%	79.30%	81.04%
		Evening (E)	3	4,104	109	17	4,230	12.07%	7.50%	4.42%
		Night (N)	9	4,226	192	56	4,474	12.43%	13.20%	14.55%
		Daily	24	33,991	1,454	385	35,830	94.87%	4.06%	1.07%
With Construction Traffic	132	Day (D)	12	25,661	1,153	**444**	27,258	75.49%	79.30%	85.88%
		Evening (E)	3	4,104	109	17	4,230	12.07%	7.50%	3.29%
		Night (N)	9	4,226	192	56	4,474	12.43%	13.20%	10.83%
		Daily	24	33,991	1,454	517	35,962	94.52%	4.04%	1.44%

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: No Construction Traffic
Road Name: Rosecrans Street
Road Segment: East of Nimitz Blvd.

Project Name: Shelter Island
Job Number: 7895

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,830 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,583 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	56 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	Day	Evening	Night	Daily
Autos:	75.5%	12.1%	12.4%	94.87%
Medium Trucks:	79.3%	7.5%	13.2%	4.06%
Heavy Trucks:	81.0%	4.4%	14.5%	1.07%

Noise Source Elevations (in feet)

Autos:	0.000
Medium Trucks:	2.297
Heavy Trucks:	8.006

Grade Adjustment: 0.0

Lane Equivalent Distance (in feet)

Autos:	96.130
Medium Trucks:	96.038
Heavy Trucks:	96.047

FHWA Noise Model Calculations

VehicleType	REMEL	Traffic Flow	Distance	Finite Road	Fresnel	Barrier Atten	Berm Atten
Autos:	66.51	3.99	-4.36	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	77.72	-9.70	-4.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-15.47	-4.36	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	Leq Peak Hour	Leq Day	Leq Evening	Leq Night	Ldn	CNEL
Autos:	64.9	62.9	61.0	56.3	64.4	64.9
Medium Trucks:	62.5	60.7	56.4	54.1	62.1	62.4
Heavy Trucks:	62.0	60.3	53.6	54.1	61.8	62.0
Vehicle Noise:	68.1	66.2	62.8	59.7	67.7	68.1

Centerline Distance to Noise Contour (in feet)

	70 dBA	65 dBA	60 dBA	55 dBA
Ldn:	70	151	325	701
CNEL:	74	160	344	742

Thursday, August 15, 2013

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario:	With Construction Traffic	*Project Name:*	Shelter Island
Road Name:	Rosecrans Street	*Job Number:*	7895
Road Segment:	East of Nimitz Blvd.x		

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	35,962 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	3,596 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	56 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	100.0 feet
Centerline Dist. to Observer:	100.0 feet
Barrier Distance to Observer:	0.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	0.0 feet
Road Elevation:	0.0 feet
Road Grade:	0.0%
Left View:	-90.0 degrees
Right View:	90.0 degrees

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	75.5%	12.1%	12.4%	94.52%
Medium Trucks:	79.3%	7.5%	13.2%	4.04%
Heavy Trucks:	85.9%	3.3%	10.8%	1.44%

Noise Source Elevations (in feet)

Autos:	0.000		
Medium Trucks:	2.297		
Heavy Trucks:	8.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	96.130
Medium Trucks:	96.038
Heavy Trucks:	96.047

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	66.51	3.99	-4.36	-1.20	*-4.77*	0.000	0.000
Medium Trucks:	77.72	-9.70	-4.36	-1.20	*-4.88*	0.000	0.000
Heavy Trucks:	82.99	-14.19	-4.36	-1.20	*-5.16*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.9	62.9	61.0	56.3	64.4	64.9
Medium Trucks:	62.5	60.7	56.4	54.1	62.1	62.4
Heavy Trucks:	63.2	61.8	53.6	54.1	62.4	62.6
Vehicle Noise:	68.4	66.7	62.8	59.7	67.9	68.2

Centerline Distance to Noise Contour (in feet)

	70 dBA	*65 dBA*	*60 dBA*	*55 dBA*
Ldn:	72	155	334	719
CNEL:	76	164	352	759

Thursday, August 15, 2013

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APPENDIX E

TRAFFIC TECHNICAL REPORT

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URBAN CROSSROADS

41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

May 29, 2015

Anne Surdzial
ECORP CONSULTING, INC.
10575 Oakdale Drive
Rancho Cucamonga, CA 91730

SUBJECT: SHELTER ISLAND BOAT LAUNCH FACILITY CONSTRUCTION TRAFFIC ASSESSMENT UPDATE

Dear Ms. Anne Surdzial:

The firm of Urban Crossroads, Inc. is pleased to submit this Construction Traffic Assessment Update for the proposed Shelter Island Boat Launch Facility development ("Project"), which is located in the northeasterly area of Shelter Island in the City of San Diego.

PURPOSE

The Shelter Island Boat Launch Facility Improvements Focused Construction Traffic Assessment (referred to as "2013 Traffic Assessment"), prepared by Urban Crossroads, Inc. (dated July 2, 2013) had assumed 12,000 cubic yards of disposal, or 1,200 truck trips. The Project is now expected to result in approximately 13,350 cubic yards of disposal, or 1,335 truck trips, which is an increase of 135 truck trips over what was previously evaluated.

This Construction Traffic Assessment Update evaluates the Project based on 1,335 truck trips. In addition, local disposal of the jetty rip rap, jetty core fill, and dredged material is no longer proposed, and all construction waste would be hauled to Copper Mountain Landfill in Arizona, via I-8 East for disposal.

ANALYSIS METHODOLOGY

The Existing data, intersection analysis methodology, level of service (LOS) criteria and thresholds of significance used in this update are consistent with the 2013 Traffic Assessment.

A summary of the proposed Project's trip generation is shown on revised Table 3. The proposed Project is anticipated to generate a net total of 48 PCE AM peak hour trips and 48 PCE PM peak hour trips.

PROJECT TRIP DISTRIBUTION

The revised Project truck trip distribution patterns are shown on Exhibit 4. As shown on Exhibit 4, it is anticipated that haul truck traffic will ultimately travel east along I-8 Freeway.

EXISTING PLUS PROJECT CONDITIONS

EXISTING PLUS PROJECT CONDITIONS TRAFFIC VOLUMES

This scenario includes Existing (2013) traffic volumes plus Project traffic. The revised AM and PM peak hour volumes which can be expected for E+P traffic conditions is shown on Exhibits 8.

EXISTING PLUS PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS

E+P conditions peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies discussed in 2013 Traffic Assessment. The intersection analysis results are summarized in Table 4 and are anticipated to operate at acceptable LOS (i.e., LOS "D" or better) during the peak hours with the exception of the following intersections:

ID	Intersection Location
6	Nimitz Blvd. / Rosecrans St. – LOS "E" AM and PM peak hours
7	Lytton St. / Rosecrans St. – LOS "F" in the AM peak hour and LOS "E" in the PM Peak hour

The results are consistent with those previously presented in the 2013 Traffic Assessment. The revised intersection operations analysis worksheets for E+P are included in Attachment "G".

PROJECT IMPACTS AND MITIGATION MEASURES

Based on the City of San Diego significance criteria, the intersection of Lytton Street at Rosecrans Street was found to be significantly impacted by the proposed Project.

The mitigation measure necessary to reduce project-related impacts to "less-than-significant" would consist of restricting all haul truck traffic in the AM peak period (7 AM to 9 AM) and restricting the haul traffic to no more than 5 loads per hour in the PM peak period (4 PM to 6 PM). The effectiveness of the proposed mitigation measure is presented in Table 5.

With the implementation of the intersection mitigation measure there are no project-related impacts anticipated to the study area intersections. The revised intersection operations analysis worksheets with mitigation measures for E+P are provided in Attachment "I".

If you have any questions, please contact me directly at (949) 660-1994, extension 205.

Respectfully submitted,

URBAN CROSSROADS, INC.

Pranesh Tarikere, PE
Senior Engineer

Haseeb Qureshi
Senior Associate

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EXHIBIT 4

CONSTRUCTION RELATED TRUCK TRIP DISTRIBUTION

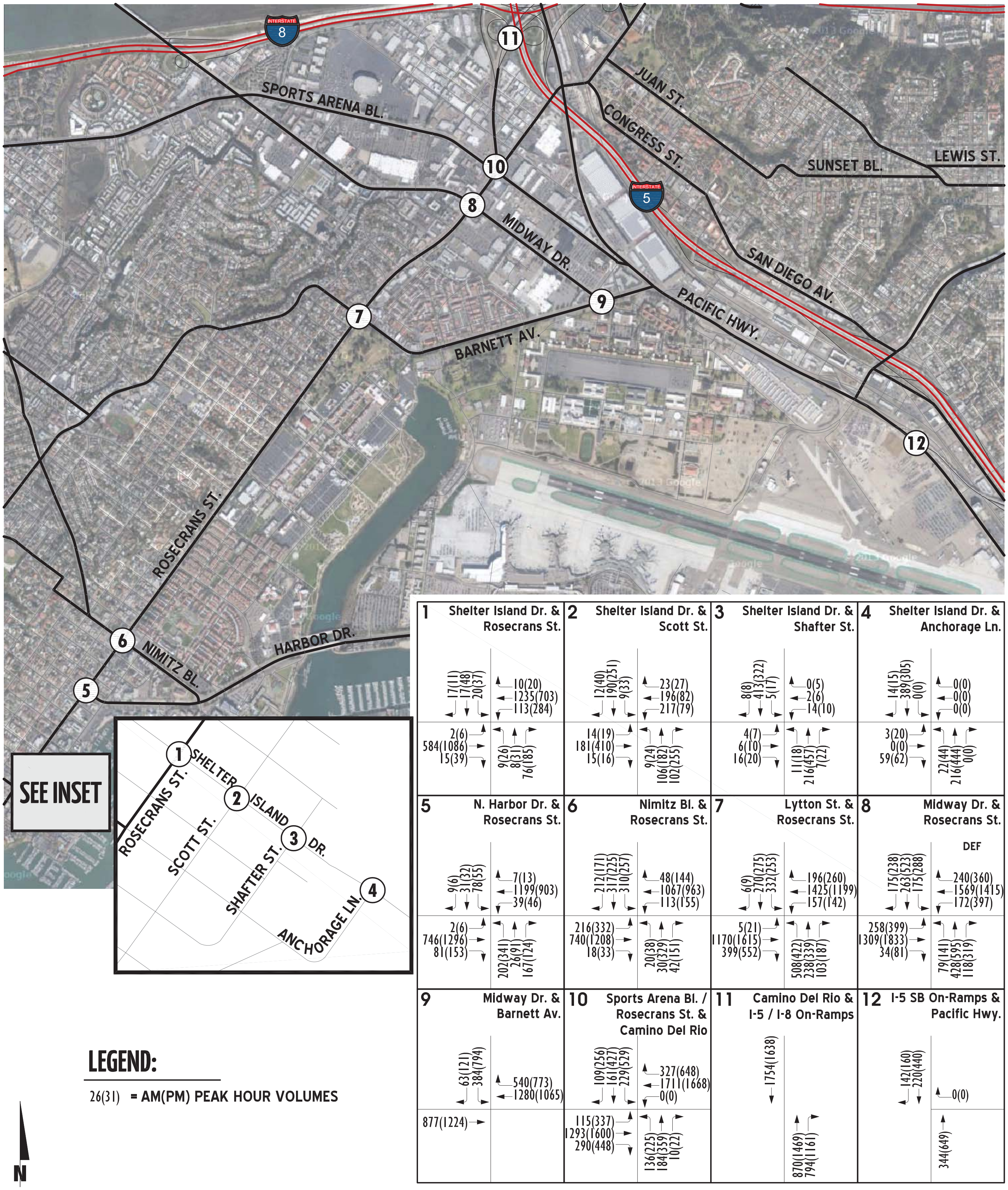
LEGEND:

10 - PERCENT TO/FROM PROJECT

N

EXHIBIT 8

EXISTING PLUS PROJECT CONDITIONS PEAK HOUR INTERSECTION VOLUMES



Shelter Island Boat Launch Facility Improvements Traffic Assessment
City of San Diego, CA (JN - 07893:301.dwg)

URBAN CROSSROADS

Revised Table 3

Construction Trip Generation Summary[1]

Construction Traffic Activity	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Passenger Cars:	12	0	12	0	12	12
Truck Trips:						
4+-axle:	*6*	*6*	12	*6*	*6*	12
4+-axle (PCE 3.0):	*18*	*18*	*36*	*18*	*18*	*36*
- Net Truck Trips (PCE)	*18*	*18*	*36*	*18*	*18*	*36*
Construction Traffic Activity Total (Raw Vehicles)	**18**	**6**	**24**	**6**	**18**	**24**
Construction Traffic Activity Total (PCE)[2]	**30**	**18**	**48**	**18**	**30**	**48**

[1] Trip Generation volumes are based on peak construction related traffic activity derived from the planned construction schedule. Peak traffic activity appears to occur during the overlapping site preparation and grading phases of construction, with a total of 40 planned haul truck trips over 15 working days requiring 6 workers for site preparation and 1335 planned haul truck trips over 30 working days requiring 6 workers for grading. Both phases are anticipated to operate 8 hours per day. Peak hour trip generation was then estimated conservatively by placing the frequency of the construction related truck trips evenly throughout the 8 hour workday with the same number of truck trips occuring during AM and PM peak hours as during calmer mid-day hours. Passenger car traffic has been estimated to occur only during the AM and PM peak hours to represent the worst case scenario of workers arriving to the construction site in the AM peak hour and leaving in the PM peak hour.

[2] TOTAL TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

Revised Table 4

Intersection Analysis for Existing plus Project Conditions

#	Intersection	Traffic Control[2]	Existing (2013) Delay (Secs.)[1] [Density] AM	Existing (2013) Delay (Secs.)[1] [Density] PM	Existing (2013) Level of Service AM	Existing (2013) Level of Service PM	E+P Delay (Secs.)[1] [Density] AM	E+P Delay (Secs.)[1] [Density] PM	E+P Level of Service AM	E+P Level of Service PM
1	Shelter Island Drive / Rosecrans Street	TS	20.0	28.1	C	C	20.6	29.0	C	C
2	Shelter Island Drive / Scott Street	TS	18.3	20.3	B	C	18.8	20.5	B	C
3	Shelter Island Drive / Shafter Street	CSS	16.8	18.1	C	C	17.9	19.2	C	C
4	Shelter Island Drive / Anchorage Lane	CSS	11.5	12.9	B	B	11.9	13.3	B	B
5	N. Harbor Drive / Rosecrans Street	TS	23.0	28.9	C	C	23.1	29.3	C	C
6	Nimitz Boulevard / Rosecrans Street	TS	**61.2**	**65.4**	**E**	**E**	**63.1**	**67.0**	**E**	**E**
7	Lytton Street / Rosecrans Street	TS	**97.2**	**67.0**	**F**	**E**	**100.4**	**69.1**	**F**	**E**
8	Midway Drive / Rosecrans Street	TS	34.2	53.4	C	D	34.4	54.6	C	D
9	Midway Drive / Barnett Avenue	TS	42.2	44.8	D	D	42.9	45.3	D	D
10	Sports Arena Boulevard / Rosecrans Street / Camino Del Rio	TS	24.1	50.0	C	D	24.1	50.3	C	D
10a	Sports Arena Boulevard / Rosecrans Street	CSS	10.0	12.8	B	B	10.0	12.8	B	B
11	Camino Del Rio / I-5 Northbound On-Ramp[3]	UC	[4.9]	[10.0]	A	B	[5.1]	[10.2]	A	B
12a	I-5 Soutbound On-Ramp / Pacific Coast Highway[3]	UC	[11.4]	[21.2]	B	C	[11.4]	[21.3]	B	C
12b	I-5 Northbound Off-Ramp / Pacific Coast Highway[3]	UC	[15.3]	[12.2]	B	B	[15.4]	[12.2]	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

BOLD = Potential Signficant Impact as defined by the County of San Diego *Guidelines for Determining Significance-Transportation and Traffic.*

1 Delay and LOS calculated using the TRAFFIX operation analysis software, Traffix Version 8.0 (2008), based on the 2000 Highway Capacity Manual (HCM) method. Synchro 8 (Version 8, 2011) has been utilized to calculate delay and LOS for the intersections of Midway Drive at Rosecrans Street, Sports Arena Boulevard at Rosecrans Street and Midway Drive at Barnett Avenue.

2 CSS = Cross-street Stop; TS = Traffic Signal; UC = Uncontrolled

3 I-5 Freeway interchanges at Camino Del Rio and Pacific Coast Highway are analyzed as freeway merge and diverge sections consistent with methodologies outlined by the 2000 HCM. Density is shown through passenger cars per mile per lane.

Revised Table 5

Intersection Analysis for Existing plus Project Conditions
With Mitigation Measure

#	Intersection	Traffic Control[2]	Existing (2013) Delay (Secs.)[1] AM	Existing (2013) Delay (Secs.)[1] PM	Existing (2013) Level of Service AM	Existing (2013) Level of Service PM	E+P Delay (Secs.)[1] AM	E+P Delay (Secs.)[1] PM	E+P Level of Service AM	E+P Level of Service PM
7	Lytton Street / Rosecrans Street									
	- without Mitigation Measure	TS	**97.2**	**67.0**	**F**	**E**	**100.4**	**69.1**	**F**	**E**
	- with Mitigation Measure[3]	TS	**97.2**	**67.0**	**F**	**E**	**98.2**	**68.8**	**F**	**E**

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

BOLD = Potential Signficant Impact as defined by the County of San Diego *Guidelines for Determining Significance-Transportation and Traffic.*

1 Delay and LOS calculated using the TRAFFIX operation analysis software, Traffix Version 8.0 (2008), based on the 2000 Highway Capacity Manual (HCM) method. Synchro 8 (Version 8, 2011) has been utilized to calculate delay and LOS for the intersections of Midway Drive at Rosecrans Street, Sports Arena Boulevard at Rosecrans Street and Midway Drive at Barnett Avenue.

2 TS = Traffic Signal

3 [illegible] construction related traffic allowed being that of workers arriving to the site. Restrict haul truck traffic to no more than 5 loads per hour during the PM peak period of 4PM to 6PM.

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REVISED ATTACHMENT G

EXISTING PLUS PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Non-local Disposal) Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Shelter Island Drive (NS) / Rosecrans Street (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.486
Loss Time (sec):	12	Average Delay (sec/veh):	20.6
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	27	27	27	27	27	27	10	24	24	10	24	24
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0	1!	0 0	0 0	1!	0 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	9	8	58	20	17	17	2	584	15	83	1235	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	8	58	20	17	17	2	584	15	83	1235	10
Added Vol:	0	0	18	0	0	0	0	0	0	30	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	8	76	20	17	17	2	584	15	113	1235	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	10	9	83	22	18	18	2	635	16	123	1342	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	9	83	22	18	18	2	635	16	123	1342	11
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	9	83	22	18	18	2	635	16	123	1342	11
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	0.87	0.87	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Lanes:	0.10	0.08	0.82	0.38	0.31	0.31	1.00	1.95	0.05	1.00	1.98	0.02
Final Sat.:	160	142	1351	599	509	509	1805	3506	90	1805	3577	29
Capacity Analysis Module:												
Vol/Sat:	0.06	0.06	0.06	0.04	0.04	0.04	0.00	0.18	0.18	0.07	0.38	0.38
Crit Moves:		****					****				****	
Green/Cycle:	0.23	0.23	0.23	0.23	0.23	0.23	0.08	0.48	0.48	0.20	0.59	0.59
Volume/Cap:	0.27	0.27	0.27	0.16	0.16	0.16	0.01	0.38	0.38	0.34	0.63	0.63
Delay/Veh:	38.8	38.8	38.8	37.6	37.6	37.6	50.5	20.2	20.2	41.9	16.6	16.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.8	38.8	38.8	37.6	37.6	37.6	50.5	20.2	20.2	41.9	16.6	16.6
LOS by Move:	D	D	D	D	D	D	D	C	C	D	B	B
HCM2kAvgQ:	3	3	3	2	2	2	0	8	8	4	17	17

Note: Queue reported is the number of cars per lane.

Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Non-local Disposal) Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Shelter Island Drive (NS) / Scott Street (EW)

Cycle (sec):	90	Critical Vol./Cap.(X):	0.936
Loss Time (sec):	12	Average Delay (sec/veh):	18.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Prot+Permit			Prot+Permit		
Rights:	Ovl			Include			Include			Include		
Min. Green:	10	10	10	23	23	23	10	25	25	10	25	25
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0 1	0	0 1	1 0	0	1 0	1 0	1	1 0

Volume Module:												
Base Vol:	9	88	102	9	160	12	14	181	15	217	196	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	88	102	9	160	12	14	181	15	217	196	23
Added Vol:	0	18	0	0	30	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	106	102	9	190	12	14	181	15	217	196	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	10	116	111	10	207	13	15	198	16	237	214	25
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	116	111	10	207	13	15	198	16	237	214	25
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	116	111	10	207	13	15	198	16	237	214	25

Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.98	0.98	0.85	0.99	0.99	0.85	0.95	0.99	0.99	0.95	0.93	0.93
Lanes:	0.08	0.92	1.00	0.05	0.95	1.00	1.00	0.92	0.08	1.00	1.79	0.21
Final Sat.:	145	1709	1615	85	1792	1615	1805	1734	144	1805	3179	373

Capacity Analysis Module:												
Vol/Sat:	0.07	0.07	0.07	0.12	0.12	0.01	0.01	0.11	0.11	0.13	0.07	0.07
Crit Moves:					****			****		****		
Green/Cycle:	0.28	0.28	0.59	0.28	0.28	0.28	0.45	0.28	0.28	0.64	0.42	0.42
Volume/Cap:	0.25	0.25	0.12	0.42	0.42	0.03	0.02	0.41	0.41	0.29	0.16	0.16
Delay/Veh:	25.6	25.6	8.2	27.2	27.2	23.8	13.9	27.0	27.0	7.7	16.2	16.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	25.6	25.6	8.2	27.2	27.2	23.8	13.9	27.0	27.0	7.7	16.2	16.2
LOS by Move:	C	C	A	C	C	C	B	C	C	A	B	B
HCM2kAvgQ:	3	3	1	5	5	0	0	5	5	3	2	2

Note: Queue reported is the number of cars per lane.

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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #3 Shelter Island Drive (NS) / Shafter Street (EW)
********************************************************************************
Average Delay (sec/veh):      1.1       Worst Case Level Of Service: C[ 17.9]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11  198     7    5  383     8    4    6    16   14    2     0
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   11  198     7    5  383     8    4    6    16   14    2     0
Added Vol:      0   18     0    0   30     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   11  216     7    5  413     8    4    6    16   14    2     0
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87 0.87 0.87  0.87 0.87 0.87  0.87 0.87 0.87  0.87
PHF Volume:    13  250     8    6  477     9    5    7    18   16    2     0
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
FinalVolume:   13  250     8    6  477     9    5    7    18   16    2     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx  4.1 xxxx xxxxx  7.1  6.5   6.2  7.1  6.5 xxxxx
FollowUpTim:  2.2 xxxx xxxxx  2.2 xxxx xxxxx  3.5  4.0   3.3  3.5  4.0 xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  487 xxxx xxxxx  258 xxxx xxxxx  774  777   482  786  777 xxxxx
Potent Cap.: 1087 xxxx xxxxx 1319 xxxx xxxxx  318  330   588  312  330 xxxxx
Move Cap.:   1087 xxxx xxxxx 1319 xxxx xxxxx  312  325   588  294  325 xxxxx
Volume/Cap:  0.01 xxxx  xxxx 0.00 xxxx  xxxx 0.01 0.02  0.03 0.06 0.01  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx  0.0 xxxx xxxxx xxxx xxxx xxxxx xxxx xxxx xxxxx
Control Del:  8.4 xxxx xxxxx  7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *    A    *     *    *    *     *    *    *     *
Movement:     LT - LTR - RT   LT - LTR - RT   LT - LTR - RT   LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx xxxx xxxx xxxxx xxxx  445 xxxxx  298 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx  0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.7 xxxxx 17.9 xxxx xxxxx
Shared LOS:     *    *     *    *    *     *    *    B     *    C    *     *
ApproachDel:     xxxxxx           xxxxxx            13.7             17.9
ApproachLOS:        *                *                B                C
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------

                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Shelter Island Drive (NS) / Anchorage Lane (EW)
********************************************************************************
Average Delay (sec/veh):      1.3      Worst Case Level Of Service: B[ 11.9]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      22  198     0     0  359    14     3    0    59     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   22  198     0     0  359    14     3    0    59     0    0     0
Added Vol:      0   18     0     0   30     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   22  216     0     0  389    14     3    0    59     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    25  247     0     0  444    16     3    0    67     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   25  247     0     0  444    16     3    0    67     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  460 xxxx xxxxx  xxxx xxxx xxxxx   749  749   452   783  757   247
Potent Cap.: 1112 xxxx xxxxx  xxxx xxxx xxxxx   382  343   612   314  339   797
Move Cap.:   1112 xxxx xxxxx  xxxx xxxx xxxxx   376  335   612   274  332   797
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.11  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  594 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  8.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.9 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             11.9            xxxxxx
ApproachLOS:        *                *                 B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Hugo Street / North Harbor Drive (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         105               Critical Vol./Cap.(X):         0.580
Loss Time (sec):      12               Average Delay (sec/veh):        23.1
Optimal Cycle: OPTIMIZED               Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    27   27    27   27   27    27   10   24    24   10   24    24
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  1  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     202   26   167   78   31     9    2  728    81   39 1169     7
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  202   26   167   78   31     9    2  728    81   39 1169     7
Added Vol:      0    0     0    0    0     0    0   18     0    0   30     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  202   26   167   78   31     9    2  746    81   39 1199     7
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93 0.93 0.93  0.93 0.93 0.93  0.93 0.93 0.93  0.93
PHF Volume:   217   28   179   84   33    10    2  800    87   42 1285     8
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  217   28   179   84   33    10    2  800    87   42 1285     8
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  217   28   179   84   33    10    2  800    87   42 1285     8
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.74 0.87  0.87 0.59 0.59  0.59 0.95 0.94  0.94 0.95 0.95  0.95
Lanes:       1.00 0.13  0.87 0.66 0.26  0.08 1.00 1.80  0.20 1.00 1.99  0.01
Final Sat.:  1408  223  1430  745  296    86 1805 3208   348 1805 3585    21
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.13  0.13 0.11 0.11  0.11 0.00 0.25  0.25 0.02 0.36  0.36
Crit Moves:  ****                           ****                   ****
Green/Cycle: 0.26 0.26  0.26 0.26 0.26  0.26 0.10 0.45  0.45 0.17 0.53  0.53
Volume/Cap:  0.60 0.49  0.49 0.44 0.44  0.44 0.01 0.55  0.55 0.13 0.67  0.67
Delay/Veh:   37.0 34.0  34.0 33.7 33.7  33.7 43.1 21.2  21.2 36.9 18.8  18.8
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  37.0 34.0  34.0 33.7 33.7  33.7 43.1 21.2  21.2 36.9 18.8  18.8
LOS by Move:    D    C     C    C    C     C    D    C     C    D    B     B
HCM2kAvgQ:      7    6     6    4    4     4    0   11    11    1   15    15
********************************************************************************
Note: Queue reported is the number of cars per lane.
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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                AM Peak Hour
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                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #6 Nimitz Boulevard (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         120              Critical Vol./Cap.(X):        0.741
Loss Time (sec):      16              Average Delay (sec/veh):       63.1
Optimal Cycle: OPTIMIZED              Level Of Service:                 E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl            Include          Include          Include
Min. Green:    10   30    30    10   30    30    10   28    28    10   28    28
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20   30    42   310  317   212   216  722    18   113 1037    48
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20   30    42   310  317   212   216  722    18   113 1037    48
Added Vol:      0    0     0     0    0     0     0   18     0     0   30     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   20   30    42   310  317   212   216  740    18   113 1067    48
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:    21   32    44   326  334   223   227  779    19   119 1123    51
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   21   32    44   326  334   223   227  779    19   119 1123    51
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   21   32    44   326  334   223   227  779    19   119 1123    51
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.85  0.95 0.89  0.89  0.95 0.95  0.95  0.95 0.94  0.94
Lanes:       1.00 2.00  1.00  1.00 1.20  0.80  1.00 1.95  0.05  1.00 1.91  0.09
Final Sat.:  1805 3610  1615  1805 2033  1360  1805 3510    85  1805 3434   154
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.01  0.03  0.18 0.16  0.16  0.13 0.22  0.22  0.07 0.33  0.33
Crit Moves:       ****        ****              ****                   ****
Green/Cycle: 0.11 0.25  0.37  0.18 0.32  0.32  0.12 0.32  0.32  0.12 0.32  0.32
Volume/Cap:  0.11 0.03  0.07  1.03 0.51  0.51  1.03 0.68  0.68  0.57 1.03  1.03
Delay/Veh:   48.7 34.1  24.9 107.3 33.7  33.7 120.6 36.8  36.8  53.8 74.9  74.9
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  48.7 34.1  24.9 107.3 33.7  33.7 120.6 36.8  36.8  53.8 74.9  74.9
LOS by Move:    D    C     C     F    C     C     F    D     D     D    E     E
HCM2kAvgQ:      1    0     1    18    9     9    11   13    13     4   24    24
********************************************************************************
Note: Queue reported is the number of cars per lane.
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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
             2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          120                Critical Vol./Cap.(X):         0.855
Loss Time (sec):       16                Average Delay (sec/veh):       100.4
Optimal Cycle: OPTIMIZED                 Level Of Service:                  F
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:   10   38    38   10   38    38   10   31    31   10   31    31
Y+R:         4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        2  0  1  0  1   1  0  0  1  0   1  0  3  0  1   2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     502  238   103   332  270     6     5 1152   399   157 1401   196
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  502  238   103   332  270     6     5 1152   399   157 1401   196
Added Vol:      6    0     0     0    0     0     0   18     0     0   24     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  508  238   103   332  270     6     5 1170   399   157 1425   196
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:   532  249   108   348  283     6     5 1226   418   165 1494   205
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  532  249   108   348  283     6     5 1226   418   165 1494   205
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  532  249   108   348  283     6     5 1226   418   165 1494   205
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.85  0.95 1.00  1.00  0.95 0.91  0.85  0.92 0.95  0.85
Lanes:       2.00 1.00  1.00  1.00 0.98  0.02  1.00 3.00  1.00  2.00 2.00  1.00
Final Sat.:  3502 1900  1615  1805 1853    41  1805 5187  1615  3502 3610  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.13  0.07  0.19 0.15  0.15  0.00 0.24  0.26  0.05 0.41  0.13
Crit Moves:       ****        ****             ****                   ****
Green/Cycle: 0.15 0.32  0.32  0.15 0.32  0.32  0.08 0.30  0.30  0.10 0.32  0.32
Volume/Cap:  1.03 0.41  0.21  1.30 0.48  0.48  0.03 0.78  0.85  0.48 1.30  0.40
Delay/Veh:   97.1 32.7  30.2 210.7 33.7  33.7  50.7 40.6  52.7  52.3  182  32.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  97.1 32.7  30.2 210.7 33.7  33.7  50.7 40.6  52.7  52.3  182  32.5
LOS by Move:    F    C     C     F    C     C     D    D     D     D    F     C
HCM2kAvgQ:     15    7     3    25    9     9     0   15    15     3   50     5
********************************************************************************
Note: Queue reported is the number of cars per lane.
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	1309	34	172	1569	240	79	428	118	175	263	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5064		3433	5085	1555	1770	3539	1557	3433	3539	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5064		3433	5085	1555	1770	3539	1557	3433	3539	1557
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	274	1393	36	183	1669	255	84	455	126	186	280	186
RTOR Reduction (vph)	0	2	0	0	0	137	0	0	86	0	0	125
Lane Group Flow (vph)	274	1427	0	183	1669	118	84	455	40	186	280	61
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	11.9	46.6		10.4	45.1	45.1	7.9	38.1	38.1	8.9	39.1	39.1
Effective Green, g (s)	11.9	46.6		10.4	45.1	45.1	7.9	38.1	38.1	8.9	39.1	39.1
Actuated g/C Ratio	0.10	0.39		0.09	0.38	0.38	0.07	0.32	0.32	0.07	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	340	1966		297	1911	584	116	1123	494	254	1153	507
v/s Ratio Prot	c0.08	0.28		0.05	c0.33		0.05	c0.13		c0.05	0.08	
v/s Ratio Perm						0.08			0.03			0.04
v/c Ratio	0.81	0.73		0.62	0.87	0.20	0.72	0.41	0.08	0.73	0.24	0.12
Uniform Delay, d1	52.9	31.3		52.9	34.8	25.3	55.0	32.1	28.7	54.4	29.6	28.4
Progression Factor	1.00	1.00		1.36	0.60	0.42	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.0	2.4		3.0	4.8	0.6	19.9	1.1	0.3	10.4	0.5	0.5
Delay (s)	65.9	33.6		74.9	25.6	11.3	74.9	33.2	29.0	64.8	30.1	28.9
Level of Service	E	C		E	C	B	E	C	C	E	C	C
Approach Delay (s)		38.8			28.1			37.6			39.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	877	1280	540	384	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3539	3539	1551	3433	1583
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3539	3539	1551	3433	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	914	1333	562	400	66
RTOR Reduction (vph)	0	0	0	309	0	0
Lane Group Flow (vph)	0	914	1333	253	400	66
Confl. Peds. (#/hr)				5		
Turn Type		NA	NA	Perm	Prot	Free
Protected Phases		4	4		3	
Permitted Phases				4		Free
Actuated Green, G (s)		29.0	29.0	29.0	14.6	81.6
Effective Green, g (s)		29.0	29.0	29.0	14.6	81.6
Actuated g/C Ratio		0.36	0.36	0.36	0.18	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1257	1257	551	614	1583
v/s Ratio Prot		0.26	c0.38		c0.12	
v/s Ratio Perm				0.16		c0.04
v/c Ratio		0.73	1.06	0.46	0.65	0.04
Uniform Delay, d1		22.9	26.3	20.3	31.1	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.1	43.1	0.6	2.5	0.0
Delay (s)		25.0	69.4	20.9	33.6	0.0
Level of Service		C	E	C	C	A
Approach Delay (s)		25.0	55.0		28.9	
Approach LOS		C	D		C	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	81.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	1293	0	0	1711	327	136	184	10	229	161	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91			0.91	1.00	0.91	0.91		0.91	0.86	0.91
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.99		1.00	0.99	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99		0.95	0.98	1.00
Satd. Flow (prot)	3433	5085			5085	1558	1610	3347		1610	3126	1417
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99		0.95	0.98	1.00
Satd. Flow (perm)	3433	5085			5085	1558	1610	3347		1610	3126	1417
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	119	1333	0	0	1764	337	140	190	10	236	166	112
RTOR Reduction (vph)	0	0	0	0	0	132	0	3	0	0	2	84
Lane Group Flow (vph)	119	1333	0	0	1764	205	111	226	0	135	276	17
Confl. Peds. (#/hr)						5						5
Turn Type	Prot	NA			NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	8.5	74.8			62.3	62.3	12.7	12.7		20.5	20.5	20.5
Effective Green, g (s)	8.5	74.8			62.3	62.3	12.7	12.7		20.5	20.5	20.5
Actuated g/C Ratio	0.07	0.62			0.52	0.52	0.11	0.11		0.17	0.17	0.17
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	243	3169			2639	808	170	354		275	534	242
v/s Ratio Prot	0.03	c0.26			c0.35		c0.07	0.07		0.08	c0.09	
v/s Ratio Perm						0.13						0.01
v/c Ratio	0.49	0.42			0.67	0.25	0.65	0.64		0.49	0.52	0.07
Uniform Delay, d1	53.7	11.5			21.2	16.0	51.5	51.5		45.0	45.2	41.8
Progression Factor	1.14	0.68			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.3			1.4	0.8	8.7	3.8		1.4	0.8	0.1
Delay (s)	62.4	8.1			22.6	16.7	60.2	55.2		46.4	46.1	41.9
Level of Service	E	A			C	B	E	E		D	D	D
Approach Delay (s)		12.6			21.7			56.9			45.3	
Approach LOS		B			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	237	53	0	0	0	33
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	260	58	0	0	0	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			319		290	290
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			319		290	290
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1241		701	750

Direction, Lane #	EB 1	NB 1
Volume Total	319	36
Volume Left	0	0
Volume Right	58	36
cSH	1700	750
Volume to Capacity	0.19	0.05
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	10.0
Lane LOS		B
Approach Delay (s)	0.0	10.0
Approach LOS		B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	Camino Del Rio / I-8 East
Agency or Company	Urban Crossroads, Inc.	Junction	I-5 NB Loop On Ramp
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	785
Freeway Volume, V_F	870
Ramp Volume, V_R	794
Freeway Free-Flow Speed, S_{FF}	55.0
Ramp Free-Flow Speed, S_{FR}	25.0

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{down} = ft; V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	870	0.97	Level	4	0	0.980	1.00	915
Ramp	794	0.97	Level	4	0	0.980	1.00	835
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 915 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	915	Exhibit 13-8	4500	No
$V_{FO} = V_F - V_R$	80	Exhibit 13-8	4500	No
V_R	835	Exhibit 13-10	1900	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	915	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.009 L_D$

D_R = 5.1 (pc/mi/ln)

LOS = A (Exhibit 13-2)

Speed Determination

D_s = 0.633 (Exhibit 13-12)

S_R= 46.8 mph (Exhibit 13-12)

S_0= N/A mph (Exhibit 13-12)

S = 46.8 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 SB On-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P (Non-local Disposal)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	240
Freeway Volume, V_F	1005
Ramp Volume, V_R	220
Freeway Free-Flow Speed, S_{FF}	55.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1005	0.95	Level	4	0	0.980	1.00	1079
Ramp	220	0.95	Level	4	0	0.980	1.00	236
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F\ (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 1079 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	1079	Exhibit 13-8	4500	No
$V_{FO} = V_F - V_R$	843	Exhibit 13-8	4500	No
V_R	236	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1079	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 11.4 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.319 (Exhibit 13-12)

S_R= 50.8 mph (Exhibit 13-12)

S_0= N/A mph (Exhibit 13-12)

S = 50.8 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 NB Off-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/13/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P (Non-local Disposal)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	1500
Deceleration Lane Length L_D	
Freeway Volume, V_F	1990
Ramp Volume, V_R	338
Freeway Free-Flow Speed, S_{FF}	55.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1990	0.95	Level	4	0	0.980	1.00	2137
Ramp	338	0.95	Level	4	0	0.980	1.00	363
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 2137 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2500	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2500	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = 15.4 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.234 (Exibit 13-11)

S_R= 52.0 mph (Exhibit 13-11)

S_0= N/A mph (Exhibit 13-11)

S = 52.0 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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-------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                PM Peak Hour
-------------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #1 Shelter Island Drive (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):        0.713
Loss Time (sec):      12                Average Delay (sec/veh):       29.0
Optimal Cycle: OPTIMIZED                Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    27   27    27   27   27    27   10   24    24   10   24    24
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        0  0  1! 0  0   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      26   31   155   37   48    11    6 1086    39  266  703    20
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   26   31   155   37   48    11    6 1086    39  266  703    20
Added Vol:      0    0    30    0    0     0    0    0     0   18    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   26   31   185   37   48    11    6 1086    39  284  703    20
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.99 0.99  0.99 0.99 0.99  0.99 0.99 0.99  0.99 0.99 0.99  0.99
PHF Volume:    26   31   188   38   49    11    6 1103    40  288  714    20
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   26   31   188   38   49    11    6 1103    40  288  714    20
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   26   31   188   38   49    11    6 1103    40  288  714    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.86 0.86  0.86 0.81 0.81  0.81 0.95 0.95  0.95 0.95 0.95  0.95
Lanes:       0.11 0.13  0.76 0.39 0.50  0.11 1.00 1.93  0.07 1.00 1.94  0.06
Final Sat.:   177  210  1256  593  769   176 1805 3467   125 1805 3496    99
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.15  0.15 0.06 0.06  0.06 0.00 0.32  0.32 0.16 0.20  0.20
Crit Moves:       ****                            ****        ****
Green/Cycle: 0.27 0.27  0.27 0.27 0.27  0.27 0.18 0.41  0.41 0.20 0.43  0.43
Volume/Cap:  0.55 0.55  0.55 0.23 0.23  0.23 0.02 0.78  0.78 0.78 0.47  0.47
Delay/Veh:   32.9 32.9  32.9 28.7 28.7  28.7 33.8 28.7  28.7 48.2 20.6  20.6
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  32.9 32.9  32.9 28.7 28.7  28.7 33.8 28.7  28.7 48.2 20.6  20.6
LOS by Move:    C    C     C    C    C     C    C    C     C    D    C     C
HCM2kAvgQ:      6    6     6    2    2     2    0   18    18    9    8     8
********************************************************************************
Note: Queue reported is the number of cars per lane.

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Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Non-local Disposal) Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Shelter Island Drive (NS) / Scott Street (EW)

Cycle (sec):	90	Critical Vol./Cap.(X):	0.936
Loss Time (sec):	12	Average Delay (sec/veh):	20.5
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Prot+Permit			Prot+Permit		
Rights:	Ovl			Include			Include			Include		
Min. Green:	10	10	10	23	23	23	10	25	25	10	25	25
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0	0 1	0 1	0	0 1	1 0	0	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	24	152	255	33	233	40	19	410	16	79	82	27
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	24	152	255	33	233	40	19	410	16	79	82	27
Added Vol:	0	30	0	0	18	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	24	182	255	33	251	40	19	410	16	79	82	27
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	25	189	265	34	261	42	20	426	17	82	85	28
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	25	189	265	34	261	42	20	426	17	82	85	28
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	25	189	265	34	261	42	20	426	17	82	85	28
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.94	0.85	0.95	0.95	0.85	0.95	0.99	0.99	0.95	0.91	0.91
Lanes:	0.12	0.88	1.00	0.12	0.88	1.00	1.00	0.96	0.04	1.00	1.50	0.50
Final Sat.:	208	1580	1615	209	1587	1615	1805	1818	71	1805	2615	861
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	0.16	0.16	0.16	0.03	0.01	0.23	0.23	0.05	0.03	0.03
Crit Moves:					****			****		****		
Green/Cycle:	0.31	0.31	0.42	0.31	0.31	0.31	0.60	0.44	0.44	0.51	0.40	0.40
Volume/Cap:	0.38	0.38	0.39	0.53	0.53	0.08	0.02	0.53	0.53	0.17	0.08	0.08
Delay/Veh:	24.7	24.7	18.3	26.5	26.5	22.0	7.3	18.8	18.8	12.1	17.0	17.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.7	24.7	18.3	26.5	26.5	22.0	7.3	18.8	18.8	12.1	17.0	17.0
LOS by Move:	C	C	B	C	C	C	A	B	B	B	B	B
HCM2kAvgQ:	5	5	5	7	7	1	0	9	9	1	1	1

Note: Queue reported is the number of cars per lane.

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #3 Shelter Island Drive (NS) / Shafter Street (EW)
********************************************************************************
Average Delay (sec/veh):      1.4      Worst Case Level Of Service: C[ 19.2]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      18  427    22    17  304     8     7   10    20    10    6     5
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   18  427    22    17  304     8     7   10    20    10    6     5
Added Vol:      0   30     0     0   18     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   18  457    22    17  322     8     7   10    20    10    6     5
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94
PHF Volume:    19  488    24    18  344     9     7   11    21    11    6     5
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   19  488    24    18  344     9     7   11    21    11    6     5
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  353 xxxx xxxxx   512 xxxx xxxxx   929  935   348   939  927   500
Potent Cap.: 1217 xxxx xxxxx  1064 xxxx xxxxx   250  268   699   246  270   575
Move Cap.:   1217 xxxx xxxxx  1064 xxxx xxxxx   237  259   699   225  261   575
Volume/Cap:  0.02 xxxx  xxxx  0.02 xxxx  xxxx  0.03 0.04  0.03  0.05 0.02  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.0 xxxx xxxxx   8.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  382 xxxxx  xxxx  276 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx  0.3 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.5 xxxxx xxxxx 19.2 xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    C     *
ApproachDel:     xxxxxx           xxxxxx            15.5             19.2
ApproachLOS:        *                *                C                C
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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-------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
*******************************************************************************
Intersection #4 Shelter Island Drive (NS) / Anchorage Lane (EW)
*******************************************************************************
Average Delay (sec/veh):      1.6      Worst Case Level Of Service: B[ 13.3]
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      44  414     0     0  287    15    20     0    62     0     0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   44  414     0     0  287    15    20     0    62     0     0     0
Added Vol:      0   30     0     0   18     0     0     0     0     0     0     0
PasserByVol:    0    0     0     0    0     0     0     0     0     0     0     0
Initial Fut:   44  444     0     0  305    15    20     0    62     0     0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    48  487     0     0  335    16    22     0    68     0     0     0
Reduct Vol:     0    0     0     0    0     0     0     0     0     0     0     0
FinalVolume:   48  487     0     0  335    16    22     0    68     0     0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  351 xxxx xxxxx  xxxx xxxx xxxxx   927  927   343   961  935   487
Potent Cap.: 1219 xxxx xxxxx  xxxx xxxx xxxxx   300  270   704   238  267   584
Move Cap.:   1219 xxxx xxxxx  xxxx xxxx xxxxx   291  259   704   208  257   584
Volume/Cap:  0.04 xxxx  xxxx  xxxx xxxx  xxxx  0.08 0.00  0.10  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  523 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.6 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  8.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.3 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             13.3            xxxxxx
ApproachLOS:         *                *                B                 *
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Hugo Street / North Harbor Drive (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          95               Critical Vol./Cap.(X):        0.806
Loss Time (sec):      12               Average Delay (sec/veh):       29.3
Optimal Cycle: OPTIMIZED               Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    27   27    27   27   27    27   10   24    24   10   24    24
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  1  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     341   91   124   55   32     6    6 1266   153   46  885    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  341   91   124   55   32     6    6 1266   153   46  885    13
Added Vol:      0    0     0    0    0     0    0   30     0    0   18     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  341   91   124   55   32     6    6 1296   153   46  903    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.97 0.97  0.97  0.97 0.97  0.97  0.97 0.97  0.97  0.97 0.97  0.97
PHF Volume:   353   94   128   57   33     6    6 1340   158   48  934    13
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  353   94   128   57   33     6    6 1340   158   48  934    13
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  353   94   128   57   33     6    6 1340   158   48  934    13
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.73 0.91  0.91  0.73 0.73  0.73  0.95 0.93  0.93  0.95 0.95  0.95
Lanes:       1.00 0.42  0.58  0.60 0.34  0.06  1.00 1.79  0.21  1.00 1.97  0.03
Final Sat.:  1379  734  1000   825  480    90  1805 3177   375  1805 3552    51
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.13  0.13  0.07 0.07  0.07  0.00 0.42  0.42  0.03 0.26  0.26
Crit Moves:  ****                                   ****        ****
Green/Cycle: 0.29 0.29  0.29  0.29 0.29  0.29  0.17 0.48  0.48  0.11 0.42  0.42
Volume/Cap:  0.88 0.44  0.44  0.24 0.24  0.24  0.02 0.88  0.88  0.25 0.63  0.63
Delay/Veh:   52.0 28.1  28.1  26.0 26.0  26.0  33.1 28.1  28.1  39.8 22.8  22.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  52.0 28.1  28.1  26.0 26.0  26.0  33.1 28.1  28.1  39.8 22.8  22.8
LOS by Move:    D    C     C     C    C     C     C    C     C     D    C     C
HCM2kAvgQ:     13    6     6     2    2     2     0   21    21     1   11    11
********************************************************************************
Note: Queue reported is the number of cars per lane.

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #6 Nimitz Boulevard (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.859
Loss Time (sec):      16                Average Delay (sec/veh):        67.0
Optimal Cycle: OPTIMIZED                Level Of Service:                  E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl             Include          Include          Include
Min. Green:    10   30    30    10   30    30    10   28    28    10   28    28
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      38  329   151   257  225   171   332 1178    33   155  945   144
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   38  329   151   257  225   171   332 1178    33   155  945   144
Added Vol:      0    0     0     0    0     0     0   30     0     0   18     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   38  329   151   257  225   171   332 1208    33   155  963   144
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    39  335   154   262  229   174   338 1231    34   158  982   147
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   39  335   154   262  229   174   338 1231    34   158  982   147
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   39  335   154   262  229   174   338 1231    34   158  982   147
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.85  0.95 0.89  0.89  0.95 0.95  0.95  0.95 0.93  0.93
Lanes:       1.00 2.00  1.00  1.00 1.14  0.86  1.00 1.95  0.05  1.00 1.74  0.26
Final Sat.:  1805 3610  1615  1805 1918  1458  1805 3500    96  1805 3081   461
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.09  0.10  0.15 0.12  0.12  0.19 0.35  0.35  0.09 0.32  0.32
Crit Moves:       ****        ****             ****                  ****
Green/Cycle: 0.10 0.25  0.35  0.14 0.29  0.29  0.18 0.38  0.38  0.10 0.30  0.30
Volume/Cap:  0.22 0.37  0.28  1.06 0.41  0.41  1.06 0.92  0.92  0.92 1.06  1.06
Delay/Veh:   50.7 37.5  28.7 124.5 34.6  34.6 115.2 45.0  45.0  99.0 85.5  85.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  50.7 37.5  28.7 124.5 34.6  34.6 115.2 45.0  45.0  99.0 85.5  85.5
LOS by Move:    D    D     C     F    C     C     F    D     D     F    F     F
HCM2kAvgQ:      1    5     4    15    6     6    15   23    23     5   25    25
********************************************************************************
Note: Queue reported is the number of cars per lane.

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         120                 Critical Vol./Cap.(X):        0.848
Loss Time (sec):      16                 Average Delay (sec/veh):       69.1
Optimal Cycle: OPTIMIZED                 Level Of Service:                 E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    10   38    38   10   38    38   10   31    31   10   31    31
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        2  0  1  0  1   1  0  0  1  0   1  0  3  0  1   2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     422  339   187  253  275     9   21 1591   546  142 1181   260
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  422  339   187  253  275     9   21 1591   546  142 1181   260
Added Vol:      0    0     0    0    0     0    0   24     6    0   18     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  422  339   187  253  275     9   21 1615   552  142 1199   260
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95
PHF Volume:   442  355   196  265  288     9   22 1693   579  149 1257   273
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  442  355   196  265  288     9   22 1693   579  149 1257   273
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  442  355   196  265  288     9   22 1693   579  149 1257   273
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.92 1.00  0.85 0.95 1.00  1.00 0.95 0.91  0.85 0.92 0.95  0.85
Lanes:       2.00 1.00  1.00 1.00 0.97  0.03 1.00 3.00  1.00 2.00 2.00  1.00
Final Sat.:  3502 1900  1615 1805 1831    60 1805 5187  1615 3502 3610  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.19  0.12 0.15 0.16  0.16 0.01 0.33  0.36 0.04 0.35  0.17
Crit Moves:       ****       ****                           **** ****
Green/Cycle: 0.13 0.32  0.32 0.14 0.32  0.32 0.08 0.33  0.33 0.08 0.33  0.33
Volume/Cap:  0.98 0.59  0.38 1.08 0.49  0.49 0.15 0.99  1.08 0.51 1.05  0.51
Delay/Veh:   88.9 36.0  32.4 133.1 33.2 33.2 51.5 58.3 103.3 54.2 81.0  33.1
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  88.9 36.0  32.4 133.1 33.2 33.2 51.5 58.3 103.3 54.2 81.0  33.1
LOS by Move:    F    D     C    F    C     C    D    E     F    D    F     C
HCM2kAvgQ:     13   11     6   16    9     9    1   24    26    3   29     8
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	399	1833	81	397	1415	360	141	595	319	288	523	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5049		3433	5085	1555	1770	3539	1557	3433	3539	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5049		3433	5085	1555	1770	3539	1557	3433	3539	1557
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	407	1870	83	405	1444	367	144	607	326	294	534	243
RTOR Reduction (vph)	0	4	0	0	0	154	0	0	146	0	0	166
Lane Group Flow (vph)	407	1949	0	405	1444	213	144	607	180	294	534	77
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	15.9	44.0		12.0	40.1	40.1	10.0	38.0	38.0	10.0	38.0	38.0
Effective Green, g (s)	15.9	44.0		12.0	40.1	40.1	10.0	38.0	38.0	10.0	38.0	38.0
Actuated g/C Ratio	0.13	0.37		0.10	0.33	0.33	0.08	0.32	0.32	0.08	0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	454	1851		343	1699	519	147	1120	493	286	1120	493
v/s Ratio Prot	0.12	c0.39		c0.12	0.28		c0.08	c0.17		c0.09	0.15	
v/s Ratio Perm						0.14			0.12			0.05
v/c Ratio	0.90	1.05		1.18	0.85	0.41	0.98	0.54	0.37	1.03	0.48	0.16
Uniform Delay, d1	51.2	38.0		54.0	37.2	30.8	54.9	33.8	31.7	55.0	33.0	29.5
Progression Factor	1.00	1.00		0.62	0.45	0.18	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.8	36.5		95.8	2.9	1.2	67.2	1.9	2.1	60.6	1.5	0.7
Delay (s)	71.1	74.5		129.3	19.5	6.7	122.1	35.7	33.8	115.6	34.5	30.1
Level of Service	E	E		F	B	A	F	D	C	F	C	C
Approach Delay (s)		73.9			37.5			46.7			55.8	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	54.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.8%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1224	1065	773	794	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3539	3539	1548	3433	1583
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3539	3539	1548	3433	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1262	1098	797	819	125
RTOR Reduction (vph)	0	0	0	522	0	0
Lane Group Flow (vph)	0	1262	1098	275	819	125
Confl. Peds. (#/hr)				5		
Turn Type		NA	NA	Perm	Prot	Free
Protected Phases		4	4		3	
Permitted Phases				4		Free
Actuated Green, G (s)		34.0	34.0	34.0	26.4	98.4
Effective Green, g (s)		34.0	34.0	34.0	26.4	98.4
Actuated g/C Ratio		0.35	0.35	0.35	0.27	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1222	1222	534	921	1583
v/s Ratio Prot		c0.36	0.31		c0.24	
v/s Ratio Perm				0.18		c0.08
v/c Ratio		1.03	0.90	0.52	0.89	0.08
Uniform Delay, d1		32.2	30.6	25.6	34.6	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		34.5	9.0	0.8	10.5	0.1
Delay (s)		66.7	39.5	26.5	45.1	0.1
Level of Service		E	D	C	D	A
Approach Delay (s)		66.7	34.1		39.1	
Approach LOS		E	C		D	

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	1600	0	0	1668	648	225	359	22	529	427	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91			0.91	1.00	0.91	0.91		0.91	0.86	0.91
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.99		1.00	0.99	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	3433	5085			5085	1558	1610	3352		1610	3134	1417
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	3433	5085			5085	1558	1610	3352		1610	3134	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	340	1616	0	0	1685	655	227	363	22	534	431	259
RTOR Reduction (vph)	0	0	0	0	0	350	0	3	0	0	2	119
Lane Group Flow (vph)	340	1616	0	0	1685	305	200	409	0	326	663	114
Confl. Peds. (#/hr)						5						5
Turn Type	Prot	NA			NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	9.0	55.0			42.0	42.0	18.5	18.5		34.5	34.5	34.5
Effective Green, g (s)	9.0	55.0			42.0	42.0	18.5	18.5		34.5	34.5	34.5
Actuated g/C Ratio	0.08	0.46			0.35	0.35	0.15	0.15		0.29	0.29	0.29
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	257	2330			1779	545	248	516		462	901	407
v/s Ratio Prot	c0.10	0.32			c0.33		c0.12	0.12		0.20	c0.21	
v/s Ratio Perm						0.20						0.08
v/c Ratio	1.32	0.69			0.95	0.56	0.81	0.79		0.71	0.74	0.28
Uniform Delay, d1	55.5	25.8			37.9	31.5	49.0	48.9		38.2	38.6	33.1
Progression Factor	1.19	0.95			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	152.6	0.5			12.0	4.1	17.2	8.1		4.9	3.2	0.4
Delay (s)	218.5	25.1			50.0	35.6	66.2	57.0		43.1	41.8	33.5
Level of Service	F	C			D	D	E	E		D	D	C
Approach Delay (s)		58.7			45.9			60.0			40.6	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	50.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	390	58	0	0	0	161
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	398	59	0	0	0	164
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			457		428	428
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			457		428	428
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	74
cM capacity (veh/h)			1104		584	627

Direction, Lane #	EB 1	NB 1
Volume Total	457	164
Volume Left	0	0
Volume Right	59	164
cSH	1700	627
Volume to Capacity	0.27	0.26
Queue Length 95th (ft)	0	26
Control Delay (s)	0.0	12.8
Lane LOS		B
Approach Delay (s)	0.0	12.8
Approach LOS		B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	DL	Freeway/Dir of Travel	Camino Del Rio / I-8 East
Agency or Company	Urban Crossroads, Inc.	Junction	I-5 NB Loop On Ramp
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☑ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	785	L_{down} =	ft
V_u =	veh/h	Freeway Volume, V_F	1469	V_D =	veh/h
		Ramp Volume, V_R	1161		
		Freeway Free-Flow Speed, S_{FF}	55.0		
		Ramp Free-Flow Speed, S_{FR}	25.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1469	0.99	Level	4	0	0.980	1.00	1514
Ramp	1161	0.99	Level	4	0	0.980	1.00	1196
UpStream								
DownStream								

Merge Areas	Diverge Areas

Estimation of v_{12} (Merge Areas)

$V_{12} = V_F\ (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Estimation of v_{12} (Diverge Areas)

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 1514 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks (Merge Areas)

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Capacity Checks (Diverge Areas)

	Actual	Capacity		LOS F?
V_F	1514	Exhibit 13-8	4500	No
$V_{FO} = V_F - V_R$	318	Exhibit 13-8	4500	No
V_R	1196	Exhibit 13-10	1900	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1514	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F) (Merge Areas)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Level of Service Determination (if not F) (Diverge Areas)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 10.2 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination (Merge Areas)

M_S = (Exibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Speed Determination (Diverge Areas)

D_s = 0.666 (Exhibit 13-12)

S_R= 46.3 mph (Exhibit 13-12)

S_0= N/A mph (Exhibit 13-12)

S = 46.3 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 SB On-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P (Non-local Disposal)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	240
Freeway Volume, V_F	2122
Ramp Volume, V_R	434
Freeway Free-Flow Speed, S_{FF}	55.0
Ramp Free-Flow Speed, S_{FR}	45.0

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{down} = ft; V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2122	0.97	Level	4	0	0.980	1.00	2231
Ramp	434	0.97	Level	4	0	0.980	1.00	456
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exhibit 13-11)

S_R= mph (Exhibit 13-11)

S_0= mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 2231 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2231	Exhibit 13-8	4500	No
$V_{FO} = V_F - V_R$	1775	Exhibit 13-8	4500	No
V_R	456	Exhibit 13-10	2100	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2231	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = 21.3 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.339 (Exhibit 13-12)

S_R= 50.6 mph (Exhibit 13-12)

S_0= N/A mph (Exhibit 13-12)

S = 50.6 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 NB Off-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/13/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P (Non-local Disposal)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp			Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N	2	☐ Yes ☐ On
☑ No ☐ Off	Ramp Number of Lanes, N	1	☑ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A	1500	L_{down} = ft
V_u = veh/h	Deceleration Lane Length L_D		V_D = veh/h
	Freeway Volume, V_F	1360	
	Ramp Volume, V_R	649	
	Freeway Free-Flow Speed, S_{FF}	55.0	
	Ramp Free-Flow Speed, S_{FR}	45.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1360	0.97	Level	4	0	0.980	1.00	1430
Ramp	649	0.97	Level	4	0	0.980	1.00	682
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F\,(P_{FM})$$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 1430 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2112	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2112	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$$

D_R = 12.2 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.218 (Exibit 13-11)

S_R= 52.2 mph (Exhibit 13-11)

S_0= N/A mph (Exhibit 13-11)

S = 52.2 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R= mph (Exhibit 13-12)

S_0= mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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Revised Attachment I

Existing Plus Project Conditions Intersection Operations Analysis Worksheets, with Mitigation Measure

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
       (JN: 07893) Existing plus Project (Non-local Disposal) Conditions
                    AM Peak Hour - WITH MITIGATION MEASURES
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         120             Critical Vol./Cap.(X):         0.849
Loss Time (sec):      16             Average Delay (sec/veh):        98.2
Optimal Cycle: OPTIMIZED             Level Of Service:                  F
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    10   38    38    10   38    38    10   31    31    10   31    31
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  0  1  0    1  0  3  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     502  238   103   332  270     6     5 1152   399   157 1401   196
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  502  238   103   332  270     6     5 1152   399   157 1401   196
Added Vol:      6    0     0     0    0     0     0    0     0     0    6     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  508  238   103   332  270     6     5 1152   399   157 1407   196
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:   532  249   108   348  283     6     5 1208   418   165 1475   205
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  532  249   108   348  283     6     5 1208   418   165 1475   205
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  532  249   108   348  283     6     5 1208   418   165 1475   205
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.85  0.95 1.00  1.00  0.95 0.91  0.85  0.92 0.95  0.85
Lanes:       2.00 1.00  1.00  1.00 0.98  0.02  1.00 3.00  1.00  2.00 2.00  1.00
Final Sat.:  3502 1900  1615  1805 1853    41  1805 5187  1615  3502 3610  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.13  0.07  0.19 0.15  0.15  0.00 0.23  0.26  0.05 0.41  0.13
Crit Moves:       ****        ****             ****                   ****
Green/Cycle: 0.15 0.32  0.32  0.15 0.32  0.32  0.08 0.30  0.30  0.10 0.32  0.32
Volume/Cap:  1.02 0.41  0.21  1.29 0.48  0.48  0.03 0.77  0.85  0.48 1.29  0.40
Delay/Veh:   94.5 32.7  30.2 205.9 33.7  33.7  50.7 40.4  53.1  52.4  178  32.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  94.5 32.7  30.2 205.9 33.7  33.7  50.7 40.4  53.1  52.4  178  32.6
LOS by Move:    F    C     C     F    C     C     D    D     D     D    F     C
HCM2kAvgQ:     15    7     3    25    9     9     0   15    15     3   49     6
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Non-local Disposal) Conditions
PM Peak Hour - WITH MITIGATION MEASURES

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.848
Loss Time (sec):	16	Average Delay (sec/veh):	68.8
Optimal Cycle:	OPTIMIZED	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Protected			Protected			Protected			Protected	
Rights:		Include			Include			Include			Include	
Min. Green:	10	38	38	10	38	38	10	31	31	10	31	31
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1	0 1	1 0	0	1 0	1 0	3	0 1	2 0	2	0 1
Volume Module:												
Base Vol:	422	339	187	253	275	9	21	1591	546	142	1181	260
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	422	339	187	253	275	9	21	1591	546	142	1181	260
Added Vol:	0	0	0	0	0	0	0	21	6	0	15	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	422	339	187	253	275	9	21	1612	552	142	1196	260
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	442	355	196	265	288	9	22	1690	579	149	1254	273
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	442	355	196	265	288	9	22	1690	579	149	1254	273
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	442	355	196	265	288	9	22	1690	579	149	1254	273
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	1.00	1.00	0.95	0.91	0.85	0.92	0.95	0.85
Lanes:	2.00	1.00	1.00	1.00	0.97	0.03	1.00	3.00	1.00	2.00	2.00	1.00
Final Sat.:	3502	1900	1615	1805	1831	60	1805	5187	1615	3502	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.13	0.19	0.12	0.15	0.16	0.16	0.01	0.33	0.36	0.04	0.35	0.17
Crit Moves:		****		****					****	****		
Green/Cycle:	0.13	0.32	0.32	0.14	0.32	0.32	0.08	0.33	0.33	0.08	0.33	0.33
Volume/Cap:	0.98	0.59	0.38	1.08	0.49	0.49	0.15	0.98	1.08	0.51	1.05	0.51
Delay/Veh:	88.9	36.0	32.4	133.1	33.2	33.2	51.5	57.9	103.3	54.2	80.1	33.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	88.9	36.0	32.4	133.1	33.2	33.2	51.5	57.9	103.3	54.2	80.1	33.1
LOS by Move:	F	D	C	F	C	C	D	E	F	D	F	C
HCM2kAvgQ:	13	11	6	16	9	9	1	24	26	3	29	8

Note: Queue reported is the number of cars per lane.

URBAN CROSSROADS

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July 2, 2013

Ms. Anne Surdzial, AICP
ECORP CONSULTING, INC.
215 North 5th Street
Redlands, CA 92374

Subject: **Shelter Island Boat Launch Facility Improvements Focused Construction Traffic Assessment**

Dear Ms. Surdzial:

Urban Crossroads, Inc. is pleased to submit this letter report to document the focused construction traffic assessment for the potential construction related traffic impacts associated with the proposed Shelter Island Boat Launch Facility Improvements ("Project"). The proposed Project is located in the northeasterly area of Shelter Island in the City of San Diego. The proposed Project site will consist of 113-boat trailer parking spaces, public restrooms, a 10-lane boat launch ramp, and two floating docks. The purpose of this letter is to assess any potential traffic impacts to the nearby intersections as a result of the proposed Projects' construction related traffic. The analyses have been evaluated for the following scenarios:

- Existing (2013) Conditions
- Existing Plus Project (Local Disposal Materials) Conditions
- Existing Plus Project (Non-local disposal Materials) Conditions

Scenarios with construction traffic taking Non-local disposal soil from Shelter Island north to the I-5 Freeway were analyzed in addition to the scenario where construction truck traffic would be taking local Disposal soil south to the I-5 Freeway in order to assess the two most likely construction traffic travel patterns.

This letter report utilizes the peak hour volume based traffic signal warrant for both Existing (2013) and E+P traffic conditions. The most current version of the California Manual on Uniform Traffic Control Devices (MUTCD), Federal Highway Administration's MUTCD 2009 Edition as amended for use in California (2012 Edition) has been utilized for the purposes of the Existing (2013) and E+P traffic signal warrant evaluations.

SUMMARY OF FINDINGS

Based on the findings of this traffic assessment, it is not anticipated that the proposed Project will result in any significant traffic impacts with the implementation of a recommended mitigation measure for the AM peak period.

Results of the intersection operations analysis shows that the intersection of Lytton Street at Rosecrans Street is currently operating at a LOS "F" and the addition of traffic from either proposed Project scenarios of hauling local Disposal and Non-local disposal materials from the construction site will result in a significant impact of an increase of delay of more than 1.0 second. However, with implementation of the proposed mitigation measure of restricting haul truck trips from arriving to or leaving from the construction site it during the AM peak period, it is anticipated that the proposed Project can reduce the increase in delay at this intersection to 1.0 second or less, thus bringing the project impact to "less-than-significant".

INTERSECTION OPERATIONS ANALYSIS METHODOLOGY

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The *Highway Capacity Manual* (HCM) (Transportation Research Board 2000) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

Per the County *of San Diego Report Format & Content Requirements for Transportation and Traffic,* a combination of the HCM-compliant traffic modeling and signal timing optimization software packages Synchro (Version 8 Build 804) and Traffix (Version 8.0 R1, 2008) have been utilized for both signalized and unsignalized intersections. The Synchro software package was utilized at intersections with unusual or specific characteristics in order to more accurately represent "real-world" traffic conditions that may or may not be as accurately represented by the Traffix software package.

The two freeway interchanges of Camino Del Rio at the I-5 Northbound On-Ramp and the I-5 Southbound On-Ramp/I-5 Northbound Off-Ramp at Pacific Coast Highway were assessed with the HCM-compliant freeway ramp analysis software, Highway Capacity Software (HCS+ Version 5.21, 2005), as these two interchanges behave as freeway to freeway interchanges rather than arterial to freeway interchanges.

Signalized Intersections – The City of San Diego requires signalized intersection operations analysis based on the methodology described in Chapter 16 of the HCM. Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation. As such, all signalized intersections in the have been analyzed using the HCM methodology.

Unsignalized Intersections – The City of San Diego requires the operations of unsignalized intersections be evaluated using the methodology described in Chapter 17 of the HCM. The LOS rating is based on the weighted average control delay expressed in seconds per vehicle. At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled intersections, LOS is computed for the intersection as a whole.

Freeway Merge/Diverge Ramp Junction Analysis – The I-5 Freeway interchanges at Camino Del Rio and Pacific Coast Highway are analyzed as freeway merge and diverge sections based on the HCM Ramps and Ramp Junctions analysis method performed using the HCS+ software. The measure of effectiveness (reported in passenger car/mile/lane) are calculated based on the existing number of travel lanes, number of lanes at the on and off ramps and acceleration/deceleration lengths at each merge/diverge point.

LOS CRITERIA

The City of San Diego target for peak hour intersection operation is LOS D or better.

Regarding the Caltrans' ramp to arterial intersections and other Caltrans maintained facilities, the published Caltrans traffic study guidelines (December 2002) state the following:

"Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not be always feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS."

As such, LOS "D" is also considered to be the limit of acceptable traffic operations during the peak hour at intersections maintained by Caltrans.

THRESHOLDS OF SIGNIFICANCE

The City of San Diego's *Significance Determination Thresholds*, dated January 2011 states that a project is considered to have a significant impact if project traffic would decrease the operations of surrounding roadways by a defined threshold. The City of San Diego defined thresholds are shown below in Table 1.

Table 1 City of San Diego Traffic Significance Thresholds

Level of Service with Project*	Allowable Change Due to Project Impact **					
	Freeways		Roadway Segments		Intersections	Ramp Metering
	V/C	*Speed (mph)*	*V/C*	*Speed (mph)*	*Delay (sec.)*	*Delay (min.)*
E (or ramp meter delays above 15 min.)	0.010	1.0	0.02	1.0	2.0	2.0
F (or ramp meter delays above 15 min.)	0.005	0.5	0.01	0.5	1.0	1.0

Note 1: The allowable increase in delay at ramp meter with more than 15 minutes delay and freeway LOS E is 2 minutes.

Note 2: The allowable increase in delay at a ramp meter with more than 15 minutes delay and freeway LOS F is 1 minute.

* All LOS measurements are based upon Highway Capacity Manual procedures for peak-hour conditions. However, V/C ratios for roadway segments are estimated on an ADT/24-hour traffic volume basis (using Table 2 of the City's Traffic Impact Study Manual. The acceptable LOS for freeways, roadways, and intersections are generally "D" ("C" for undeveloped locations). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

** If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. The project applicant shall then identify feasible improvements (within the Traffic Impact Study) that will restore/ and maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see above * note), or if the project adds a significant amount of peak-hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating the project's direct significant and/or cumulatively considerable traffic impacts.

Key: Delay = Average control delay per vehicle measured in seconds for intersections, or minutes for ramp meters

LOS = Level of Service

Speed = Speed measured in miles per hour

V/C = Volume to Capacity ratio

TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for the installation of a traffic signal at an unsignalized intersection. This evaluation uses the signal warrant criteria presented in the 2012 Edition of the *California Manual on Uniform Traffic Control Devices (California MUTCD)* for the study area intersection. Eight warrants from the MUTCD are available to be evaluated to identify if the prevailing traffic conditions meet or exceed the minimum criteria. It is important to note that even though an intersection may meet one or more warrant(s), it does not automatically indicate that a traffic signal should be installed. Sound engineering judgment should be utilized in the decision making process. Chapter 4C of the *California MUTCD* presents the guidelines for Traffic Control Signal Needs Studies.

The signal warrant criteria for Existing (2013) conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. Both the FHWA's *MUTCD* and the *2012 CA MUTCD* indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, this focused traffic analysis utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for Existing (2013) traffic conditions. Warrant 3 criteria are basically identical for both the FHWA's *MUTCD* and the *2012 CA MUTCD*. Warrant 3 is appropriate to use for this focused traffic analysis because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection. The posted speed limit on Shelter Island Drive is 25 miles per hour (mph).

Traffic signal warrants have been conducted for this assessment at the two unsignalized intersections along Shelter Island Drive at Shafter Street and Anchorage Lane for all scenarios in the case that the intersection operations analysis at these locations shows existing or anticipated deficiencies due to traffic from the proposed Project, in which case a traffic signal may possibly be recommended.

EXISTING (2013) CONDITIONS

Exhibit 1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

Existing (2013) Traffic Volumes

Manual AM and PM peak hour turning movement counts were conducted in May 2013. The raw manual peak hour turning movement traffic count data sheets are included in Attachment "A". Existing (2013) AM and PM peak hour intersection volumes are also shown on Exhibit 2.

Existing (2013) Intersection Operations Analysis

Existing (2013) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies discussed previously. It is important to recognize that the intersection operations analysis reflects the existing constrained traffic count conditions. These constraints in the form of vehicle queues at closely spaced intersections significantly limit the number of vehicles that can physically be accommodated during peak hour conditions. While the traffic counts identify all the vehicles using an intersection during peak hours, they may not fully account for the unconstrained demand at a particular location. Several intersections near the I-5 Freeway interchanges at Camino Del Rio and Pacific Coast Highway such as Sports Arena Way at Rosecrans Street and Midway Drive at Barnett Avenue experience vehicle delays that are not reflected in the intersection LOS analysis due to the constrained conditions.

The intersection analysis results for Existing (2013) conditions are summarized in Table 2 and illustrated on Exhibit 3 and are operating at acceptable LOS (i.e., LOS "D" or better) during the peak hours with the exception of the following intersections:

ID	Intersection Location
6	Nimitz Blvd. / Rosecrans St. – LOS "E" AM and PM peak hours
7	Lytton St. / Rosecrans St. – LOS "F" in the AM peak hour and LOS "E" in the PM Peak hour

The intersection operations analysis worksheets are included in Attachment "B".

Existing (2013) Traffic Signal Warrant Analysis

Traffic signal warrants for Existing (2013) traffic conditions are based on existing peak hour intersection volumes. For Existing (2013) conditions, neither unsignalized study area intersections along Shelter Island Drive warranted a traffic signal. Traffic signal warrant worksheets for Existing (2013) Conditions are included in Attachment "C".

SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS – CONSTRUCTION ACTIVITY

The proposed Project site will consist of 113-boat trailer parking spaces, public restrooms, a 10-lane boat launch ramp, and two floating docks. The proposed Project for the purposes of this assessment consists of the construction related traffic (workers' passenger cars, haul trucks) that are anticipated to be required for the construction of the proposed boat launch facility improvements.

Project Trip Generation

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Traffic generation for the proposed Project has been derived from the construction schedule for the proposed boat launch facility improvements provided by the client. The trip generation values used for the purposes of this assessment were based on the peak construction related traffic activity found on the schedule, which was found to be during the partially overlapping grading and site preparation phases of construction. The site preparation phase requires approximately 40 haul truck trips over the course of 15 working days with 6 workers per day. The grading phase requires approximately 1200 haul truck trips over the course of 30 working days with 6 workers per day. As specified by the construction schedule, construction will occur 8 hours per day, 5 days a week (Monday through Friday). In an effort to more conservatively assess the potential traffic impact of the proposed Project it has been anticipated that haul truck traffic will be spread out evenly throughout the workday with the same number of haul trucks traveling during AM and PM peak hours as during less congested mid-day periods. Passenger car traffic has also been estimated to occur only during the AM and PM peak hours to represent the worst case scenario of workers arriving to the construction site in the AM peak hour and leaving in the PM peak hour.

Subsequently, haul truck peak hour trip generation was derived by dividing the number of haul truck trips by the number of working hours over the course of the construction phase (8 hours per day x number of working days per phase). This trip number was then used for both inbound and outbound trips as each haul trip would require an arrival to and departure from the construction site. Passenger car trips were estimated from the total number of workers estimated for both construction phases (12 workers) and split among the AM and PM peak hours, with all passenger car trips coming to the site in the morning and leaving the site in the evening.

Passenger Car Equivalents (PCE) factors have been applied to the trip generation rates for heavy trucks (large 4+-axles). Consistent with standard traffic engineering practice in Southern California, PCE factors have been utilized due to the expected haul truck component of the proposed construction. PCE factors allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, for the purposes of level of service analyses. A PCE factor of 3.0 for 4+-axle trucks was applied to the haul truck trips anticipated to be generated by the proposed Project.

A summary of the proposed Project's trip generation is shown on Table 3. The proposed Project is anticipated to generate a net total of 44 PCE AM peak hour trips and 44 PCE PM peak hour trips.

Project Trip Distribution

Trip distribution is the process of identifying the probable destinations, directions ore traffic routes that will be utilized by proposed Project traffic. The potential interaction between the planned lane use and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the proposed Project site. The existing roadway network, location of sediment disposal sites and discussion with Port of San Diego staff have been utilized to develop the proposed Project trip distribution patterns for scenarios where sediment from the construction site may be Non-local disposal or local Disposal.

Project truck trip and Passenger car distribution patterns are shown on Exhibit 4 and 5, respectively. As shown on Exhibit 4, in the case that sediment from the construction site is local Disposal, it is anticipated that haul truck traffic will ultimately travel south along the I-5 Freeway. In the event that sediment from the construction site is Non-local disposal, it is anticipated that haul truck traffic will travel north along the I-5 Freeway in order to reach appropriate remediation and disposal sites.

EXISTING PLUS PROJECT (LOCAL DISPOSAL MATERIALS) CONDITIONS

Existing Plus Project (Local Disposal Materials) Conditions Traffic Volumes

This scenario includes Existing (2013) traffic volumes plus Project traffic in the event that materials to be hauled from the proposed Project site are local Disposal. Exhibit 6 shows the AM and PM peak hour volumes which can be expected for E+P (Local Disposal Materials) traffic conditions.

Existing Plus Project (Local Disposal Materials) Conditions Intersection Operations Analysis

E+P (Local Disposal Materials) conditions peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies previously discussed. The intersection analysis results are summarized in Table 4 and illustrated on Exhibit 7 and are anticipated to operate at acceptable LOS (i.e., LOS "D" or better) during the peak hours with the exception of the following intersections:

ID	Intersection Location
6	Nimitz Blvd. / Rosecrans St. – LOS "E" AM and PM peak hours
7	Lytton St. / Rosecrans St. – LOS "F" in the AM peak hour and LOS "E" in the PM Peak hour

The intersection operations analysis worksheets are included in Attachment "D".

Existing Plus Project (Local Disposal Materials) Conditions Traffic Signal Warrant Analysis

Traffic signal warrants for E+P traffic conditions are based on E+P (Local Disposal Materials) conditions peak hour volumes. For E+P (Local Disposal Materials) conditions, neither unsignalized study area intersections along Shelter Island Drive are anticipated to warrant a traffic signal. Traffic signal warrant worksheets for E+P (Local Disposal Materials) conditions are included in Attachment "E".

Project (Local Disposal Materials) Impacts and Mitigation Measures

Based on the City of San Diego significance criteria shown on Table 1 City of San Diego Traffic Significance Thresholds, the intersection of Lytton Street at Rosecrans Street was found to be significantly impacted by the proposed Project.

The mitigation measure necessary to reduce project-related impacts to "less-than-significant" would consist of restricting all haul truck traffic in the AM peak period (7 AM to 9 AM). The effectiveness of the proposed mitigation measure is presented in Table 5.

With the implementation of the intersection mitigation measure there are no project-related impacts anticipated to the study area intersections. The E+P (Local Disposal Materials) conditions intersection operations analysis worksheet with mitigation measure is provided in Attachment “F”.

EXISTING PLUS PROJECT (NON-LOCAL DISPOSAL MATERIALS) CONDITIONS

Existing Plus Project (Non-local disposal Materials) Conditions Traffic Volumes

This scenario includes Existing (2013) traffic volumes plus Project traffic in the event that materials to be hauled from the proposed Project site are non-local disposal. Exhibit 8 shows the AM and PM peak hour volumes which can be expected for E+P (Non-local disposal Materials) traffic conditions.

Existing Plus Project (Non-local disposal Materials) Conditions Intersection Operations Analysis

E+P (Non-local disposal Materials) conditions peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies previously discussed. The intersection analysis results are summarized in Table 4 and illustrated on Exhibit 9 and are anticipated to operate at acceptable LOS (i.e., LOS “D” or better) during the peak hours with the exception of the following intersections:

ID	Intersection Location
6	Nimitz Blvd. / Rosecrans St. – LOS “E” AM and PM peak hours
7	Lytton St. / Rosecrans St. – LOS “F” in the AM peak hour and LOS “E” in the PM Peak hour

The intersection operations analysis worksheets are included in Attachment “G”.

Existing Plus Project (Non-local disposal Materials) Conditions Traffic Signal Warrant Analysis

Traffic signal warrants for E+P traffic conditions are based on E+P (Non-local disposal Materials) conditions peak hour volumes. Similar to E+P (Local Disposal Materials) conditions, no additional intersections are anticipated to warrant a traffic signal under E+P (Non-local disposal Materials) conditions. Traffic signal warrant worksheets for E+P (Non-local disposal Materials) conditions are included in Attachment “H”.

Project (Non-local disposal Materials) Impacts and Mitigation Measures

Based on the City of San Diego significance criteria shown on Table 1 City of San Diego Traffic Significance Thresholds the intersection of Lytton Street at Rosecrans Street was found to be significantly impacted by the proposed Project.

The mitigation measure necessary to reduce project-related impacts to "less-than-significant" would consist of restricting all haul truck traffic in the AM peak period (7 AM to 9 AM), just as was necessary for E+P (Local Disposal Materials) conditions. The effectiveness of the proposed mitigation measure is presented in Table 5.

With the implementation of the intersection mitigation measures there are no project-related impacts anticipated to the study area intersections. The E+P (Non-local disposal Materials) conditions intersection operations analysis worksheet with mitigation measure is provided in Attachment "I".

If you have any questions, please do not hesitate to contact me at (949) 660-1994 x 217.

Sincerely,

URBAN CROSSROADS, INC.

Haseeb Qureshi,
Senior Associate

Donson Liu, E.I.T.
Assistant Transportation Engineer

JN:07893-03 Letter
Attachments

Table 2

Intersection Analysis for Existing (2013) Conditions

#	Intersection	Traffic Control[3]	Intersection Approach Lanes[1]												Delay (Secs.)[2] [Density]		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Shelter Island Drive / Rosecrans Street	TS	0	1	0	0	1	0	1	2	0	1	2	0	20.0	28.1	C	C
2	Shelter Island Drive / Scott Street	TS	0	1	1>	0	1	d	1	1	0	1	2	0	18.3	20.3	B	C
3	Shelter Island Drive / Shafter Street	CSS	0	1	0	0	1	0	0	1	0	0	1	0	16.8	18.1	C	C
4	Shelter Island Drive / Anchorage Lane	CSS	0	1	0	0	1	0	0	1	0	0	1	0	11.5	12.9	B	B
5	N. Harbor Drive / Rosecrans Street	TS	1	1	0	0	1	0	1	2	0	1	2	0	23.0	28.9	C	C
6	Nimitz Boulevard / Rosecrans Street	TS	1	2	1>	1	2	0	1	2	0	1	2	0	**61.2**	**65.4**	**E**	**E**
7	Lytton Street / Rosecrans Street	TS	2	1	1	1	1	0	1	3	1	2	2	1	**97.2**	**67.0**	**F**	**E**
8	Midway Drive / Rosecrans Street	TS	1	2	1	2	2	1	2	3	0	2	3	d	34.2	54.0	C	D
9	Midway Drive / Barnett Avenue	TS	0	0	0	2	0	1	0	2	0	0	2	1>>	42.2	44.8	D	D
10a	Sports Arena Boulevard / Rosecrans Street / Camino Del Rio	TS	1	2	0	1	2	1	2	3	1>>	0	3	1>>	24.1	50.1	C	D
10b	Sports Arena Boulevard / Rosecrans Street	CSS	0	0	1	0	0	0	0	1	0	0	0	0	10.0	12.8	B	B
11	Camino Del Rio / I-5 Northbound On-Ramp[4]	UC	0	2	1>>	0	2	0	0	0	0	0	0	0	[4.9]	[10.0]	A	B
12a	I-5 Soutbound On-Ramp / Pacific Coast Highway[4]	UC	0	0	0	0	2	1>>	0	0	0	0	0	0	[11.4]	[21.2]	B	C
12b	I-5 Northbound Off-Ramp / Pacific Coast Highway[4]	UC	0	2	0	0	0	1>>	0	0	0	0	0	0	[15.3]	[12.2]	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.

L = Left; T = Through; R = Right; > = Right-Turn Overlap Phasing; >> = Free Right Turn; d= Defacto Right Turn Lane

2 Delay and LOS calculated using the TRAFFIX operation analysis software, Traffix Version 8.0 (2008), based on the 2000 Highway Capacity Manual (HCM) method. Synchro 8 (Version 8, 2011) has been utilized to calculate delay and LOS for the intersections of Midway Drive at Rosecrans Street, Sports Arena Boulevard at Rosecrans Street and Midway Drive at Barnett Avenue.

3 CSS = Cross-street Stop; TS = Traffic Signal; UC = Uncontrolled

4 I-5 Freeway interchanges at Camino Del Rio and Pacific Coast Highway are analyzed as freeway merge and diverge sections consistent with methodologies outlined by the 2000 HCM. Density is shown through passenger cars per mile per lane.

Table 3

Construction Trip Generation Summary[1]

Construction Traffic Activity	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Passenger Cars:	12	0	12	0	12	12
Truck Trips:						
4+-axle:	*5*	*5*	11	*5*	*5*	11
4+-axle (PCE 3.0):	*16*	*16*	*32*	*16*	*16*	*32*
- Net Truck Trips (PCE)	*16*	*16*	*32*	*16*	*16*	*32*
Construction Traffic Activity Total (Raw Vehicles)	**17**	**5**	**23**	**5**	**17**	**23**
Construction Traffic Activity Total (PCE)[2]	**28**	**16**	**44**	**16**	**28**	**44**

[1] Trip Generation volumes are based on peak construction related traffic activity derived from the planned construction schedule. Peak traffic activity appears to occur during the overlapping site preparation and grading phases of construction, with a total of 40 planned haul truck trips over 15 working days requiring 6 workers for site preparation and 1200 planned haul truck trips over 30 working days requiring 6 workers for grading. Both phases are anticipated to operate 8 hours per day. Peak hour trip generation was then estimated conservatively by placing the frequency of the construction related truck trips evenly throughout the 8 hour workday with the same number of truck trips occuring during AM and PM peak hours as during calmer mid-day hours. Passenger car traffic has been estimated to occur only during the AM and PM peak hours to represent the worst case scenario of workers arriving to the construction site in the AM peak hour and leaving in the PM peak hour.

[2] TOTAL TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

Table 4

Intersection Analysis for Existing plus Project Conditions

#	Intersection	Traffic Control[2]	Existing (2013) Delay (Secs.)[1] [Density] AM	Existing (2013) Delay (Secs.)[1] [Density] PM	Existing (2013) Level of Service AM	Existing (2013) Level of Service PM	E + P-Local Disposal Delay (Secs.)[1] [Density] AM	E + P-Local Disposal Delay (Secs.)[1] [Density] PM	E + P-Local Disposal Level of Service AM	E + P-Local Disposal Level of Service PM	E+P-Non-Local Disposal) Delay (Secs.)[1] [Density] AM	E+P-Non-Local Disposal) Delay (Secs.)[1] [Density] PM	E+P-Non-Local Disposal) Level of Service AM	E+P-Non-Local Disposal) Level of Service PM
1	Shelter Island Drive / Rosecrans Street	TS	20.0	28.1	C	C	20.5	28.9	C	C	20.5	28.9	C	C
2	Shelter Island Drive / Scott Street	TS	18.3	20.3	B	C	18.8	20.5	B	C	18.8	20.5	B	C
3	Shelter Island Drive / Shafter Street	CSS	16.8	18.1	C	C	17.8	19.1	C	C	17.8	19.1	C	C
4	Shelter Island Drive / Anchorage Lane	CSS	11.5	12.9	B	B	11.9	13.3	B	B	11.9	13.3	B	B
5	N. Harbor Drive / Rosecrans Street	TS	23.0	28.9	C	C	23.1	29.3	C	C	23.1	29.3	C	C
6	Nimitz Boulevard / Rosecrans Street	TS	**61.2**	**65.4**	**E**	**E**	**63.0**	**66.8**	**E**	**E**	**63.0**	**66.8**	**E**	**E**
7	Lytton Street / Rosecrans Street	TS	**97.2**	**67.0**	**F**	**E**	**99.2**	**67.7**	**F**	**E**	**100.1**	**68.9**	**F**	**E**
8	Midway Drive / Rosecrans Street	TS	34.2	53.4	C	D	34.2	53.7	C	D	34.4	54.5	C	D
9	Midway Drive / Barnett Avenue	TS	42.2	44.8	D	D	45.0	47.0	D	D	42.9	45.3	D	D
10	Sports Arena Boulevard / Rosecrans Street / Camino Del Rio	TS	24.1	50.0	C	D	24.1	50.0	C	D	24.1	50.3	C	D
10a	Sports Arena Boulevard / Rosecrans Street	CSS	10.0	12.8	B	B	10.0	12.8	B	B	10.0	12.8	B	B
11	Camino Del Rio / I-5 Northbound On-Ramp[3]	UC	[4.9]	[10.0]	A	B	[4.9]	[10.0]	B	B	[4.9]	[10.0]	A	B
12a	I-5 Soutbound On-Ramp / Pacific Coast Highway[3]	UC	[11.4]	[21.2]	B	C	[11.5]	[21.4]	B	C	[11.4]	[21.3]	B	C
12b	I-5 Northbound Off-Ramp / Pacific Coast Highway[3]	UC	[15.3]	[12.2]	B	B	[15.5]	[12.4]	B	B	[15.4]	[12.2]	B	B

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

BOLD = Potential Signficant Impact as defined by the County of San Diego *Guidelines for Determining Significance-Transportation and Traffic.*

1 Delay and LOS calculated using the TRAFFIX operation analysis software, Traffix Version 8.0 (2008), based on the 2000 Highway Capacity Manual (HCM) method. Synchro 8 (Version 8, 2011) has been utilized to calculate delay and LOS for the intersections of Midway Drive at Rosecrans Street, Sports Arena Boulevard at Rosecrans Street and Midway Drive at Barnett Avenue.

2 CSS = Cross-street Stop; TS = Traffic Signal; UC = Uncontrolled

3 I-5 Freeway interchanges at Camino Del Rio and Pacific Coast Highway are analyzed as freeway merge and diverge sections consistent with methodologies outlined by the 2000 HCM. Density is shown through passenger cars per mile per lane.

Table 5

Intersection Analysis for Existing plus Project Conditions With Mitigation Measure

#	Intersection	Traffic Control[2]	Existing (2013) Delay (Secs.)[1] AM	Existing (2013) Delay (Secs.)[1] PM	Existing (2013) Level of Service AM	Existing (2013) Level of Service PM	E + P-Local Disposal Delay (Secs.)[1] AM	E + P-Local Disposal Delay (Secs.)[1] PM	E + P-Local Disposal Level of Service AM	E + P-Local Disposal Level of Service PM	E+P Non-Local Disposa Delay (Secs.)[1] AM	E+P Non-Local Disposa Delay (Secs.)[1] PM	E+P Non-Local Disposa Level of Service AM	E+P Non-Local Disposa Level of Service PM
7	Lytton Street / Rosecrans Street													
	- without Mitigation Measure	TS	**97.2**	**67.0**	**F**	**E**	**99.2**	**67.7**	**F**	**E**	**100.1**	**68.9**	**F**	**E**
	- with Mitigation Measure[3]	TS	**97.2**	**67.0**	**F**	**E**	**98.2**	**67.7**	**F**	**E**	**98.2**	**68.9**	**F**	**E**

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

BOLD = Potential Signficant Impact as defined by the County of San Diego *Guidelines for Determining Significance-Transportation and Traffic.*

1 Delay and LOS calculated using the TRAFFIX operation analysis software, Traffix Version 8.0 (2008), based on the 2000 Highway Capacity Manual (HCM) method. Synchro 8 (Version 8, 2011) has been utilized to calculate delay and LOS for the intersections of Midway Drive at Rosecrans Street, Sports Arena Boulevard at Rosecrans Street and Midway Drive at Barnett Avenue.

2 TS = Traffic Signal

3 Mitigation measure consists of restricting haul truck traffic to and from the site during the AM peak period of 7AM to 9AM with the only construction related traffic allowed being that of workers arriving to the site.

EXHIBIT 1

EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS

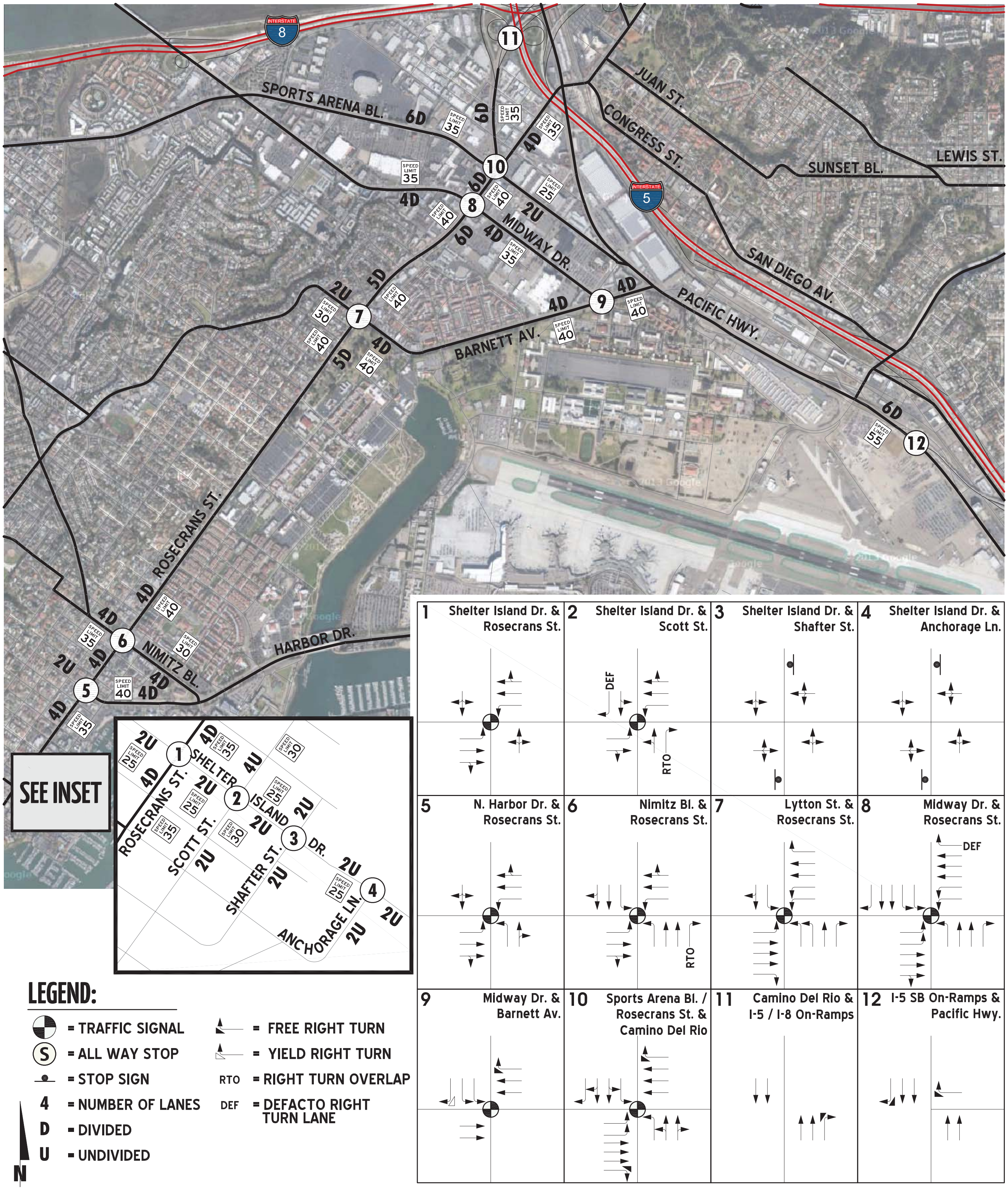


EXHIBIT 2

EXISTING (2013) CONDITIONS PEAK HOUR INTERSECTION VOLUMES

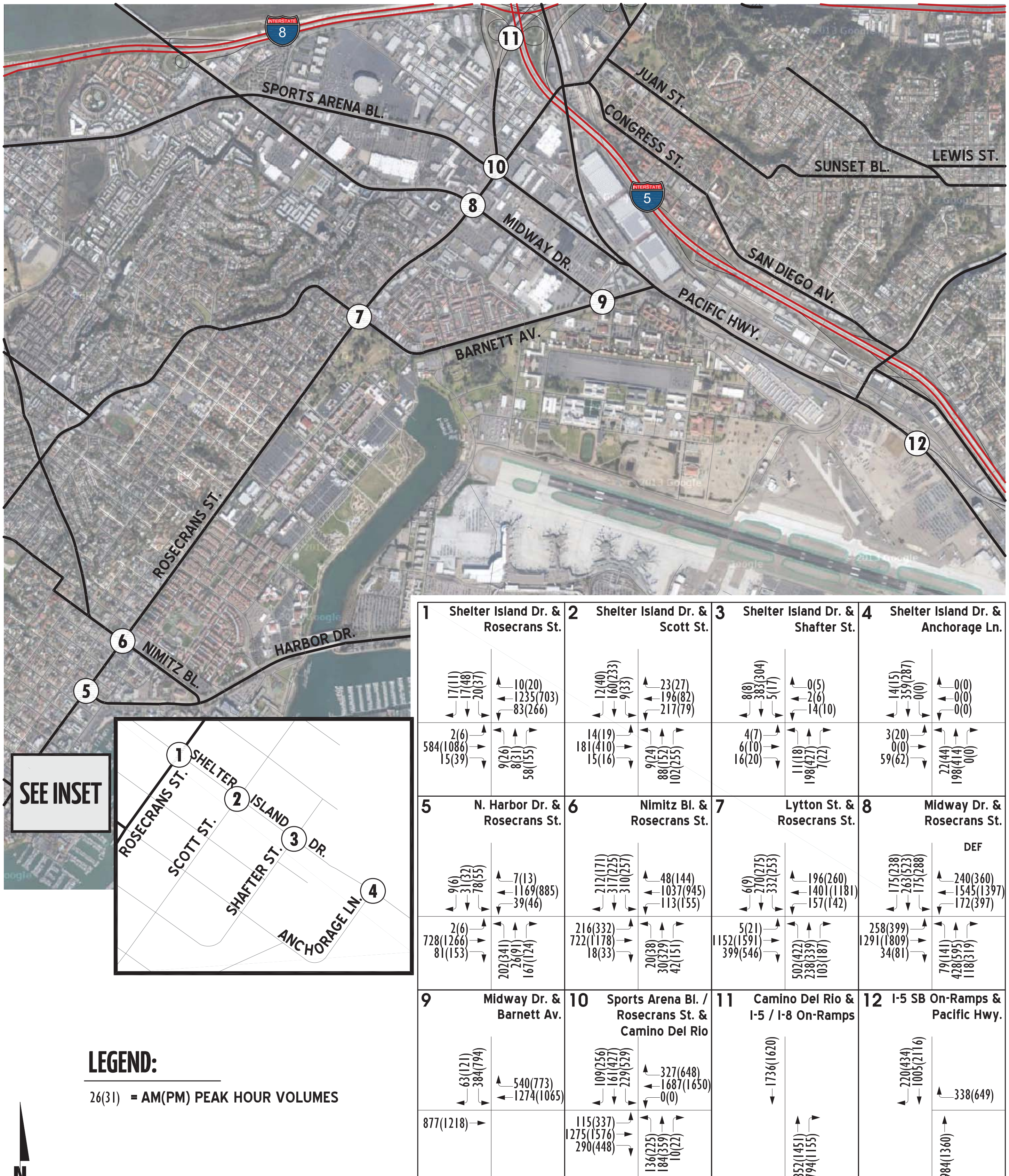
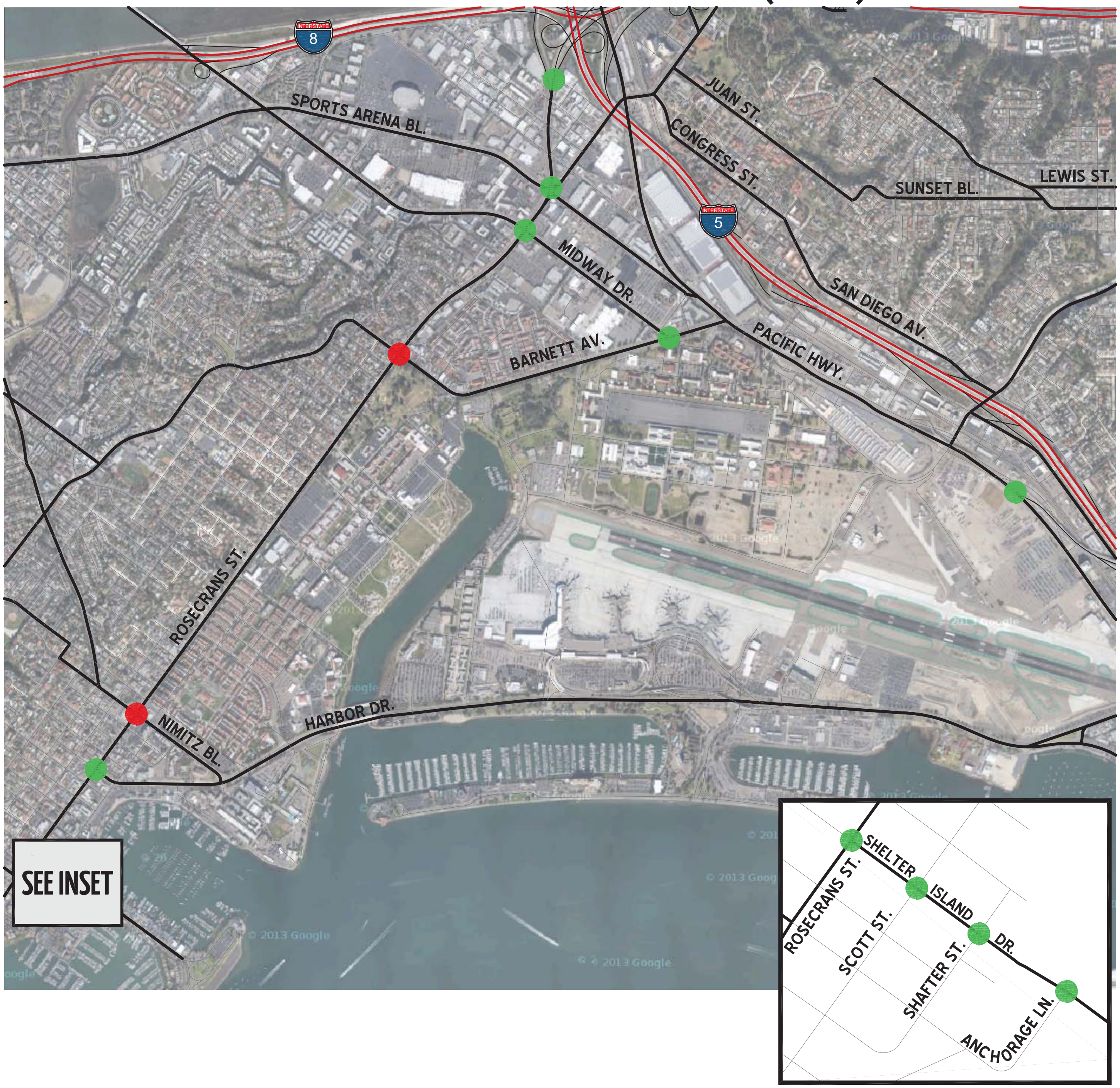


EXHIBIT 3

SUMMARY OF INTERSECTION LOS FOR EXISTING (2013) CONDITIONS



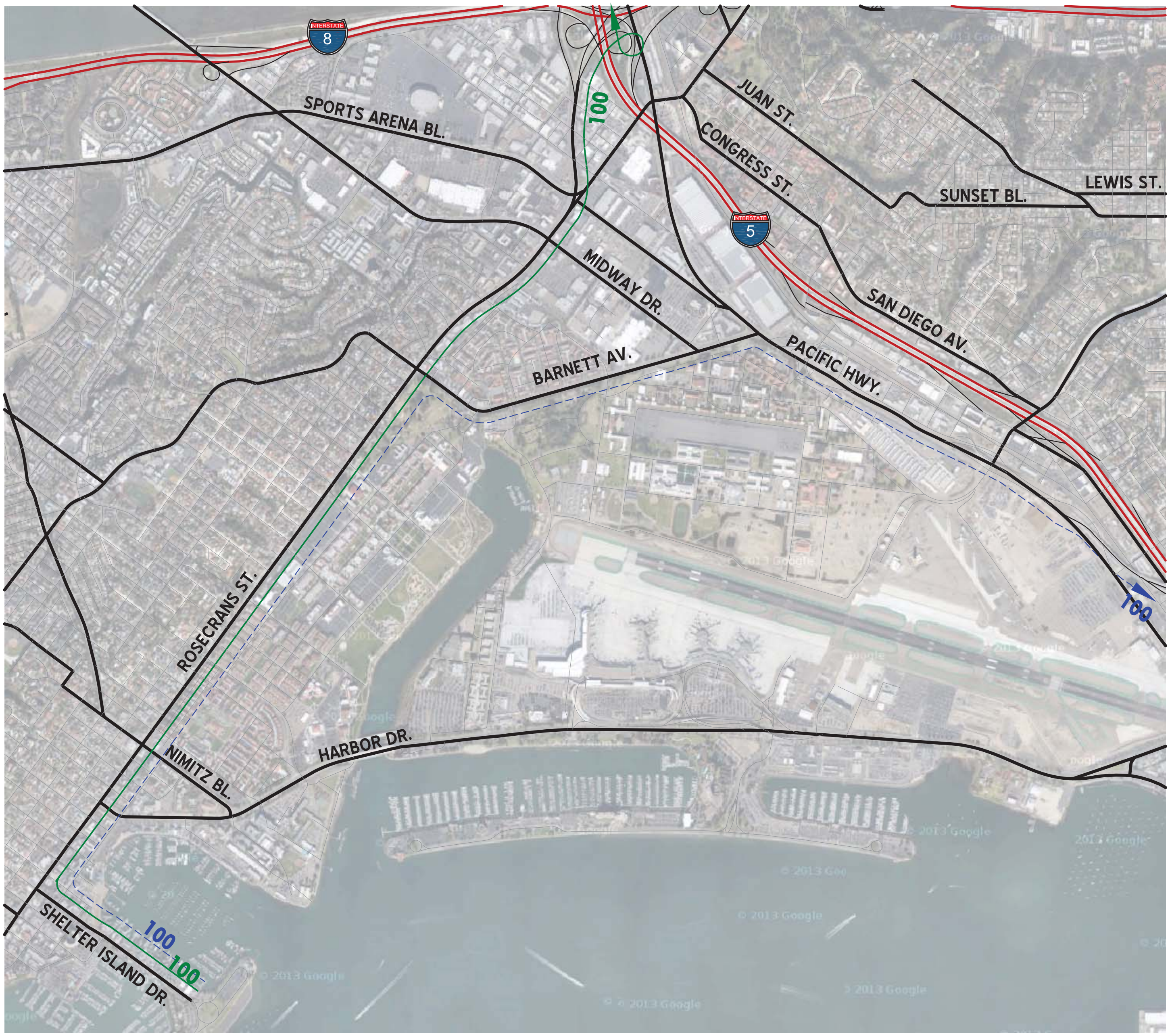
LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS

N

EXHIBIT 4

CONSTRUCTION RELATED TRUCK TRIP DISTRIBUTION



LEGEND:

- 10 = PERCENT TO/FROM PROJECT
- = CONTAMINATED SOIL SCENARIO
- = UNCONTAMINATED SOIL SCENARIO

N

EXHIBIT 5

CONSTRUCTION RELATED PASSENGER CAR TRIP DISTRIBUTION

LEGEND:

10 - **PERCENT TO/FROM PROJECT**

N

EXHIBIT 6

EXISTING PLUS PROJECT (LOCAL DISPOSAL MATERIALS) CONDITIONS PEAK HOUR INTERSECTION VOLUMES

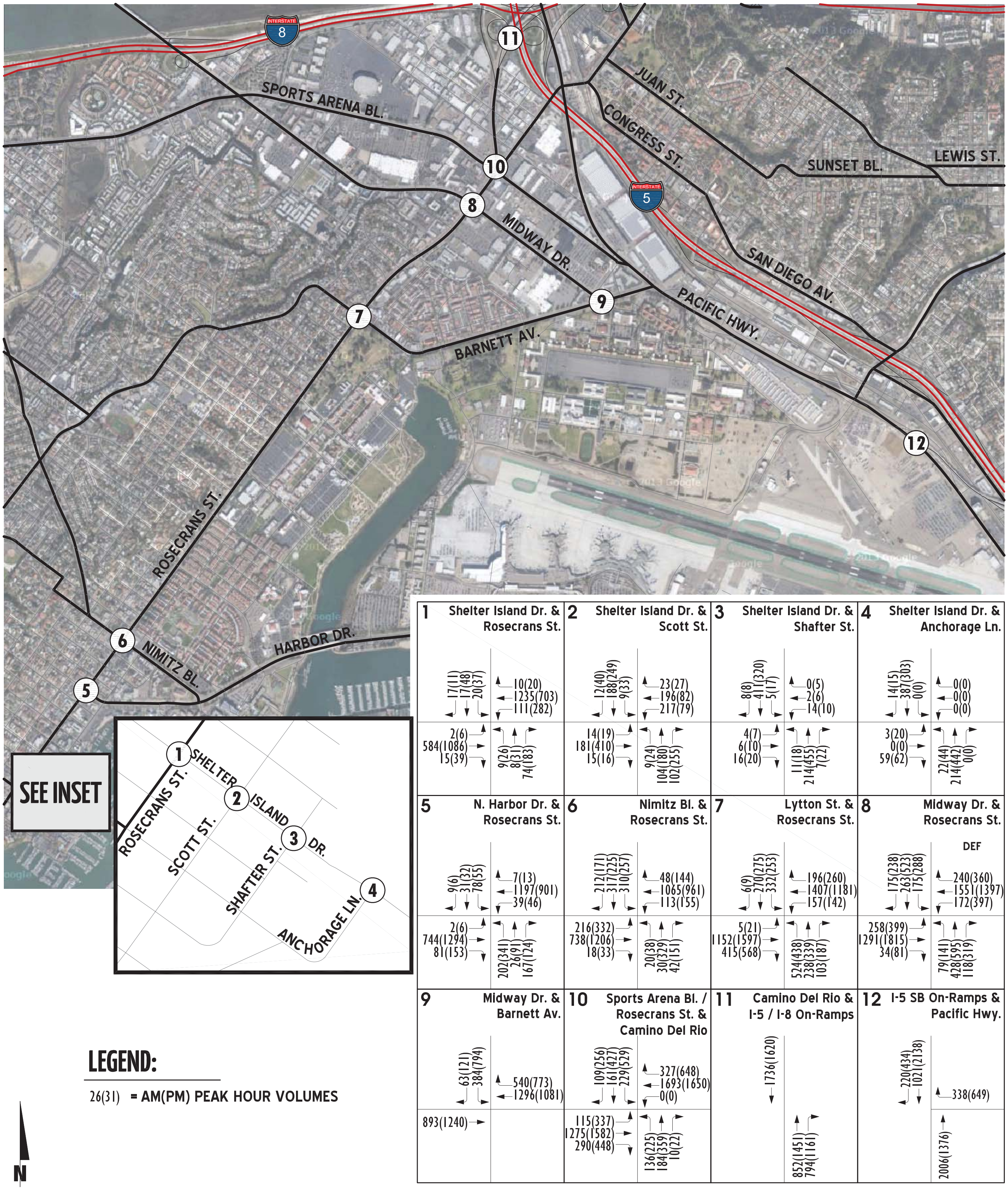
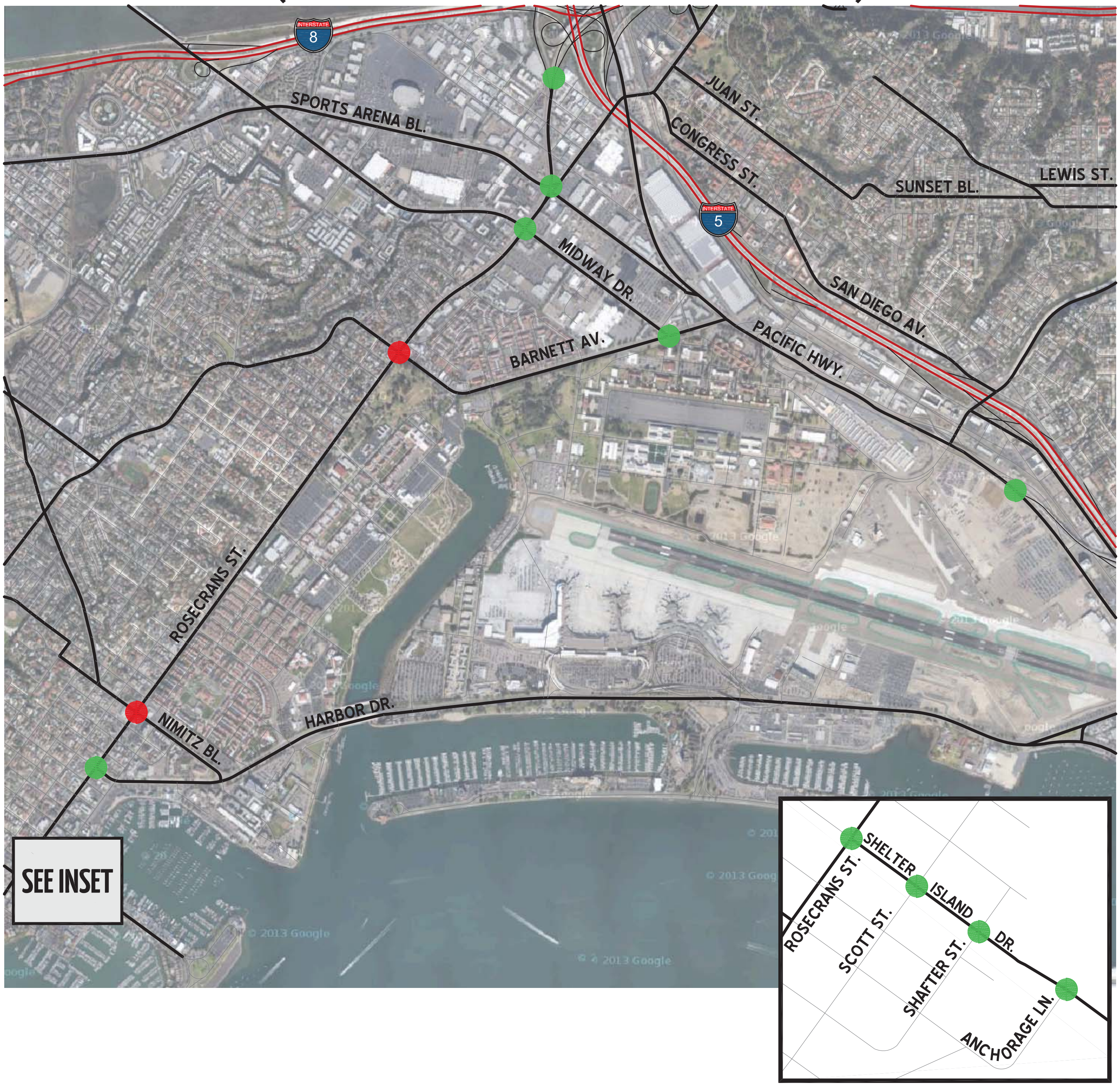


EXHIBIT 7

SUMMARY OF INTERSECTION LOS FOR EXISTING PLUS PROJECT (LOCAL DISPOSAL MATERIALS) CONDITIONS



LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS

N

EXHIBIT 8

EXISTING PLUS PROJECT (□O□□LOCAL DISPOSAL MATERIALS) CONDITIONS PEAK HOUR INTERSECTION VOLUMES

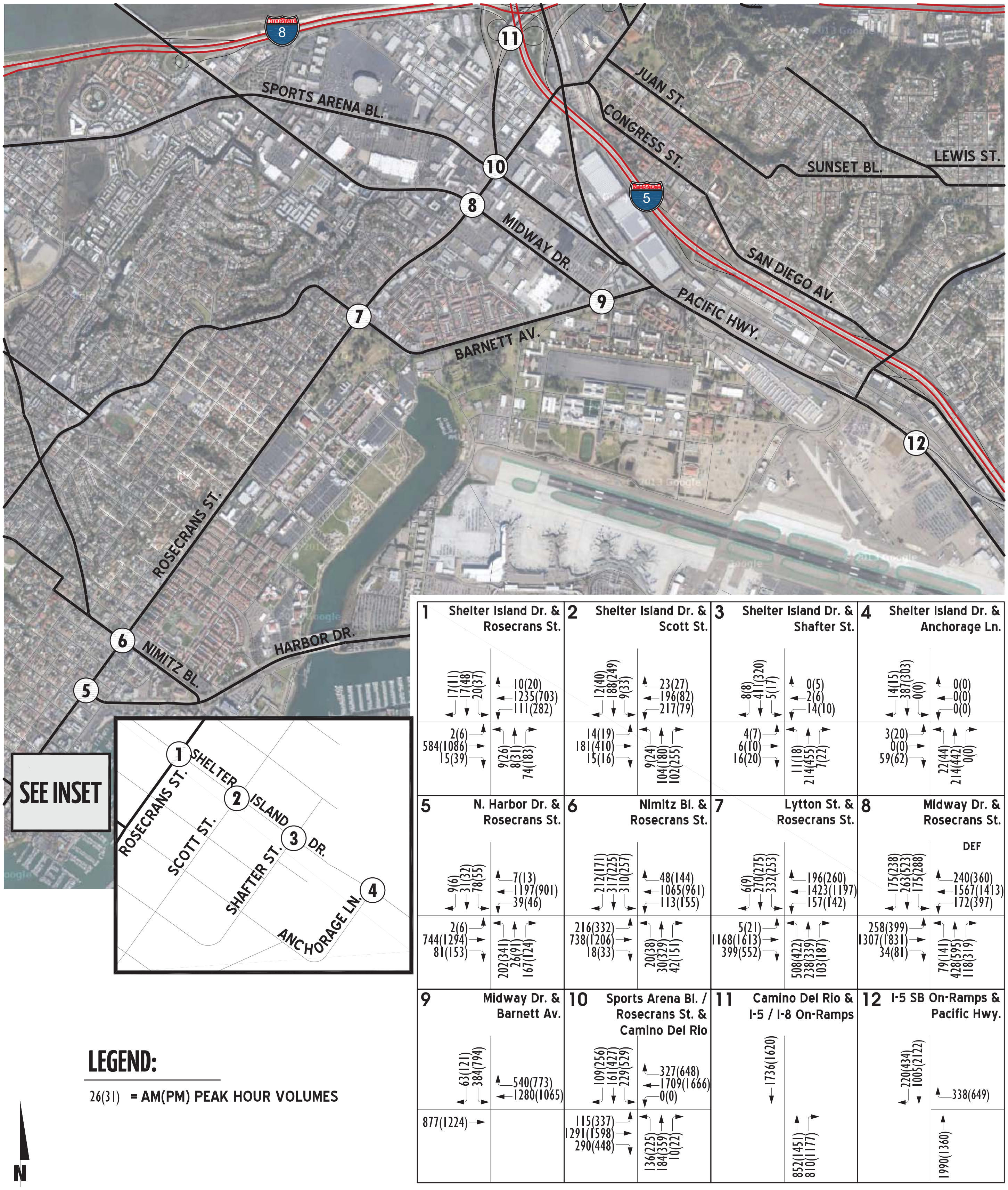
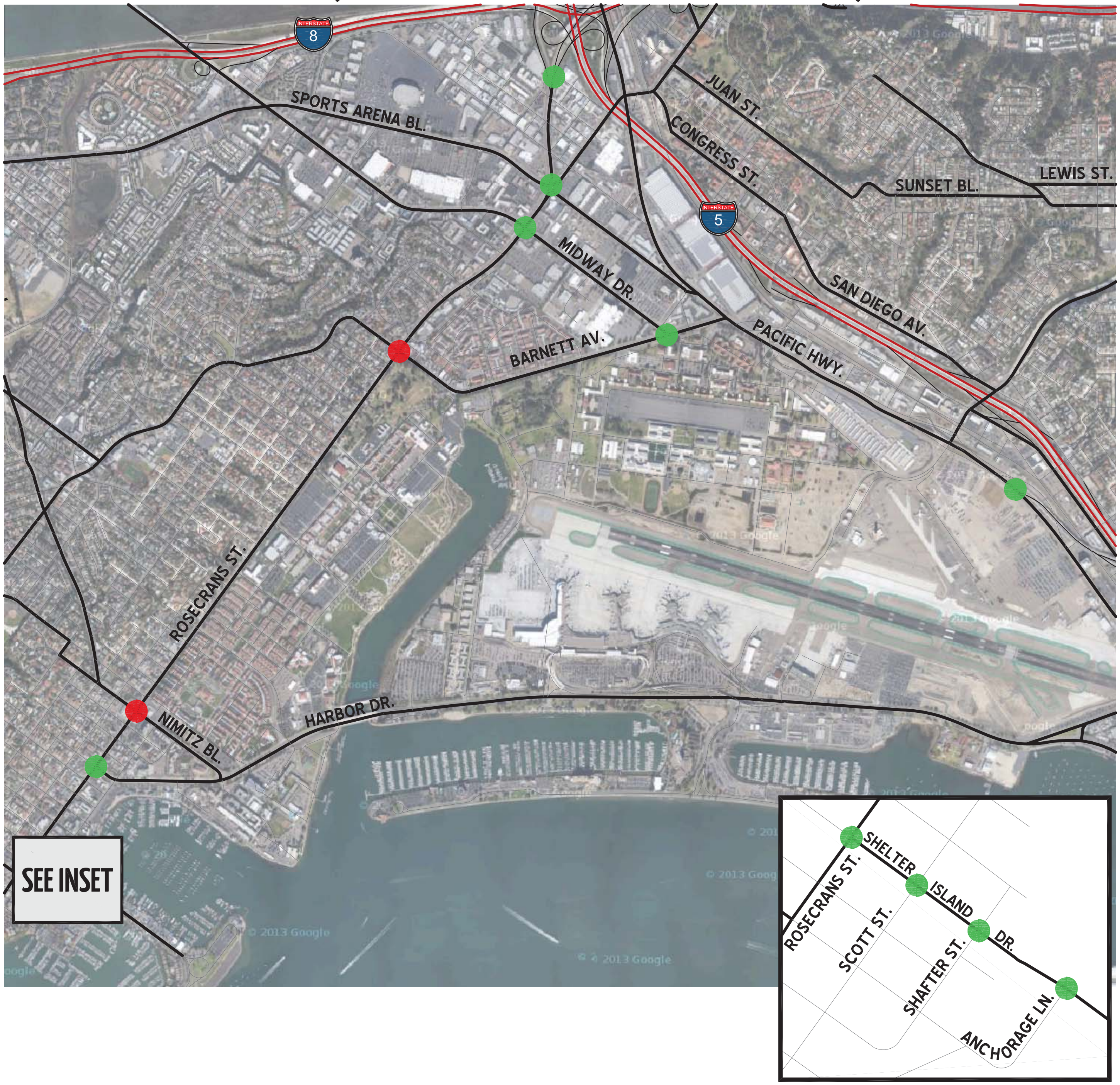


EXHIBIT 9

SUMMARY OF INTERSECTION LOS FOR EXISTING PLUS PROJECT (□O□□LOCAL DISPOSAL MATERIALS) CONDITIONS



LEGEND:

- = AM PEAK HOUR ACCEPTABLE LOS
- = AM PEAK HOUR DEFICIENT LOS
- = PM PEAK HOUR ACCEPTABLE LOS
- = PM PEAK HOUR DEFICIENT LOS

N

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Attachment A

Traffic Count Data

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INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

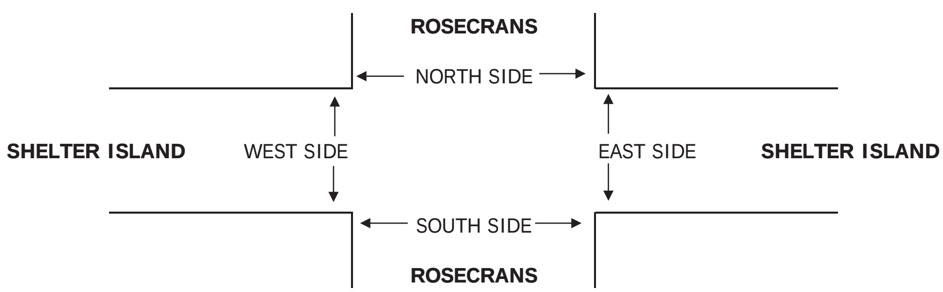
DATE:	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
5/23/13	NORTH & SOUTH:	ROSECRANS	LOCATION #:	1
THURSDAY	EAST & WEST:	SHELTER ISLAND	CONTROL:	SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W E ►
S ▼

		NORTHBOUND ROSECRANS			SOUTHBOUND ROSECRANS			EASTBOUND SHELTER ISLAND			WESTBOUND SHELTER ISLAND				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	2	0	1	2	0	0	1	0	0	1	0		X	X	X	X	
AM	7:00 AM	1	124	4	17	298	4	5	3	1	1	1	16	475					0
	7:15 AM	1	121	4	14	340	4	4	1	14	2	3	5	513					0
	7:30 AM	0	178	3	20	324	0	7	3	0	2	1	21	559					0
	7:45 AM	0	161	4	32	273	2	4	10	2	4	3	16	511					0
	8:00 AM	1	144	4	30	216	1	1	8	2	5	1	14	427					0
	8:15 AM	0	152	7	45	233	1	12	6	0	5	1	17	479					0
	8:30 AM	2	146	7	44	231	4	9	10	2	1	1	25	482					0
	8:45 AM	2	141	6	34	217	5	2	4	2	6	3	30	452					0
	VOLUMES	7	1,167	39	236	2,132	21	44	45	23	26	14	144	3,898	0	0	0	0	0
	APPROACH %	1%	96%	3%	10%	89%	1%	39%	40%	21%	14%	8%	78%						
	APP/DEPART	1,213	/	1,355	2,389	/	2,181	112	/	320	184	/	42	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	2	584	15	83	1,235	10	20	17	17	9	8	58	2,058					
	APPROACH %	0%	97%	2%	6%	93%	1%	37%	31%	31%	12%	11%	77%						
	PEAK HR FACTOR		0.830			0.927			0.711			0.781		0.920					
	APP/DEPART	601	/	662	1,328	/	1,261	54	/	115	75	/	20	0					
PM	4:00 PM	3	249	8	79	179	6	11	17	3	6	10	40	611					0
	4:15 PM	2	294	13	64	161	3	8	9	4	6	7	37	608					0
	4:30 PM	0	266	9	66	176	3	9	10	0	6	6	42	593					0
	4:45 PM	1	277	9	57	187	8	9	12	4	8	8	36	616					0
	5:00 PM	2	260	13	44	185	5	9	12	0	5	3	44	582					0
	5:15 PM	2	248	15	48	170	1	6	12	2	5	4	45	558					0
	5:30 PM	1	244	12	51	144	3	6	8	1	5	5	49	529					0
	5:45 PM	0	226	9	52	153	2	7	7	1	4	3	47	511					0
	VOLUMES	11	2,064	88	461	1,355	31	65	87	15	45	46	340	4,608	0	0	0	0	0
	APPROACH %	1%	95%	4%	25%	73%	2%	39%	52%	9%	10%	11%	79%						
	APP/DEPART	2,163	/	2,469	1,847	/	1,415	167	/	636	431	/	88	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	6	1,086	39	266	703	20	37	48	11	26	31	155	2,428					
	APPROACH %	1%	96%	3%	27%	71%	2%	39%	50%	11%	12%	15%	73%						
	PEAK HR FACTOR		0.915			0.937			0.774			0.946		0.985					
	APP/DEPART	1,131	/	1,278	989	/	740	96	/	353	212	/	57	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

63789 1179

POINT LOMA

PTD13-0524-01

ALL HOURS

ROSECRANS

4,236	**52**	**3,487**	**697**	**TOTAL**	**3,824**
1,847	31	1,355	461	**PM**	2,469
2,389	21	2,132	236	**AM**	1,355

SHELTER ISLAND (west)

TOTAL	PM	AM
130	88	42
109	65	44
132	87	45
38	15	23
279	**167**	**112**

SHELTER ISLAND (east)

AM	PM	TOTAL
184	**431**	**615**
144	340	**484**
14	46	**60**
26	45	**71**
320	636	**956**

2,181	**AM**	7	1,167	39	**1,213**
1,415	**PM**	11	2,064	88	**2,163**
3,596	**TOTAL**	**18**	**3,231**	**127**	**3,376**

ROSECRANS

ROSECRANS

2,317	**30**	**1,938**	**349**	**TOTAL**	**1,940**
989	20	703	266	**PM**	1,278
1,328	10	1,235	83	**AM**	662

SHELTER ISLAND (west)

TOTAL	PM	AM
77	57	20
57	37	20
65	48	17
28	11	17
150	**96**	**54**

PEAK HOUR

AM 7:00 AM

PM 4:00 PM

SHELTER ISLAND (east)

AM	PM	TOTAL
75	**212**	**287**
58	155	**213**
8	31	**39**
9	26	**35**
115	353	**468**

1,261	**AM**	2	584	15	**601**
740	**PM**	6	1,086	39	**1,131**
2,001	**Total**	**8**	**1,670**	**54**	**1,732**

ROSECRANS

63789 1180

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
5/23/13	NORTH & SOUTH:	SCOTT	LOCATION #:	2
THURSDAY	EAST & WEST:	SHELTER ISLAND	CONTROL:	SIGNAL

NOTES:

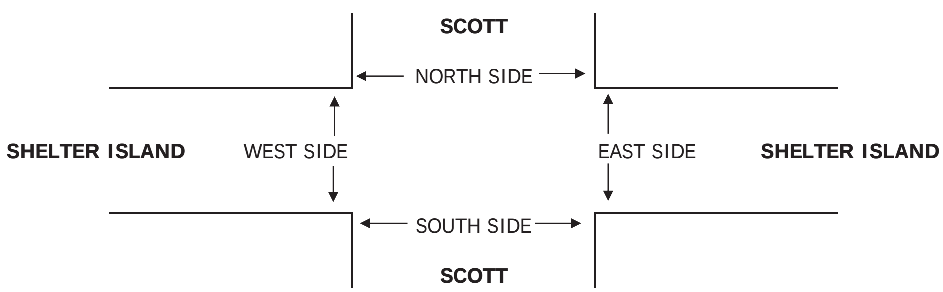
AM
PM
MD
OTHER
OTHER

▲ N
◄ W E ►
S ▼

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	SCOTT			SCOTT			SHELTER ISLAND			SHELTER ISLAND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	2	0	0	1	0	0	1	1	
AM													
7:00 AM	1	25	3	35	64	1	0	18	1	3	15	23	189
7:15 AM	1	42	1	39	72	7	4	13	3	3	13	24	222
7:30 AM	3	46	4	39	53	3	2	19	0	2	18	30	219
7:45 AM	3	48	7	56	49	6	4	32	2	1	14	17	239
8:00 AM	6	42	3	42	51	4	3	33	2	3	17	22	228
8:15 AM	6	55	4	51	47	7	0	47	2	3	17	24	263
8:30 AM	0	38	1	62	56	4	5	48	7	2	27	30	280
8:45 AM	2	46	7	62	42	8	1	32	1	1	27	26	255
VOLUMES	22	342	30	386	434	40	19	242	18	18	148	196	1,895
APPROACH %	6%	87%	8%	45%	50%	5%	7%	87%	6%	5%	41%	54%	
APP/DEPART	394	/	557	860	/	470	279	/	658	362	/	210	0
BEGIN PEAK HR		8:00 AM											
VOLUMES	14	181	15	217	196	23	9	160	12	9	88	102	1,026
APPROACH %	7%	86%	7%	50%	45%	5%	5%	88%	7%	5%	44%	51%	
PEAK HR FACTOR		0.808			0.893			0.754			0.843		0.916
APP/DEPART	210	/	292	436	/	217	181	/	392	199	/	125	0
PM													
4:00 PM	6	104	6	14	12	9	13	66	9	6	38	73	356
4:15 PM	9	101	4	14	10	4	8	64	10	8	37	43	312
4:30 PM	2	106	4	26	30	11	5	57	11	4	33	61	350
4:45 PM	2	99	2	25	30	3	7	46	10	6	44	78	352
5:00 PM	2	73	4	18	28	3	10	43	6	2	48	60	297
5:15 PM	6	69	4	46	54	4	7	54	6	7	40	44	341
5:30 PM	5	56	4	46	66	6	4	49	7	2	45	53	343
5:45 PM	6	50	3	42	56	3	2	62	5	4	46	56	335
VOLUMES	38	658	31	231	286	43	56	441	64	39	331	468	2,686
APPROACH %	5%	91%	4%	41%	51%	8%	10%	79%	11%	5%	39%	56%	
APP/DEPART	727	/	1,182	560	/	389	561	/	703	838	/	412	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	19	410	16	79	82	27	33	233	40	24	152	255	1,370
APPROACH %	4%	92%	4%	42%	44%	14%	11%	76%	13%	6%	35%	59%	
PEAK HR FACTOR		0.959			0.701			0.869			0.842		0.962
APP/DEPART	445	/	698	188	/	146	306	/	328	431	/	198	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM															
7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM															
4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS

POINT LOMA

PTD13-0524-01

ALL HOURS

SCOTT (north leg)

1,420	**83**	**720**	**617**	**TOTAL**		**1,739**
560	43	286	231	**PM**		1,182
860	40	434	386	**AM**		557

SHELTER ISLAND (west leg)

	TOTAL	**PM**	**AM**
	622	412	210
	75	56	19
	683	441	242
	82	64	18
	840	**561**	**279**

SHELTER ISLAND (east leg)

	AM	**PM**	**TOTAL**
	362	**838**	**1,200**
	196	468	**664**
	148	331	**479**
	18	39	**57**
	658	703	**1,361**

SCOTT (south leg)

470		**AM**	22	342	30	**394**
389		**PM**	38	658	31	**727**
859		**TOTAL**	**60**	**1,000**	**61**	**1,121**

PEAK HOUR

AM 8:00 AM

PM 4:00 PM

SCOTT (north leg)

624	**50**	**278**	**296**	**TOTAL**		**990**
188	27	82	79	**PM**		698
436	23	196	217	**AM**		292

SHELTER ISLAND (west leg)

	TOTAL	**PM**	**AM**
	323	198	125
	42	33	9
	393	233	160
	52	40	12
	487	**306**	**181**

SHELTER ISLAND (east leg)

	AM	**PM**	**TOTAL**
	199	**431**	**630**
	102	255	**357**
	88	152	**240**
	9	24	**33**
	392	328	**720**

SCOTT (south leg)

217		**AM**	14	181	15	**210**
146		**PM**	19	410	16	**445**
363		**Total**	**33**	**591**	**31**	**655**

63789 1182

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
5/23/13	NORTH & SOUTH:	SHAFTER	LOCATION #:	3
THURSDAY	EAST & WEST:	SHELTER ISLAND	CONTROL:	2 WAY STOP NS

NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◄ W
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S ▼

	NORTHBOUND SHAFTER			SOUTHBOUND SHAFTER			EASTBOUND SHELTER ISLAND			WESTBOUND SHELTER ISLAND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	0	1	0	0	1	0	
AM 7:00 AM	2	0	0	1	0	0	0	51	2	2	41	0	99
7:15 AM	1	1	3	2	0	1	0	56	1	2	40	1	108
7:30 AM	1	0	1	2	0	0	0	57	2	3	47	1	114
7:45 AM	2	0	3	5	0	0	2	92	1	2	31	0	138
8:00 AM	0	1	3	4	0	0	0	77	3	3	40	1	132
8:15 AM	4	2	3	2	1	0	1	100	2	1	41	3	160
8:30 AM	0	2	7	5	1	0	2	110	0	3	59	0	189
8:45 AM	0	1	3	3	0	0	2	96	3	4	58	3	173
VOLUMES	10	7	23	24	2	1	7	639	14	20	357	9	1,113
APPROACH %	25%	18%	58%	89%	7%	4%	1%	97%	2%	5%	92%	2%	
APP/DEPART	40	/	23	27	/	36	660	/	686	386	/	368	0
BEGIN PEAK HR		8:00 AM											
VOLUMES	4	6	16	14	2	0	5	383	8	11	198	7	654
APPROACH %	15%	23%	62%	88%	13%	0%	1%	97%	2%	5%	92%	3%	
PEAK HR FACTOR		0.722			0.667			0.884			0.831		0.865
APP/DEPART	26	/	18	16	/	21	396	/	413	216	/	202	0
PM 4:00 PM	1	5	7	2	2	1	7	78	2	5	114	2	226
4:15 PM	3	0	7	3	0	2	2	78	0	1	83	8	187
4:30 PM	2	3	3	2	1	2	3	83	2	6	100	6	213
4:45 PM	1	2	3	3	3	0	5	65	4	6	130	6	228
5:00 PM	2	1	2	1	3	2	4	62	1	3	105	4	190
5:15 PM	1	3	2	4	0	0	6	95	1	3	91	6	212
5:30 PM	0	2	6	2	1	3	9	84	4	3	92	4	210
5:45 PM	1	2	7	1	0	1	5	100	2	3	106	4	232
VOLUMES	11	18	37	18	10	11	41	645	16	30	821	40	1,698
APPROACH %	17%	27%	56%	46%	26%	28%	6%	92%	2%	3%	92%	4%	
APP/DEPART	66	/	99	39	/	56	702	/	700	891	/	843	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	7	10	20	10	6	5	17	304	8	18	427	22	854
APPROACH %	19%	27%	54%	48%	29%	24%	5%	92%	2%	4%	91%	5%	
PEAK HR FACTOR		0.712			0.875			0.935			0.822		0.936
APP/DEPART	37	/	49	21	/	32	329	/	334	467	/	439	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0

SHAFTER

← NORTH SIDE →

SHELTER ISLAND WEST SIDE EAST SIDE **SHELTER ISLAND**

← SOUTH SIDE →

SHAFTER

	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

63789 1183

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS

POINT LOMA
PTD13-0524-01
ALL HOURS

SHAFTER (north leg)

66	**12**	**12**	**42**	**TOTAL**	**122**
39	11	10	18	**PM**	99
27	1	2	24	**AM**	23

SHELTER ISLAND (west leg)

TOTAL	**1,362**	**30**	**1,284**	**48**	**1,211**
PM	**702**	16	645	41	843
AM	**660**	14	639	7	368

SHELTER ISLAND (east leg)

AM	**386**	9	357	20	686
PM	**891**	40	821	30	700
TOTAL	**1,277**	**49**	**1,178**	**50**	**1,386**

SHAFTER (south leg)

36	**AM**	10	7	23	**40**
56	**PM**	11	18	37	**66**
92	**TOTAL**	**21**	**25**	**60**	**106**

PEAK HOUR
AM 8:00 AM

PM 4:00 PM

SHAFTER (north leg)

37	**5**	**8**	**24**	**TOTAL**	**67**
21	5	6	10	**PM**	49
16	0	2	14	**AM**	18

SHELTER ISLAND (west leg)

TOTAL	**725**	**16**	**687**	**22**	**641**
PM	**329**	8	304	17	439
AM	**396**	8	383	5	202

SHELTER ISLAND (east leg)

AM	**216**	7	198	11	413
PM	**467**	22	427	18	334
TOTAL	**683**	**29**	**625**	**29**	**747**

SHAFTER (south leg)

21	**AM**	4	6	16	**26**
32	**PM**	7	10	20	**37**
53	**Total**	**11**	**16**	**36**	**63**

63789 1184

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:				
5/23/13	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
THURSDAY	NORTH & SOUTH:	ANCHORAGE	LOCATION #:	4
	EAST & WEST:	SHELTER ISLAND	CONTROL:	1 WAY STOP NB

NOTES:

AM
PM
MD
OTHER
OTHER

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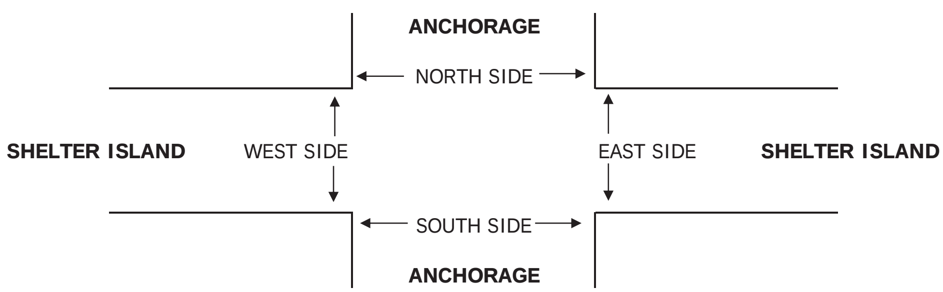
S ▼

		NORTHBOUND ANCHORAGE			SOUTHBOUND ANCHORAGE			EASTBOUND SHELTER ISLAND			WESTBOUND SHELTER ISLAND			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	0.5	X	0.5	X	X	X	X	1	0	0	1	X	
AM	7:00 AM	1		8					39	3	4	43		98
AM	7:15 AM	0		4					44	4	5	40		97
AM	7:30 AM	0		7					50	2	4	47		110
AM	7:45 AM	0		17					83	5	4	32		141
AM	8:00 AM	1		11					77	3	6	42		140
AM	8:15 AM	1		12					97	2	4	40		156
AM	8:30 AM	0		21					98	5	5	58		187
AM	8:45 AM	1		15					87	4	7	58		172
AM	VOLUMES	4	0	95	0	0	0	0	575	28	39	360	0	1,101
AM	APPROACH %	4%	0%	96%	0%	0%	0%	0%	95%	5%	10%	90%	0%	
AM	APP/DEPART	99	/	0	0	/	67	603	/	670	399	/	364	0
AM	BEGIN PEAK HR		8:00 AM											
AM	VOLUMES	3	0	59	0	0	0	0	359	14	22	198	0	655
AM	APPROACH %	5%	0%	95%	0%	0%	0%	0%	96%	4%	10%	90%	0%	
AM	PEAK HR FACTOR		0.738			0.000			0.905			0.846		0.876
AM	APP/DEPART	62	/	0	0	/	36	373	/	418	220	/	201	0
PM	4:00 PM	10		14					77	4	10	92		207
PM	4:15 PM	1		7					79	2	7	79		175
PM	4:30 PM	9		14					75	6	10	98		212
PM	4:45 PM	2		16					68	2	13	130		231
PM	5:00 PM	4		20					52	4	12	95		187
PM	5:15 PM	5		12					92	3	9	91		212
PM	5:30 PM	1		11					75	3	10	94		194
PM	5:45 PM	2		11					96	5	6	110		230
PM	VOLUMES	34	0	105	0	0	0	0	614	29	77	789	0	1,648
PM	APPROACH %	24%	0%	76%	0%	0%	0%	0%	95%	5%	9%	91%	0%	
PM	APP/DEPART	139	/	0	0	/	106	643	/	719	866	/	823	0
PM	BEGIN PEAK HR		4:30 PM											
PM	VOLUMES	20	0	62	0	0	0	0	287	15	44	414	0	842
PM	APPROACH %	24%	0%	76%	0%	0%	0%	0%	95%	5%	10%	90%	0%	
PM	PEAK HR FACTOR		0.854			0.000			0.795			0.801		0.911
PM	APP/DEPART	82	/	0	0	/	59	302	/	349	458	/	434	0

U-TURNS					
	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
AM	7:15 AM					0					0					0
AM	7:30 AM					0					0					0
AM	7:45 AM					0					0					0
AM	8:00 AM					0					0					0
AM	8:15 AM					0					0					0
AM	8:30 AM					0					0					0
AM	8:45 AM					0					0					0
AM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
PM	4:15 PM					0					0					0
PM	4:30 PM					0					0					0
PM	4:45 PM					0					0					0
PM	5:00 PM					0					0					0
PM	5:15 PM					0					0					0
PM	5:30 PM					0					0					0
PM	5:45 PM					0					0					0
PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

63789 1185

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS

POINT LOMA

PTD13-0524-01

ALL HOURS

ANCHORAGE (north leg)

TOTAL	**0**	**0**	**0**	**0**		**0**
PM	**0**	0	0	0		0
AM	**0**	0	0	0		0

SHELTER ISLAND (west leg)

TOTAL	**1,187**		**0**	**1,189**	**57**	**1,246**
PM	823		0	614	29	**643**
AM	364		0	575	28	**603**

SHELTER ISLAND (east leg)

AM	**399**	0	360	39		670
PM	**866**	0	789	77		719
TOTAL	**1,265**	**0**	**1,149**	**116**		**1,389**

ANCHORAGE (south leg)

AM	67		4	0	95	**99**
PM	106		34	0	105	**139**
TOTAL	**173**		**38**	**0**	**200**	**238**

PEAK HOUR

AM 8:00 AM

PM 4:30 PM

ANCHORAGE (north leg)

TOTAL	**0**	**0**	**0**	**0**		**0**
PM	**0**	0	0	0		0
AM	**0**	0	0	0		0

SHELTER ISLAND (west leg)

TOTAL	**635**		**0**	**646**	**29**	**675**
PM	434		0	287	15	**302**
AM	201		0	359	14	**373**

SHELTER ISLAND (east leg)

AM	**220**	0	198	22		418
PM	**458**	0	414	44		349
TOTAL	**678**	**0**	**612**	**66**		**767**

ANCHORAGE (south leg)

AM	36		3	0	59	**62**
PM	59		20	0	62	**82**
Total	**95**		**23**	**0**	**121**	**144**

63789 1186

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
5/23/13	NORTH & SOUTH:	ROSECRANS	LOCATION #:	5
THURSDAY	EAST & WEST:	HUGO-N. HARBOR	CONTROL:	SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

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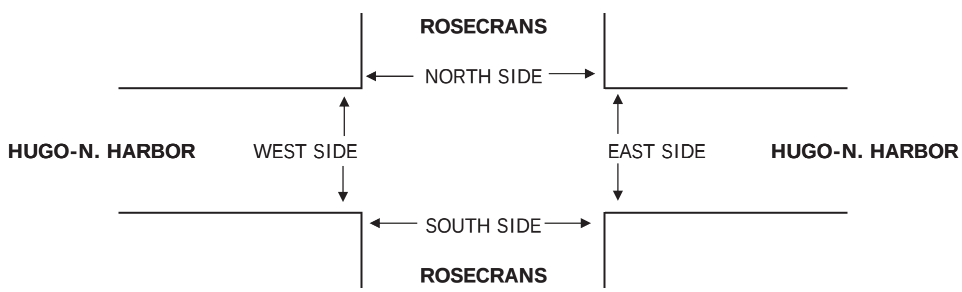
S ▼

	NORTHBOUND ROSECRANS			SOUTHBOUND ROSECRANS			EASTBOUND HUGO-N. HARBOR			WESTBOUND HUGO-N. HARBOR			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	0	1	0	0	1	1	
AM 7:00 AM	1	141	12	10	288	2	19	7	2	51	5	17	555
7:15 AM	0	136	9	11	305	3	16	9	5	64	15	22	595
7:30 AM	0	194	28	8	323	2	16	4	2	57	8	38	680
7:45 AM	0	198	16	9	308	3	26	13	2	49	3	39	666
8:00 AM	2	164	19	10	254	2	27	10	2	47	8	34	579
8:15 AM	0	172	18	12	284	0	9	4	3	49	7	56	614
8:30 AM	0	169	18	12	255	7	9	6	1	34	4	47	562
8:45 AM	1	155	20	8	231	2	14	6	2	42	5	42	528
VOLUMES	4	1,329	140	80	2,248	21	136	59	19	393	55	295	4,779
APPROACH %	0%	90%	10%	3%	96%	1%	64%	28%	9%	53%	7%	40%	
APP/DEPART	1,473	/	1,760	2,349	/	2,660	214	/	279	743	/	80	0
BEGIN PEAK HR		7:30 AM											
VOLUMES	2	728	81	39	1,169	7	78	31	9	202	26	167	2,539
APPROACH %	0%	90%	10%	3%	96%	1%	66%	26%	8%	51%	7%	42%	
PEAK HR FACTOR		0.913			0.912			0.720			0.882		0.933
APP/DEPART	811	/	973	1,215	/	1,380	118	/	151	395	/	35	0
PM 4:00 PM	1	287	31	12	245	6	14	13	0	85	34	52	780
4:15 PM	1	334	53	17	178	2	12	4	4	100	30	13	748
4:30 PM	2	308	28	7	237	4	13	7	0	76	10	34	726
4:45 PM	2	337	41	10	225	1	16	8	2	80	17	25	764
5:00 PM	2	298	35	10	211	3	19	8	2	72	9	39	708
5:15 PM	1	320	38	12	254	2	14	5	0	43	7	23	719
5:30 PM	6	306	33	13	211	1	25	7	1	26	4	32	665
5:45 PM	4	267	28	7	226	4	12	2	0	37	9	31	627
VOLUMES	19	2,457	287	88	1,787	23	125	54	9	519	120	249	5,737
APPROACH %	1%	89%	10%	5%	94%	1%	66%	29%	5%	58%	14%	28%	
APP/DEPART	2,763	/	2,831	1,898	/	2,315	188	/	429	888	/	162	0
BEGIN PEAK HR		4:00 PM											
VOLUMES	6	1,266	153	46	885	13	55	32	6	341	91	124	3,018
APPROACH %	0%	89%	11%	5%	94%	1%	59%	34%	6%	61%	16%	22%	
PEAK HR FACTOR		0.918			0.897			0.861			0.813		0.967
APP/DEPART	1,425	/	1,445	944	/	1,232	93	/	231	556	/	110	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

63789 1187

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS

ROSECRANS

TOTAL	**4,247**	**44**	**4,035**	**168**	**4,591**
PM	**1,898**	23	1,787	88	2,831
AM	**2,349**	21	2,248	80	1,760

HUGO-N. HARBOR (west)

TOTAL	**242**	**261**	**113**	**28**	**402**
PM	162	125	54	9	**188**
AM	80	136	59	19	**214**

POINT LOMA

PTD13-0524-01

ALL HOURS

HUGO-N. HARBOR (east)

AM	**743**	295	55	393	279
PM	**888**	249	120	519	429
TOTAL	**1,631**	**544**	**175**	**912**	**708**

ROSECRANS

AM	2,660	4	1,329	140	**1,473**
PM	2,315	19	2,457	287	**2,763**
TOTAL	**4,975**	**23**	**3,786**	**427**	**4,236**

ROSECRANS

TOTAL	**2,159**	**20**	**2,054**	**85**	**2,418**
PM	**944**	13	885	46	1,445
AM	**1,215**	7	1,169	39	973

HUGO-N. HARBOR (west)

TOTAL	**145**	**133**	**63**	**15**	**211**
PM	110	55	32	6	**93**
AM	35	78	31	9	**118**

PEAK HOUR

AM 7:30 AM

PM 4:00 PM

HUGO-N. HARBOR (east)

AM	**395**	167	26	202	151
PM	**556**	124	91	341	231
TOTAL	**951**	**291**	**117**	**543**	**382**

ROSECRANS

AM	1,380	2	728	81	**811**
PM	1,232	6	1,266	153	**1,425**
Total	**2,612**	**8**	**1,994**	**234**	**2,236**

63789 1188

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
5/23/13	NORTH & SOUTH:	ROSECRANS	LOCATION #:	6
THURSDAY	EAST & WEST:	NIMITZ	CONTROL:	SIGNAL

NOTES:

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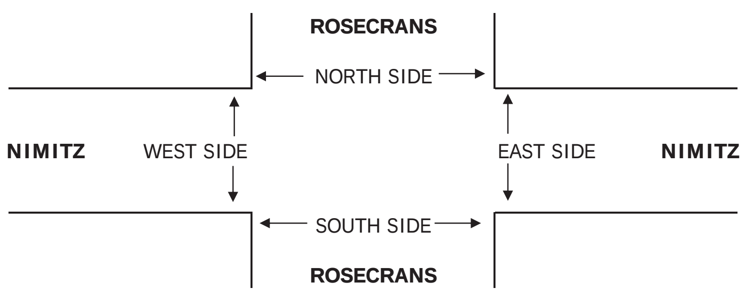
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	ROSECRANS			ROSECRANS			NIMITZ			NIMITZ			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	1	2	0	1	2	1	
AM													
7:00 AM	37	145	5	39	279	12	49	67	44	9	23	14	723
7:15 AM	58	144	3	22	275	13	76	88	52	8	10	9	758
7:30 AM	58	184	4	41	274	8	66	85	52	2	6	10	790
7:45 AM	48	227	4	19	264	12	87	76	45	6	8	16	812
8:00 AM	52	167	7	31	224	15	81	68	63	4	6	7	725
8:15 AM	61	156	4	30	255	16	87	74	57	3	6	8	757
8:30 AM	69	161	5	40	251	13	69	90	53	5	7	3	766
8:45 AM	73	180	4	33	241	13	58	87	52	6	10	4	761
VOLUMES	456	1,364	36	255	2,063	102	573	635	418	43	76	71	6,092
APPROACH %	25%	73%	2%	11%	85%	4%	35%	39%	26%	23%	40%	37%	
APP/DEPART	1,856	/	2,008	2,420	/	2,524	1,626	/	926	190	/	634	0
BEGIN PEAK HR		7:15 AM											
VOLUMES	216	722	18	113	1,037	48	310	317	212	20	30	42	3,085
APPROACH %	23%	76%	2%	9%	87%	4%	37%	38%	25%	22%	33%	46%	
PEAK HR FACTOR		0.857			0.927			0.971			0.767		0.950
APP/DEPART	956	/	1,074	1,198	/	1,269	839	/	448	92	/	294	0
PM													
4:00 PM	45	299	5	28	254	29	78	72	37	8	40	41	936
4:15 PM	85	281	7	39	198	34	70	59	43	14	61	49	940
4:30 PM	86	293	13	35	251	37	86	57	39	10	66	27	1,000
4:45 PM	85	286	9	34	231	28	58	56	47	8	76	42	960
5:00 PM	86	288	5	41	221	40	56	58	37	9	103	45	989
5:15 PM	75	311	6	45	242	39	57	54	48	11	84	37	1,009
5:30 PM	60	224	5	37	183	31	63	68	45	6	61	44	827
5:45 PM	71	187	6	37	245	24	58	82	43	6	10	4	773
VOLUMES	593	2,169	56	296	1,825	262	526	506	339	72	501	289	7,434
APPROACH %	21%	77%	2%	12%	77%	11%	38%	37%	25%	8%	58%	34%	
APP/DEPART	2,818	/	2,984	2,383	/	2,236	1,371	/	858	862	/	1,356	0
BEGIN PEAK HR		4:30 PM											
VOLUMES	332	1,178	33	155	945	144	257	225	171	38	329	151	3,958
APPROACH %	22%	76%	2%	12%	76%	12%	39%	34%	26%	7%	64%	29%	
PEAK HR FACTOR		0.984			0.954			0.897			0.825		0.981
APP/DEPART	1,543	/	1,586	1,244	/	1,154	653	/	413	518	/	805	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

63789　1189

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS

POINT LOMA

PTD13-0524-01

ALL HOURS

ROSECRANS (north leg)

TOTAL	**4,803**	**364**	**3,888**	**551**	**4,992**
PM	**2,383**	262	1,825	296	2,984
AM	**2,420**	102	2,063	255	2,008

NIMITZ (west leg)

	TOTAL	PM	AM
	1,990	1,356	634
	1,099	526	573
	1,141	506	635
	757	339	418
	2,997	**1,371**	**1,626**

NIMITZ (east leg)

	AM	PM	TOTAL
	190	**862**	**1,052**
	71	289	**360**
	76	501	**577**
	43	72	**115**
	926	858	**1,784**

ROSECRANS (south leg)

2,524	AM	456	1,364	36	**1,856**
2,236	PM	593	2,169	56	**2,818**
4,760	TOTAL	**1,049**	**3,533**	**92**	**4,674**

PEAK HOUR

AM 7:15 AM

PM 4:30 PM

ROSECRANS (north leg)

TOTAL	**2,442**	**192**	**1,982**	**268**	**2,660**
PM	**1,244**	144	945	155	1,586
AM	**1,198**	48	1,037	113	1,074

NIMITZ (west leg)

	TOTAL	PM	AM
	1,099	805	294
	567	257	310
	542	225	317
	383	171	212
	1,492	**653**	**839**

NIMITZ (east leg)

	AM	PM	TOTAL
	92	**518**	**610**
	42	151	**193**
	30	329	**359**
	20	38	**58**
	448	413	**861**

ROSECRANS (south leg)

1,269	AM	216	722	18	**956**
1,154	PM	332	1,178	33	**1,543**
2,423	Total	**548**	**1,900**	**51**	**2,499**

63789 1190

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
5/23/13	NORTH & SOUTH:	ROSECRANS	LOCATION #:	7
THURSDAY	EAST & WEST:	LYTTON	CONTROL:	SIGNAL

NOTES:

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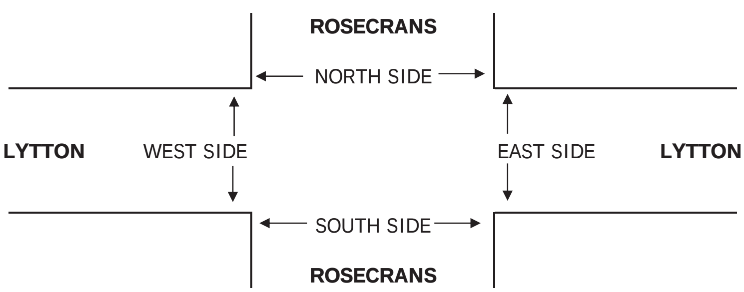
		NORTHBOUND ROSECRANS			SOUTHBOUND ROSECRANS			EASTBOUND LYTTON			WESTBOUND LYTTON			
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
	LANES:	1	3	0	2	2	1	1	0.5	0.5	2	1	1	
AM	7:00 AM	5	191	105	23	282	59	91	65	3	100	88	8	1,020
AM	7:15 AM	0	199	85	26	363	71	98	91	3	113	91	11	1,151
AM	7:30 AM	3	222	108	25	332	36	94	82	5	115	63	30	1,115
AM	7:45 AM	1	249	96	31	318	39	106	87	1	114	69	30	1,141
AM	8:00 AM	1	283	96	45	387	47	81	53	0	129	50	21	1,193
AM	8:15 AM	1	333	111	42	360	61	67	51	3	133	61	25	1,248
AM	8:30 AM	2	287	96	39	336	49	78	79	2	126	58	27	1,179
AM	8:45 AM	1	232	80	24	295	52	68	61	1	127	56	20	1,017
AM	VOLUMES	14	1,996	777	255	2,673	414	683	569	18	957	536	172	9,064
AM	APPROACH %	1%	72%	28%	8%	80%	12%	54%	45%	1%	57%	32%	10%	
AM	APP/DEPART	2,787	/	2,851	3,342	/	3,648	1,270	/	1,601	1,665	/	964	0
AM	BEGIN PEAK HR		7:45 AM											
AM	VOLUMES	5	1,152	399	157	1,401	196	332	270	6	502	238	103	4,761
AM	APPROACH %	0%	74%	26%	9%	80%	11%	55%	44%	1%	60%	28%	12%	
AM	PEAK HR FACTOR		0.874			0.915			0.784			0.962		0.954
AM	APP/DEPART	1,556	/	1,587	1,754	/	1,909	608	/	826	843	/	439	0
PM	4:00 PM	4	462	167	25	288	68	67	65	1	101	66	55	1,369
PM	4:15 PM	6	363	121	31	291	99	62	74	3	111	96	39	1,296
PM	4:30 PM	4	384	128	41	296	68	54	61	0	110	99	41	1,286
PM	4:45 PM	7	382	130	45	306	25	70	75	5	100	78	52	1,275
PM	5:00 PM	5	370	119	41	316	70	59	74	3	108	92	47	1,304
PM	5:15 PM	1	352	101	48	306	74	60	73	4	108	112	44	1,283
PM	5:30 PM	6	426	106	33	351	74	41	40	2	98	85	47	1,309
PM	5:45 PM	1	294	89	44	299	93	40	55	6	76	81	34	1,112
PM	VOLUMES	34	3,033	961	308	2,453	571	453	517	24	812	709	359	10,234
PM	APPROACH %	1%	75%	24%	9%	74%	17%	46%	52%	2%	43%	38%	19%	
PM	APP/DEPART	4,028	/	3,845	3,332	/	3,289	994	/	1,786	1,880	/	1,314	0
PM	BEGIN PEAK HR		4:00 PM											
PM	VOLUMES	21	1,591	546	142	1,181	260	253	275	9	422	339	187	5,226
PM	APPROACH %	1%	74%	25%	9%	75%	16%	47%	51%	2%	45%	36%	20%	
PM	PEAK HR FACTOR		0.852			0.940			0.895			0.948		0.954
PM	APP/DEPART	2,158	/	2,031	1,583	/	1,612	537	/	963	948	/	620	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM		0			0
7:15 AM		1			1
7:30 AM		0			0
7:45 AM		0			0
8:00 AM		0			0
8:15 AM		2			2
8:30 AM		0			0
8:45 AM		1			1
AM TOTAL	0	4	0	0	4
4:00 PM		1			1
4:15 PM		4			4
4:30 PM		4			4
4:45 PM		4			4
5:00 PM		6			6
5:15 PM		1			1
5:30 PM		2			2
5:45 PM		3			3
PM TOTAL	0	25	0	0	25



PEDESTRIAN CROSSINGS

		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
AM	7:15 AM					0
AM	7:30 AM					0
AM	7:45 AM					0
AM	8:00 AM					0
AM	8:15 AM					0
AM	8:30 AM					0
AM	8:45 AM					0
AM	TOTAL	0	0	0	0	0
PM	4:00 PM					0
PM	4:15 PM					0
PM	4:30 PM					0
PM	4:45 PM					0
PM	5:00 PM					0
PM	5:15 PM					0
PM	5:30 PM					0
PM	5:45 PM					0
PM	TOTAL	0	0	0	0	0

PEDESTRIAN ACTIVATIONS

		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL
AM	7:00 AM					0
AM	7:15 AM					0
AM	7:30 AM					0
AM	7:45 AM					0
AM	8:00 AM					0
AM	8:15 AM					0
AM	8:30 AM					0
AM	8:45 AM					0
AM	TOTAL	0	0	0	0	0
PM	4:00 PM					0
PM	4:15 PM					0
PM	4:30 PM					0
PM	4:45 PM					0
PM	5:00 PM					0
PM	5:15 PM					0
PM	5:30 PM					0
PM	5:45 PM					0
PM	TOTAL	0	0	0	0	0

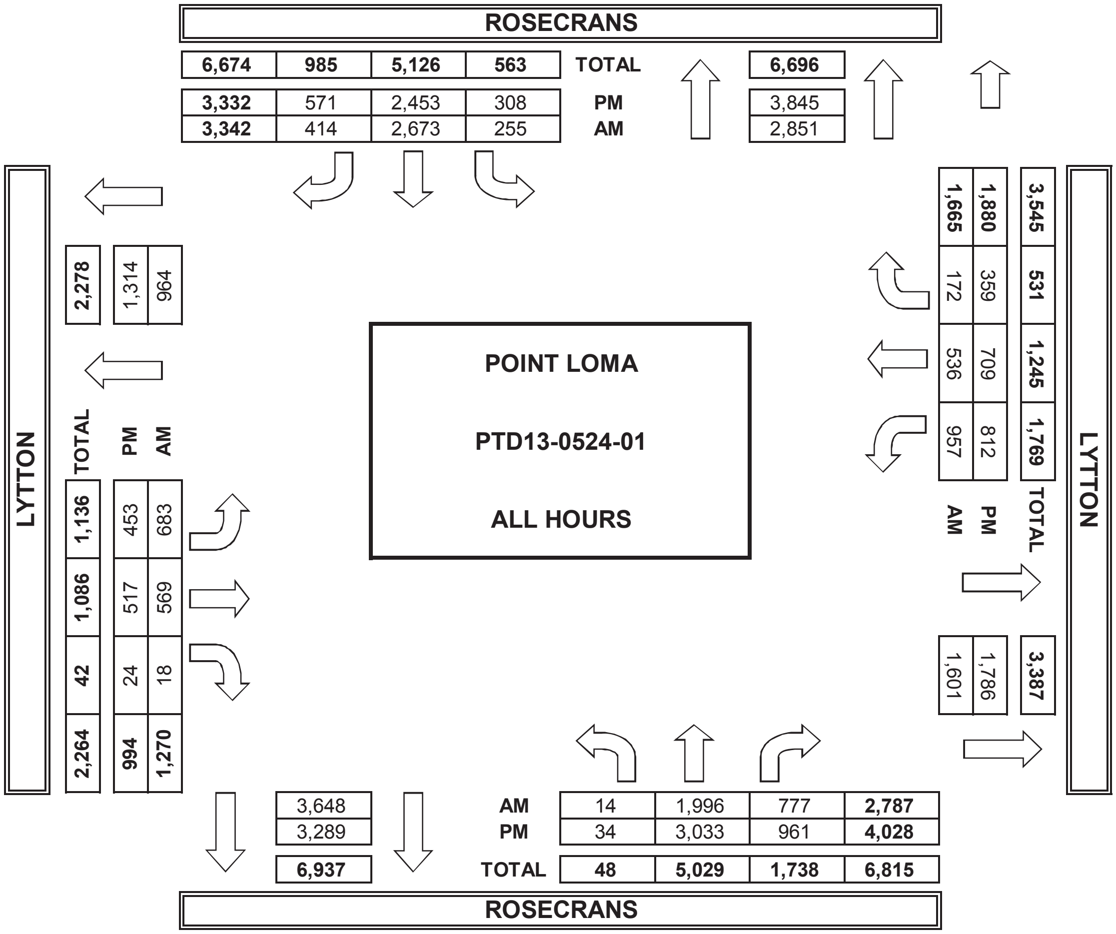
BICYCLE CROSSINGS

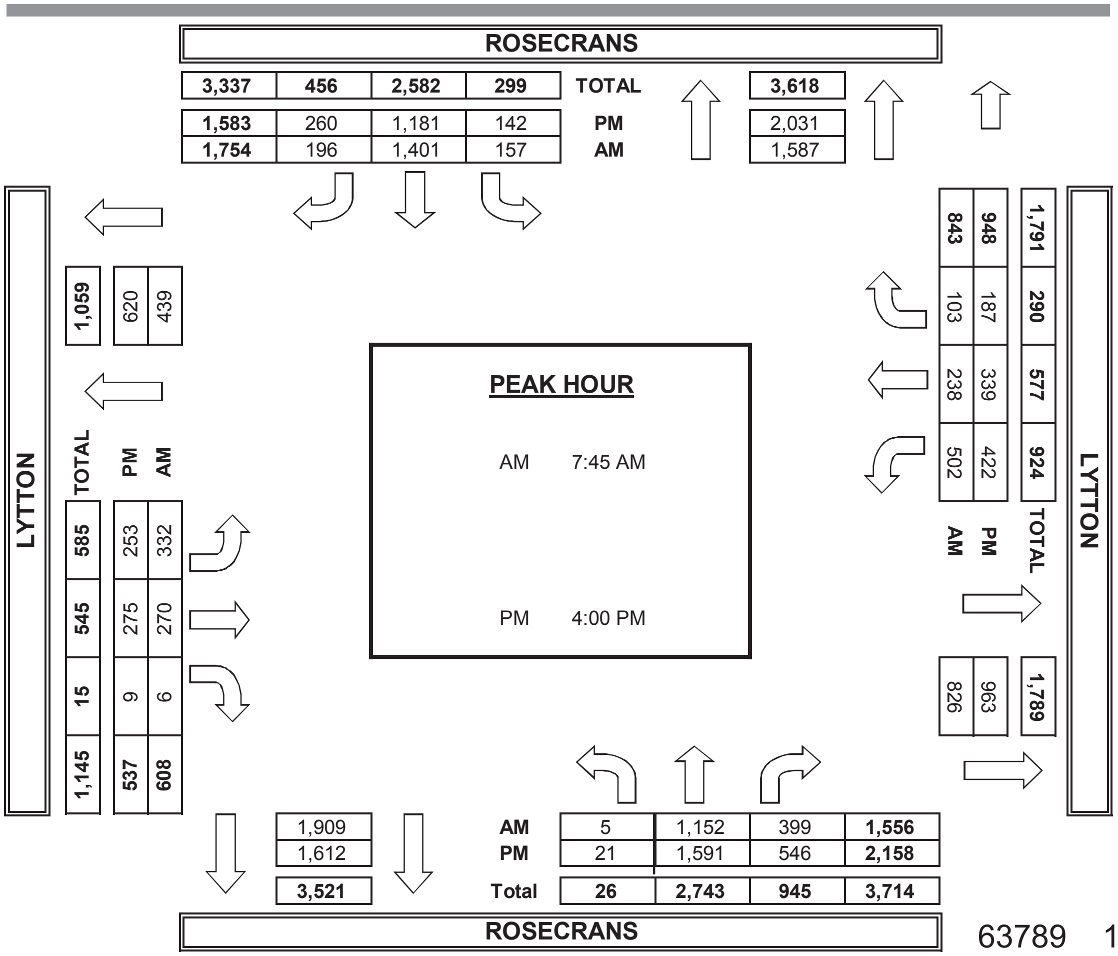
		NS	SS	ES	WS	TOTAL
AM	7:00 AM					0
AM	7:15 AM					0
AM	7:30 AM					0
AM	7:45 AM					0
AM	8:00 AM					0
AM	8:15 AM					0
AM	8:30 AM					0
AM	8:45 AM					0
AM	TOTAL	0	0	0	0	0
PM	4:00 PM					0
PM	4:15 PM					0
PM	4:30 PM					0
PM	4:45 PM					0
PM	5:00 PM					0
PM	5:15 PM					0
PM	5:30 PM					0
PM	5:45 PM					0
PM	TOTAL	0	0	0	0	0

63789 1191

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS





INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:			
5/23/13 THURSDAY	LOCATION: POINT LOMA		PROJECT #: PTD13-0524-01
	NORTH & SOUTH: ROSECRANS		LOCATION #: 8
	EAST & WEST: MIDWAY		CONTROL: SIGNAL

NOTES:

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OTHER

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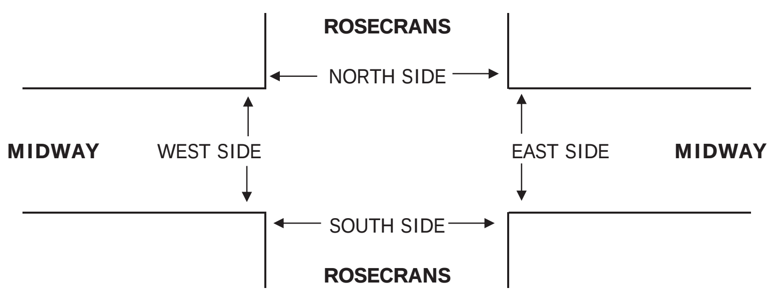
		NORTHBOUND ROSECRANS			SOUTHBOUND ROSECRANS			EASTBOUND MIDWAY			WESTBOUND MIDWAY				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	3	0	1	3	0	2	2	1	1	2	1		X	X	X	X	
AM	7:00 AM	27	258	9	41	385	24	40	47	40	27	65	14	977	1	0	0	0	1
AM	7:15 AM	22	292	11	36	412	40	50	62	33	17	69	17	1,061	1	1	0	0	2
AM	7:30 AM	34	313	20	48	334	44	43	79	39	17	74	23	1,068	4	1	1	0	6
AM	7:45 AM	34	312	22	42	367	50	52	70	44	16	77	27	1,113	4	3	1	0	8
AM	8:00 AM	52	328	6	27	450	49	35	54	43	17	90	24	1,175	2	1	9	0	12
AM	8:15 AM	63	344	8	58	374	68	50	64	48	13	102	20	1,212	3	2	0	0	5
AM	8:30 AM	82	344	11	45	352	67	47	82	41	29	125	46	1,271	4	1	0	0	5
AM	8:45 AM	61	275	9	42	369	56	43	63	43	20	111	28	1,120	2	1	0	0	3
AM	VOLUMES	375	2,466	96	339	3,043	398	360	521	331	156	713	199	8,997	21	10	11	0	42
AM	APPROACH %	13%	84%	3%	9%	81%	11%	30%	43%	27%	15%	67%	19%						
AM	APP/DEPART	2,937	/	3,025	3,780	/	3,530	1,212	/	956	1,068	/	1,486	0					
AM	BEGIN PEAK HR		8:00 AM																
AM	VOLUMES	258	1,291	34	172	1,545	240	175	263	175	79	428	118	4,778					
AM	APPROACH %	16%	82%	2%	9%	79%	12%	29%	43%	29%	13%	68%	19%						
AM	PEAK HR FACTOR		0.906			0.930			0.901			0.781		0.940					
AM	APP/DEPART	1,583	/	1,584	1,957	/	1,799	613	/	469	625	/	926	0					
PM	4:00 PM	97	495	18	92	306	80	86	116	63	28	124	61	1,566	11	0	0	0	11
PM	4:15 PM	96	477	9	114	326	72	65	110	73	31	134	75	1,582	2	2	2	1	7
PM	4:30 PM	95	419	20	83	340	85	79	140	58	30	143	99	1,591	16	6	2	0	24
PM	4:45 PM	96	513	18	100	334	94	62	124	61	46	163	68	1,679	6	8	0	0	14
PM	5:00 PM	114	449	26	102	346	82	72	125	55	33	138	75	1,617	3	5	2	0	10
PM	5:15 PM	94	428	17	112	377	99	75	134	64	32	151	77	1,660	9	0	2	1	12
PM	5:30 PM	91	406	15	87	353	84	80	155	69	29	134	75	1,578	8	3	2	0	13
PM	5:45 PM	95	410	19	86	360	76	88	114	65	26	131	72	1,542	0	7	2	0	9
PM	VOLUMES	778	3,597	142	776	2,742	672	607	1,018	508	255	1,118	602	12,815	55	31	12	2	100
PM	APPROACH %	17%	80%	3%	19%	65%	16%	28%	48%	24%	13%	57%	30%						
PM	APP/DEPART	4,517	/	4,806	4,190	/	3,505	2,133	/	1,936	1,975	/	2,568	0					
PM	BEGIN PEAK HR		4:30 PM																
PM	VOLUMES	399	1,809	81	397	1,397	360	288	523	238	141	595	319	6,547					
PM	APPROACH %	17%	79%	4%	18%	65%	17%	27%	50%	23%	13%	56%	30%						
PM	PEAK HR FACTOR		0.913			0.916			0.947			0.952		0.975					
PM	APP/DEPART	2,289	/	2,416	2,154	/	1,776	1,049	/	1,001	1,055	/	1,354	0					



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
AM	7:15 AM					0					0					0
AM	7:30 AM					0					0					0
AM	7:45 AM					0					0					0
AM	8:00 AM					0					0					0
AM	8:15 AM					0					0					0
AM	8:30 AM					0					0					0
AM	8:45 AM					0					0					0
AM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
PM	4:15 PM					0					0					0
PM	4:30 PM					0					0					0
PM	4:45 PM					0					0					0
PM	5:00 PM					0					0					0
PM	5:15 PM					0					0					0
PM	5:30 PM					0					0					0
PM	5:45 PM					0					0					0
PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

63789 1193

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS

POINT LOMA

PTD13-0524-01

ALL HOURS

ROSECRANS (north leg)

7,970	**1,070**	**5,785**	**1,115**	**TOTAL**	**7,831**
4,190	672	2,742	776	**PM**	4,806
3,780	398	3,043	339	**AM**	3,025

MIDWAY (east leg)

AM	**1,068**	199	713	156
PM	**1,975**	602	1,118	255
TOTAL	**3,043**	**801**	**1,831**	**411**

AM	956
PM	1,936
TOTAL	**2,892**

MIDWAY (west leg)

TOTAL	**4,054**
PM	2,568
AM	1,486

TOTAL	**967**	**1,539**	**839**	**3,345**
PM	607	1,018	508	**2,133**
AM	360	521	331	**1,212**

ROSECRANS (south leg)

3,530	**AM**	375	2,466	96	**2,937**
3,505	**PM**	778	3,597	142	**4,517**
7,035	**TOTAL**	**1,153**	**6,063**	**238**	**7,454**

PEAK HOUR

AM 8:00 AM

PM 4:30 PM

ROSECRANS (north leg)

4,111	**600**	**2,942**	**569**	**TOTAL**	**4,000**
2,154	360	1,397	397	**PM**	2,416
1,957	240	1,545	172	**AM**	1,584

MIDWAY (east leg)

AM	**625**	118	428	79
PM	**1,055**	319	595	141
TOTAL	**1,680**	**437**	**1,023**	**220**

AM	469
PM	1,001
TOTAL	**1,470**

MIDWAY (west leg)

TOTAL	**2,280**
PM	1,354
AM	926

TOTAL	**463**	**786**	**413**	**1,662**
PM	288	523	238	**1,049**
AM	175	263	175	**613**

ROSECRANS (south leg)

1,799	**AM**	258	1,291	34	**1,583**
1,776	**PM**	399	1,809	81	**2,289**
3,575	**Total**	**657**	**3,100**	**115**	**3,872**

63789 1194

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
5/23/13	NORTH & SOUTH:	BARNETT	LOCATION #:	9
THURSDAY	EAST & WEST:	MIDWAY	CONTROL:	SIGNAL

NOTES:

AM
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MD
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OTHER

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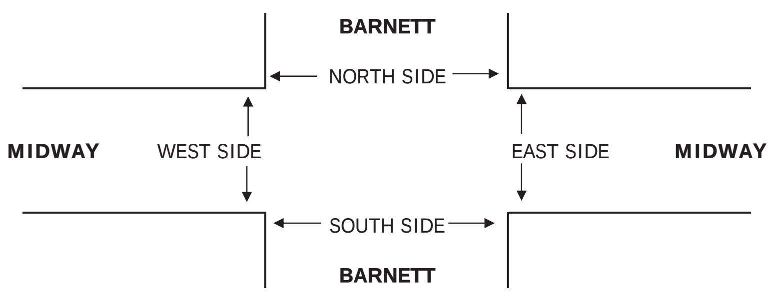
	NORTHBOUND BARNETT			SOUTHBOUND BARNETT			EASTBOUND MIDWAY			WESTBOUND MIDWAY			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	2	X	X	2	2	2	X	1	X	X	X	
AM													
7:00 AM		193			351	95	61		18				718
7:15 AM		216			357	113	72		11				769
7:30 AM		232			274	131	89		19				745
7:45 AM		200			337	144	104		9				794
8:00 AM		190			347	117	92		15				761
8:15 AM		254			329	134	77		21				815
8:30 AM		233			261	145	111		18				768
8:45 AM		189			262	147	98		33				729
VOLUMES	0	1,707	0	0	2,518	1,026	704	0	144	0	0	0	6,099
APPROACH %	0%	100%	0%	0%	71%	29%	83%	0%	17%	0%	0%	0%	
APP/DEPART	1,707	/	2,411	3,544	/	2,662	848	/	0	0	/	1,026	0
BEGIN PEAK HR		7:45 AM											
VOLUMES	0	877	0	0	1,274	540	384	0	63	0	0	0	3,138
APPROACH %	0%	100%	0%	0%	70%	30%	86%	0%	14%	0%	0%	0%	
PEAK HR FACTOR		0.863			0.943			0.866			0.000		0.963
APP/DEPART	877	/	1,261	1,814	/	1,337	447	/	0	0	/	540	0
PM													
4:00 PM		330			276	179	158		29				972
4:15 PM		310			266	163	163		38				940
4:30 PM		301			240	186	185		26				938
4:45 PM		338			277	195	190		22				1,022
5:00 PM		306			276	181	194		29				986
5:15 PM		273			272	211	225		44				1,025
5:30 PM		257			242	164	185		36				884
5:45 PM		211			224	179	164		19				797
VOLUMES	0	2,326	0	0	2,073	1,458	1,464	0	243	0	0	0	7,564
APPROACH %	0%	100%	0%	0%	59%	41%	86%	0%	14%	0%	0%	0%	
APP/DEPART	2,326	/	3,790	3,531	/	2,316	1,707	/	0	0	/	1,458	0
BEGIN PEAK HR		4:30 PM											
VOLUMES	0	1,218	0	0	1,065	773	794	0	121	0	0	0	3,971
APPROACH %	0%	100%	0%	0%	58%	42%	87%	0%	13%	0%	0%	0%	
PEAK HR FACTOR		0.901			0.951			0.850			0.000		0.969
APP/DEPART	1,218	/	2,012	1,838	/	1,186	915	/	0	0	/	773	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0



		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

63789 1195

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS

POINT LOMA
PTD13-0524-01
ALL HOURS

BARNETT (north)

7,075	**2,484**	**4,591**	**0**	**TOTAL**
3,531	1,458	2,073	0	**PM**
3,544	1,026	2,518	0	**AM**

6,201	TOTAL
3,790	PM
2,411	AM

MIDWAY (west)

	TOTAL	PM	AM
	2,484	1,458	1,026
	2,168	1,464	704
	0	0	0
	387	243	144
	2,555	**1,707**	**848**

MIDWAY (east)

	AM	PM	TOTAL
	0	**0**	**0**
	0	0	**0**
	0	0	**0**
	0	0	**0**
	0	0	**0**

BARNETT (south)

2,662	AM
2,316	PM
4,978	TOTAL

AM	0	1,707	0	**1,707**
PM	0	2,326	0	**2,326**
TOTAL	**0**	**4,033**	**0**	**4,033**

PEAK HOUR
AM 7:45 AM

PM 4:30 PM

BARNETT (north)

3,652	**1,313**	**2,339**	**0**	**TOTAL**
1,838	773	1,065	0	**PM**
1,814	540	1,274	0	**AM**

3,273	TOTAL
2,012	PM
1,261	AM

MIDWAY (west)

	TOTAL	PM	AM
	1,313	773	540
	1,178	794	384
	0	0	0
	184	121	63
	1,362	**915**	**447**

MIDWAY (east)

	AM	PM	TOTAL
	0	**0**	**0**
	0	0	**0**
	0	0	**0**
	0	0	**0**
	0	0	**0**

BARNETT (south)

1,337	AM
1,186	PM
2,523	Total

AM	0	877	0	**877**
PM	0	1,218	0	**1,218**
Total	**0**	**2,095**	**0**	**2,095**

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
5/23/13	NORTH & SOUTH:	ROSECRANS-CAMINO DEL RIO	LOCATION #:	10
THURSDAY	EAST & WEST:	SPORTS AREAN - ROSECRANS	CONTROL:	SIGNAL

NOTES:

AM
PM
MD
OTHER
OTHER

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	NORTHBOUND ROSECRANS-CAMINO DEL RIO			SOUTHBOUND ROSECRANS-CAMINO DEL RIO			EASTBOUND SPORTS AREAN - ROSECRANS			WESTBOUND SPORTS AREAN - ROSECRANS			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	1	X	3	1	1	1.5	1.5	1.5	1	0.5	
AM													
7:00 AM	13	250	43		425	49	48	24	18	26	39	1	936
7:15 AM	23	284	71		431	78	56	36	16	35	42	2	1,074
7:30 AM	20	307	65		382	62	68	44	14	40	49	3	1,054
7:45 AM	16	305	77		442	71	47	34	19	32	40	4	1,087
8:00 AM	33	313	54		462	83	66	44	24	39	46	0	1,164
8:15 AM	24	321	82		417	94	61	45	30	41	46	5	1,166
8:30 AM	42	336	77		366	79	55	38	36	24	52	1	1,106
8:45 AM	27	253	72		391	86	57	49	32	46	46	5	1,064
VOLUMES	198	2,369	541	0	3,316	602	458	314	189	283	360	21	8,651
APPROACH %	6%	76%	17%	0%	85%	15%	48%	33%	20%	43%	54%	3%	
APP/DEPART	3,108	/	2,848	3,918	/	3,788	961	/	855	664	/	1,160	0
BEGIN PEAK HR		7:45 AM											
VOLUMES	115	1,275	290	0	1,687	327	229	161	109	136	184	10	4,523
APPROACH %	7%	76%	17%	0%	84%	16%	46%	32%	22%	41%	56%	3%	
PEAK HR FACTOR		0.923			0.924			0.917			0.897		0.970
APP/DEPART	1,680	/	1,514	2,014	/	1,932	499	/	451	330	/	626	0
PM													
4:00 PM	69	478	113		371	144	98	83	50	45	71	6	1,528
4:15 PM	70	440	113		403	141	83	90	56	52	76	6	1,530
4:30 PM	72	416	107		379	141	115	101	67	48	75	7	1,528
4:45 PM	98	428	115		409	175	110	78	53	48	86	3	1,603
5:00 PM	75	427	96		434	157	140	95	60	61	81	4	1,630
5:15 PM	81	397	115		424	155	117	96	61	62	99	4	1,611
5:30 PM	82	378	110		395	177	129	116	62	47	97	4	1,597
5:45 PM	99	374	114		397	159	143	120	73	55	82	10	1,626
VOLUMES	646	3,338	883	0	3,212	1,249	935	779	482	418	667	44	12,653
APPROACH %	13%	69%	18%	0%	72%	28%	43%	35%	22%	37%	59%	4%	
APP/DEPART	4,867	/	4,317	4,461	/	4,112	2,196	/	1,662	1,129	/	2,562	0
BEGIN PEAK HR		5:00 PM											
VOLUMES	337	1,576	435	0	1,650	648	529	427	256	225	359	22	6,464
APPROACH %	14%	67%	19%	0%	72%	28%	44%	35%	21%	37%	59%	4%	
PEAK HR FACTOR		0.982			0.972			0.902			0.918		0.991
APP/DEPART	2,348	/	2,127	2,298	/	2,131	1,212	/	862	606	/	1,344	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM	0	0	0	0	0
7:15 AM	3	0	0	0	3
7:30 AM	1	1	0	0	2
7:45 AM	1	0	1	0	2
8:00 AM	4	0	0	0	4
8:15 AM	2	0	0	0	2
8:30 AM	2	0	0	0	2
8:45 AM	3	0	0	1	4
AM total	16	1	1	1	19
4:00 PM	7	0	2	0	9
4:15 PM	5	0	0	0	5
4:30 PM	9	0	0	0	9
4:45 PM	11	0	2	0	13
5:00 PM	15	0	0	0	15
5:15 PM	13	0	3	0	16
5:30 PM	10	0	1	0	11
5:45 PM	18	0	0	1	19
PM total	88	0	8	1	97

ROSECRANS-CAMINO DEL RIO

NORTH SIDE

SPORTS AREAN - ROSECRANS WEST SIDE EAST SIDE **SPORTS AREAN - ROSECRANS**

SOUTH SIDE

ROSECRANS-CAMINO DEL RIO

	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM															
7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM															
4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

63789 1197

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS

ROSECRANS-CAMINO DEL RIO

8,379	1,851	6,528	0	TOTAL
4,461	1,249	3,212	0	PM
3,918	602	3,316	0	AM

TOTAL	7,165
PM	4,317
AM	2,848

SPORTS AREAN - ROSECRANS

TOTAL	3,157	671	1,093	1,393
PM	2,196	482	779	935
AM	961	189	314	458

TOTAL	3,722
PM	2,562
AM	1,160

POINT LOMA

PTD13-0524-01

ALL HOURS

SPORTS AREAN - ROSECRANS

AM	664	21	360	283
PM	1,129	44	667	418
TOTAL	1,793	65	1,027	701

AM	855
PM	1,662
TOTAL	2,517

AM	198	2,369	541	3,108
PM	646	3,338	883	4,867
TOTAL	844	5,707	1,424	7,975

AM	3,788
PM	4,112
TOTAL	7,900

ROSECRANS-CAMINO DEL RIO

ROSECRANS-CAMINO DEL RIO

4,312	975	3,337	0	TOTAL
2,298	648	1,650	0	PM
2,014	327	1,687	0	AM

TOTAL	3,641
PM	2,127
AM	1,514

SPORTS AREAN - ROSECRANS

TOTAL	1,711	365	588	758
PM	1,212	256	427	529
AM	499	109	161	229

TOTAL	1,970
PM	1,344
AM	626

PEAK HOUR

AM 7:45 AM

PM 5:00 PM

SPORTS AREAN - ROSECRANS

AM	330	10	184	136
PM	606	22	359	225
TOTAL	936	32	543	361

AM	451
PM	862
TOTAL	1,313

AM	115	1,275	290	1,680
PM	337	1,576	435	2,348
Total	452	2,851	725	4,028

AM	1,932
PM	2,131
Total	4,063

ROSECRANS-CAMINO DEL RIO

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 5/23/13 THURSDAY	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
	NORTH & SOUTH:	ROSECRANS-CAMINO DEL RIO	LOCATION #:	10
	EAST & WEST:	SPORTS AREAN - ROSECRANS	CONTROL:	YEILD WB

NOTES:

AM
PM
MD
OTHER
OTHER

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		NORTHBOUND ROSECRANS-CAMINO DEL RIO			SOUTHBOUND ROSECRANS-CAMINO DEL RIO			EASTBOUND SPORTS AREAN - ROSECRANS			WESTBOUND SPORTS AREAN - ROSECRANS				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	X	1	0	X	X	X	X	X	X	X	X	1		X	X	X	X	
AM	7:00 AM		31	12									6	49					0
	7:15 AM		62	9									10	81					0
	7:30 AM		56	9									5	70					0
	7:45 AM		59	18									9	86					0
	8:00 AM		45	9									10	64					0
	8:15 AM		70	12									7	89					0
	8:30 AM		63	14									7	84					0
	8:45 AM		56	16									7	79					0
	VOLUMES	0	442	99	0	0	0	0	0	0	0	0	61	602	0	0	0	0	0
	APPROACH %	0%	82%	18%	0%	0%	0%	0%	0%	0%	0%	0%	100%						
	APP/DEPART	541	/	503	0	/	0	0	/	99	61	/	0	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	0	237	53	0	0	0	0	0	0	0	0	33	323					
	APPROACH %	0%	82%	18%	0%	0%	0%	0%	0%	0%	0%	0%	100%						
	PEAK HR FACTOR		0.884			0.000			0.000			0.825		0.907					
	APP/DEPART	290	/	270	0	/	0	0	/	53	33	/	0	0					
PM	4:00 PM		98	15									35	148					0
	4:15 PM		98	15									38	151					0
	4:30 PM		93	14									48	155					0
	4:45 PM		101	14									40	155					0
	5:00 PM		81	15									40	136					0
	5:15 PM		100	15									25	140					0
	5:30 PM		95	15									25	135					0
	5:45 PM		104	10									13	127					0
	VOLUMES	0	770	113	0	0	0	0	0	0	0	0	264	1,147	0	0	0	0	0
	APPROACH %	0%	87%	13%	0%	0%	0%	0%	0%	0%	0%	0%	100%						
	APP/DEPART	883	/	1,034	0	/	0	0	/	113	264	/	0	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	0	390	58	0	0	0	0	0	0	0	0	161	609					
	APPROACH %	0%	87%	13%	0%	0%	0%	0%	0%	0%	0%	0%	100%						
	PEAK HR FACTOR		0.974			0.000			0.000			0.839		0.982					
	APP/DEPART	448	/	551	0	/	0	0	/	58	161	/	0	0					

ROSECRANS-CAMINO DEL RIO

NORTH SIDE

SPORTS AREAN - ROSECRANS WEST SIDE EAST SIDE **SPORTS AREAN - ROSECRANS**

SOUTH SIDE

ROSECRANS-CAMINO DEL RIO

		PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM					0					0					0
	7:15 AM					0					0					0
	7:30 AM					0					0					0
	7:45 AM					0					0					0
	8:00 AM					0					0					0
	8:15 AM					0					0					0
	8:30 AM					0					0					0
	8:45 AM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM	4:00 PM					0					0					0
	4:15 PM					0					0					0
	4:30 PM					0					0					0
	4:45 PM					0					0					0
	5:00 PM					0					0					0
	5:15 PM					0					0					0
	5:30 PM					0					0					0
	5:45 PM					0					0					0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

63789 1199

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS

ROSECRANS-CAMINO DEL RIO

0	**0**	**0**	**0**	**TOTAL**	**1,537**
0	0	0	0	**PM**	1,034
0	0	0	0	**AM**	503

SPORTS AREAN - ROSECRANS (west)

	TOTAL	**PM**	**AM**
	0	0	0
	0	0	0
	0	0	0
	0	0	0
	0	**0**	**0**

POINT LOMA

PTD13-0524-01

ALL HOURS

SPORTS AREAN - ROSECRANS (east)

	AM	**PM**	**TOTAL**
	61	**264**	**325**
	61	264	**325**
	0	0	**0**
	0	0	**0**
	99	113	**212**

0	**AM**	0	442	99	**541**
0	**PM**	0	770	113	**883**
0	**TOTAL**	**0**	**1,212**	**212**	**1,424**

ROSECRANS-CAMINO DEL RIO

ROSECRANS-CAMINO DEL RIO

0	**0**	**0**	**0**	**TOTAL**	**821**
0	0	0	0	**PM**	551
0	0	0	0	**AM**	270

SPORTS AREAN - ROSECRANS (west)

	TOTAL	**PM**	**AM**
	0	0	0
	0	0	0
	0	0	0
	0	0	0
	0	**0**	**0**

PEAK HOUR

AM 7:45 AM

PM 4:00 PM

SPORTS AREAN - ROSECRANS (east)

	AM	**PM**	**TOTAL**
	33	**161**	**194**
	33	161	**194**
	0	0	**0**
	0	0	**0**
	53	58	**111**

0	**AM**	0	237	53	**290**
0	**PM**	0	390	58	**448**
0	**Total**	**0**	**627**	**111**	**738**

ROSECRANS-CAMINO DEL RIO

63789 1200

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE: 5/23/13 THURSDAY	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
	NORTH & SOUTH:	CAMINO DEL RIO	LOCATION #:	11
	EAST & WEST:	I-5 NB ON RAMP	CONTROL:	NONE

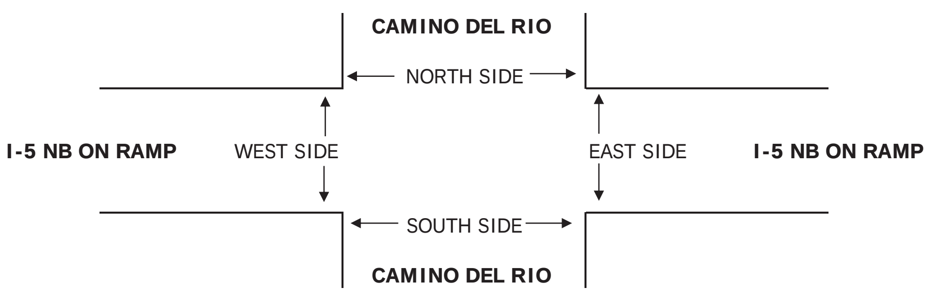
NOTES:

AM PM MD OTHER OTHER

N ▲ ◄ W E ► S ▼

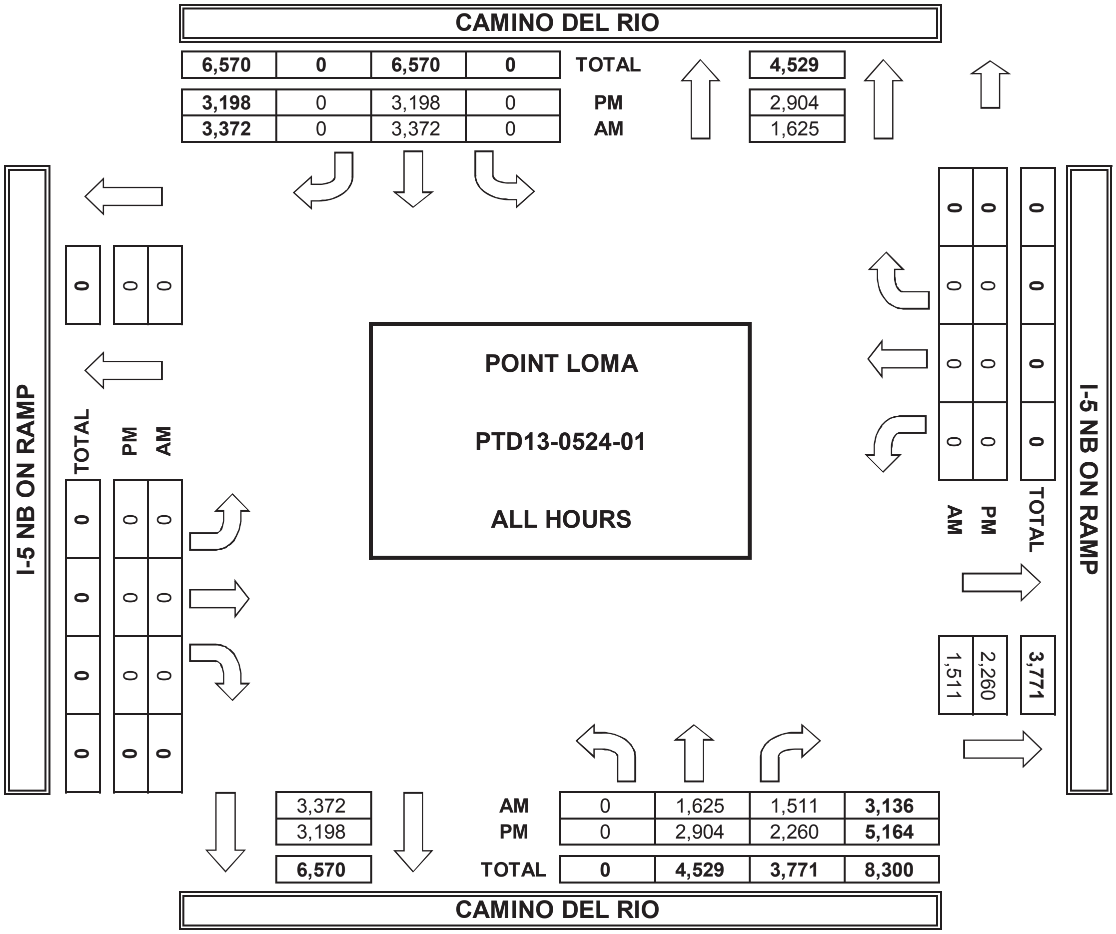
	NORTHBOUND CAMINO DEL RIO			SOUTHBOUND CAMINO DEL RIO			EASTBOUND I-5 NB ON RAMP			WESTBOUND I-5 NB ON RAMP			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	X	2	1	X	2	X	X	X	X	X	X	X	
AM 7:00 AM		155	189		427								771
7:15 AM		180	197		424								801
7:30 AM		196	216		384								796
7:45 AM		211	184		481								876
8:00 AM		211	203		446								860
8:15 AM		234	191		425								850
8:30 AM		236	184		372								792
8:45 AM		202	147		413								762
VOLUMES	0	1,625	1,511	0	3,372	0	0	0	0	0	0	0	6,508
APPROACH %	0%	52%	48%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	3,136	/	1,625	3,372	/	3,372	0	/	1,511	0	/	0	0
BEGIN PEAK HR		7:30 AM											
VOLUMES	0	852	794	0	1,736	0	0	0	0	0	0	0	3,382
APPROACH %	0%	52%	48%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR		0.968			0.902			0.000			0.000		0.965
APP/DEPART	1,646	/	852	1,736	/	1,736	0	/	794	0	/	0	0
PM 4:00 PM		371	305		339								1,015
4:15 PM		376	261		424								1,061
4:30 PM		350	312		400								1,062
4:45 PM		372	288		375								1,035
5:00 PM		353	294		421								1,068
5:15 PM		354	265		398								1,017
5:30 PM		364	293		432								1,089
5:45 PM		364	242		409								1,015
VOLUMES	0	2,904	2,260	0	3,198	0	0	0	0	0	0	0	8,362
APPROACH %	0%	56%	44%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
APP/DEPART	5,164	/	2,904	3,198	/	3,198	0	/	2,260	0	/	0	0
BEGIN PEAK HR		4:15 PM											
VOLUMES	0	1,451	1,155	0	1,620	0	0	0	0	0	0	0	4,226
APPROACH %	0%	56%	44%	0%	100%	0%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR		0.984			0.955			0.000			0.000		0.989
APP/DEPART	2,606	/	1,451	1,620	/	1,620	0	/	1,155	0	/	0	0

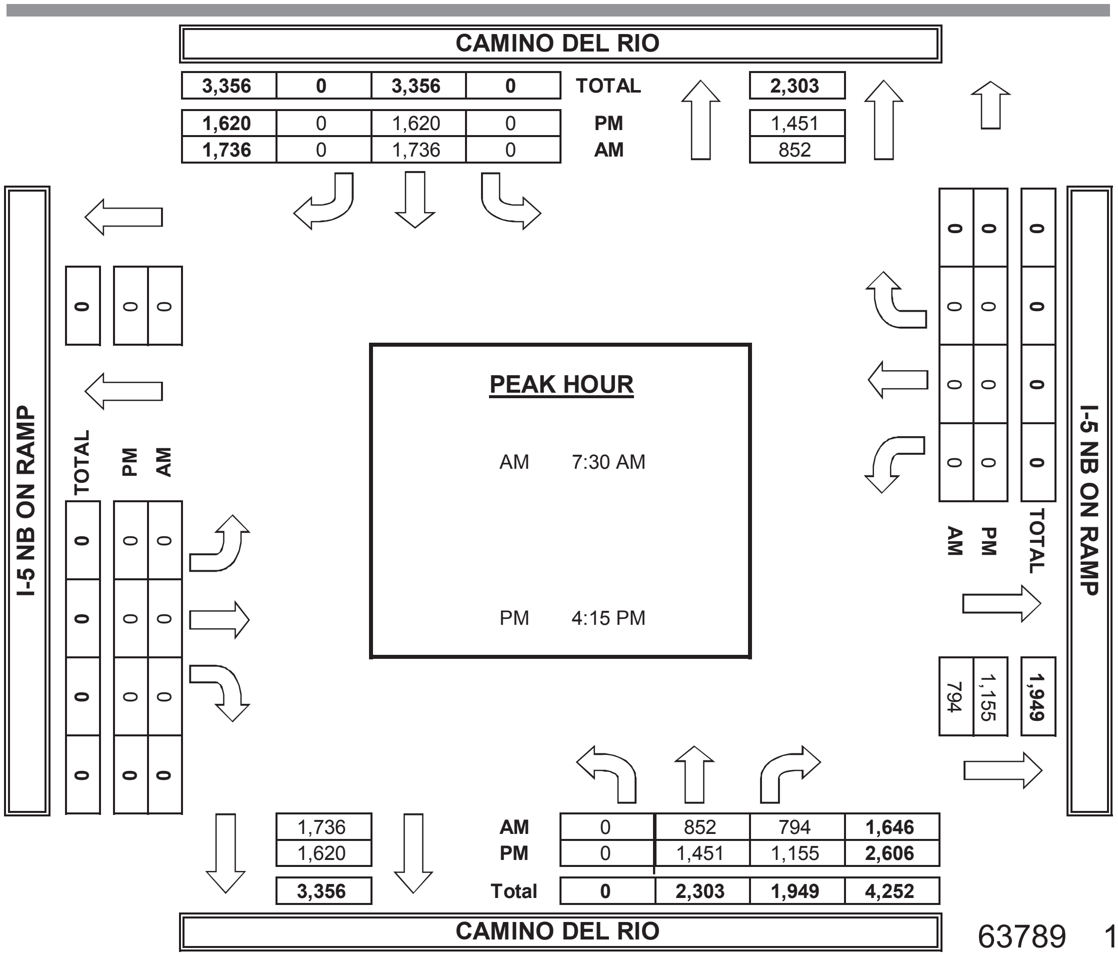
U-TURNS	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
VOLUMES	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
VOLUMES	0	0	0	0	0



	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM 7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM 4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA
TURNING MOVEMENT COUNTS





63789 1202

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: PACIFIC TECHNICAL DATA

DATE:				
5/23/13	LOCATION:	POINT LOMA	PROJECT #:	PTD13-0524-01
THURSDAY	NORTH & SOUTH:	I-5 SB ON RAMP	LOCATION #:	12
	EAST & WEST:	PACIFIC HWY	CONTROL:	NONE

NOTES:

AM
PM
MD
OTHER
OTHER

▲ N
◀ W E ▶
S ▼

	NORTHBOUND I-5 SB ON RAMP			SOUTHBOUND I-5 SB ON RAMP			EASTBOUND PACIFIC HWY			WESTBOUND PACIFIC HWY			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	2	1	2	2	1							
AM													
7:00 AM	514	88	17	216	30	33							898
7:15 AM	544	69	23	230	38	20							924
7:30 AM	499	58	28	260	54	17							916
7:45 AM	553	100	30	227	61	34							1,005
8:00 AM	505	86	31	260	43	37							962
8:15 AM	483	73	33	234	54	41							918
8:30 AM	443	79	27	284	62	30							925
8:45 AM	425	64	44	248	52	31							864
VOLUMES	3,966	617	233	1,959	394	243	0	0	0	0	0	0	7,412
APPROACH %	82%	13%	5%	75%	15%	9%	0%	0%	0%	0%	0%	0%	
APP/DEPART	4,816	/	617	2,596	/	394	0	/	2,192	0	/	4,209	0
BEGIN PEAK HR		7:45 AM											
VOLUMES	1,984	338	121	1,005	220	142	0	0	0	0	0	0	3,810
APPROACH %	81%	14%	5%	74%	16%	10%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR		0.894			0.909			0.000			0.000		0.948
APP/DEPART	2,443	/	338	1,367	/	220	0	/	1,126	0	/	2,126	0
PM													
4:00 PM	323	129	37	590	91	37							1,207
4:15 PM	299	147	28	506	113	33							1,126
4:30 PM	330	153	37	521	106	41							1,188
4:45 PM	329	152	40	525	103	42							1,191
5:00 PM	330	186	37	552	101	44							1,250
5:15 PM	371	158	50	518	124	33							1,254
5:30 PM	340	130	43	459	111	40							1,123
5:45 PM	318	104	28	433	82	24							989
VOLUMES	2,640	1,159	300	4,104	831	294	0	0	0	0	0	0	9,328
APPROACH %	64%	28%	7%	78%	16%	6%	0%	0%	0%	0%	0%	0%	
APP/DEPART	4,099	/	1,159	5,229	/	831	0	/	4,404	0	/	2,934	0
BEGIN PEAK HR		4:30 PM											
VOLUMES	1,360	649	164	2,116	434	160	0	0	0	0	0	0	4,883
APPROACH %	63%	30%	8%	78%	16%	6%	0%	0%	0%	0%	0%	0%	
PEAK HR FACTOR		0.938			0.972			0.000			0.000		0.973
APP/DEPART	2,173	/	649	2,710	/	434	0	/	2,280	0	/	1,520	0

U-TURNS

	NB	SB	EB	WB	TTL
	X	X	X	X	
7:00 AM					0
7:15 AM					0
7:30 AM					0
7:45 AM					0
8:00 AM					0
8:15 AM					0
8:30 AM					0
8:45 AM					0
AM TOTAL	0	0	0	0	0
4:00 PM					0
4:15 PM					0
4:30 PM					0
4:45 PM					0
5:00 PM					0
5:15 PM					0
5:30 PM					0
5:45 PM					0
PM TOTAL	0	0	0	0	0

I-5 SB ON RAMP

← NORTH SIDE →

PACIFIC HWY WEST SIDE EAST SIDE **PACIFIC HWY**

← SOUTH SIDE →

I-5 SB ON RAMP

	PEDESTRIAN CROSSINGS					PEDESTRIAN ACTIVATIONS					BICYCLE CROSSINGS				
	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM															
7:00 AM					0					0					0
7:15 AM					0					0					0
7:30 AM					0					0					0
7:45 AM					0					0					0
8:00 AM					0					0					0
8:15 AM					0					0					0
8:30 AM					0					0					0
8:45 AM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PM															
4:00 PM					0					0					0
4:15 PM					0					0					0
4:30 PM					0					0					0
4:45 PM					0					0					0
5:00 PM					0					0					0
5:15 PM					0					0					0
5:30 PM					0					0					0
5:45 PM					0					0					0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PACIFIC TECHNICAL DATA

TURNING MOVEMENT COUNTS

POINT LOMA

PTD13-0524-01

ALL HOURS

North leg: I-5 SB ON RAMP

TOTAL	**7,825**	**537**	**1,225**	**6,063**
PM	**5,229**	294	831	4,104
AM	**2,596**	243	394	1,959

TOTAL	**1,776**
PM	1,159
AM	617

West leg: PACIFIC HWY

	TOTAL	PM	AM
Exiting	**7,143**	2,934	4,209
	0	0	0
	0	0	0
	0	0	0
	0	**0**	**0**

East leg: PACIFIC HWY

	AM	PM	TOTAL
	0	**0**	**0**
	0	0	**0**
	0	0	**0**
	0	0	**0**
Exiting	2,192	4,404	**6,596**

South leg: I-5 SB ON RAMP

AM	394	3,966	617	233	**4,816**
PM	831	2,640	1,159	300	**4,099**
TOTAL	**1,225**	**6,606**	**1,776**	**533**	**8,915**

PEAK HOUR

AM 7:45 AM

PM 4:30 PM

North leg: I-5 SB ON RAMP

TOTAL	**4,077**	**302**	**654**	**3,121**
PM	**2,710**	160	434	2,116
AM	**1,367**	142	220	1,005

TOTAL	**987**
PM	649
AM	338

West leg: PACIFIC HWY

	TOTAL	PM	AM
Exiting	**3,646**	1,520	2,126
	0	0	0
	0	0	0
	0	0	0
	0	**0**	**0**

East leg: PACIFIC HWY

	AM	PM	TOTAL
	0	**0**	**0**
	0	0	**0**
	0	0	**0**
	0	0	**0**
Exiting	1,126	2,280	**3,406**

South leg: I-5 SB ON RAMP

AM	220	1,984	338	121	**2,443**
PM	434	1,360	649	164	**2,173**
Total	**654**	**3,344**	**987**	**285**	**4,616**

63789 1204

Attachment B

Existing (2013) Conditions Intersection Operations Analysis Worksheets

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Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing (2013) Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 Shelter Island Drive (NS) / Rosecrans Street (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.473
Loss Time (sec):	12	Average Delay (sec/veh):	20.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	27	27	27	27	27	27	10	24	24	10	24	24
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	9	8	58	20	17	17	2	584	15	83	1235	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	8	58	20	17	17	2	584	15	83	1235	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	10	9	63	22	18	18	2	635	16	90	1342	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	9	63	22	18	18	2	635	16	90	1342	11
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	9	63	22	18	18	2	635	16	90	1342	11
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	0.87	0.87	0.86	0.86	0.86	0.95	0.95	0.95	0.95	0.95	0.95
Lanes:	0.12	0.11	0.77	0.38	0.31	0.31	1.00	1.95	0.05	1.00	1.98	0.02
Final Sat.:	199	177	1281	602	512	512	1805	3506	90	1805	3577	29
Capacity Analysis Module:												
Vol/Sat:	0.05	0.05	0.05	0.04	0.04	0.04	0.00	0.18	0.18	0.05	0.38	0.38
Crit Moves:		****					****				****	
Green/Cycle:	0.23	0.23	0.23	0.23	0.23	0.23	0.08	0.48	0.48	0.20	0.59	0.59
Volume/Cap:	0.22	0.22	0.22	0.16	0.16	0.16	0.01	0.38	0.38	0.25	0.63	0.63
Delay/Veh:	38.2	38.2	38.2	37.6	37.6	37.6	50.5	20.2	20.2	40.9	16.6	16.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.2	38.2	38.2	37.6	37.6	37.6	50.5	20.2	20.2	40.9	16.6	16.6
LOS by Move:	D	D	D	D	D	D	D	C	C	D	B	B
HCM2kAvgQ:	2	2	2	2	2	2	0	8	8	3	17	17

Note: Queue reported is the number of cars per lane.

Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing (2013) Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 Shelter Island Drive (NS) / Scott Street (EW)

Cycle (sec):	90	Critical Vol./Cap.(X):	0.936
Loss Time (sec):	12	Average Delay (sec/veh):	18.3
Optimal Cycle:	OPTIMIZED	Level Of Service:	B

Approach:	North Bound	South Bound	East Bound	West Bound
Movement:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	Permitted	Permitted	Prot+Permit	Prot+Permit
Rights:	Ovl	Include	Include	Include
Lanes:	0 1 0 0 1	0 1 0 0 1	1 0 0 1 0	1 0 1 1 0

Movement:	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
Min. Green:	10	10	10	23	23	23	10	25	25	10	25	25
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	9	88	102	9	160	12	14	181	15	217	196	23
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	88	102	9	160	12	14	181	15	217	196	23
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	10	96	111	10	175	13	15	198	16	237	214	25
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	96	111	10	175	13	15	198	16	237	214	25
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	96	111	10	175	13	15	198	16	237	214	25
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.97	0.97	0.85	0.99	0.99	0.85	0.95	0.99	0.99	0.95	0.93	0.93
Lanes:	0.09	0.91	1.00	0.05	0.95	1.00	1.00	0.92	0.08	1.00	1.79	0.21
Final Sat.:	172	1679	1615	100	1777	1615	1805	1734	144	1805	3179	373
Capacity Analysis Module:												
Vol/Sat:	0.06	0.06	0.07	0.10	0.10	0.01	0.01	0.11	0.11	0.13	0.07	0.07
Crit Moves:					****			****		****		
Green/Cycle:	0.26	0.26	0.58	0.26	0.26	0.26	0.46	0.28	0.28	0.66	0.44	0.44
Volume/Cap:	0.22	0.22	0.12	0.38	0.38	0.03	0.02	0.40	0.40	0.28	0.15	0.15
Delay/Veh:	26.7	26.7	8.5	28.2	28.2	25.2	13.3	26.5	26.5	6.9	15.4	15.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	26.7	26.7	8.5	28.2	28.2	25.2	13.3	26.5	26.5	6.9	15.4	15.4
LOS by Move:	C	C	A	C	C	C	B	C	C	A	B	B
HCM2kAvgQ:	2	2	1	4	4	0	0	5	5	3	2	2

Note: Queue reported is the number of cars per lane.

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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
                  (JN: 07893) Existing (2013) Conditions
                               AM Peak Hour
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                    Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #3 Shelter Island Drive (NS) / Shafter Street (EW)
********************************************************************************
Average Delay (sec/veh):      1.1      Worst Case Level Of Service: C[ 16.8]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11  198     7     5  383     8     4    6    16    14    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   11  198     7     5  383     8     4    6    16    14    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:    13  229     8     6  443     9     5    7    18    16    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   13  229     8     6  443     9     5    7    18    16    2     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5 xxxxx
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0 xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  452 xxxx xxxxx   237 xxxx xxxxx   718  721   447   730  722 xxxxx
Potent Cap.: 1119 xxxx xxxxx  1342 xxxx xxxxx   347  356   615   340  355 xxxxx
Move Cap.:   1119 xxxx xxxxx  1342 xxxx xxxxx   341  350   615   321  350 xxxxx
Volume/Cap:  0.01 xxxx  xxxx  0.00 xxxx  xxxx  0.01 0.02  0.03  0.05 0.01  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.3 xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  474 xxxxx   325 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx   0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.1 xxxxx  16.8 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     C    *     *
ApproachDel:     xxxxxx           xxxxxx              13.1             16.8
ApproachLOS:        *                *                 B                C
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
                   (JN: 07893) Existing (2013) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Shelter Island Drive (NS) / Anchorage Lane (EW)
********************************************************************************
Average Delay (sec/veh):      1.4      Worst Case Level Of Service: B[ 11.5]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      22  198     0     0  359    14     3    0    59     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   22  198     0     0  359    14     3    0    59     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    25  226     0     0  410    16     3    0    67     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   25  226     0     0  410    16     3    0    67     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  426 xxxx xxxxx  xxxx xxxx xxxxx   694  694   418   728  702   226
Potent Cap.: 1144 xxxx xxxxx  xxxx xxxx xxxxx   412  369   639   342  365   818
Move Cap.:   1144 xxxx xxxxx  xxxx xxxx xxxxx   405  361   639   300  357   818
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.11  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  622 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  8.2 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.5 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:    xxxxxx           xxxxxx             11.5            xxxxxx
ApproachLOS:         *                *                B                 *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing (2013) Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #5 Hugo Street / North Harbor Drive (NS) / Rosecrans Street (EW)

Cycle (sec):	105	Critical Vol./Cap.(X):	0.570
Loss Time (sec):	12	Average Delay (sec/veh):	23.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound	South Bound	East Bound	West Bound
Control:	Permitted	Permitted	Protected	Protected
Rights:	Include	Include	Include	Include
Lanes:	1 0 0 1 0	0 0 1! 0 0	1 0 1 1 0	1 0 1 1 0

Movement:	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
Min. Green:	27	27	27	27	27	27	10	24	24	10	24	24
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Volume Module:												
Base Vol:	202	26	167	78	31	9	2	728	81	39	1169	7
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	202	26	167	78	31	9	2	728	81	39	1169	7
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	217	28	179	84	33	10	2	780	87	42	1253	8
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	217	28	179	84	33	10	2	780	87	42	1253	8
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	217	28	179	84	33	10	2	780	87	42	1253	8
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.74	0.87	0.87	0.59	0.59	0.59	0.95	0.94	0.94	0.95	0.95	0.95
Lanes:	1.00	0.13	0.87	0.66	0.26	0.08	1.00	1.80	0.20	1.00	1.99	0.01
Final Sat.:	1408	223	1430	745	296	86	1805	3200	356	1805	3585	21
Capacity Analysis Module:												
Vol/Sat:	0.15	0.13	0.13	0.11	0.11	0.11	0.00	0.24	0.24	0.02	0.35	0.35
Crit Moves:	****						****				****	
Green/Cycle:	0.26	0.26	0.26	0.26	0.26	0.26	0.10	0.45	0.45	0.18	0.53	0.53
Volume/Cap:	0.60	0.49	0.49	0.44	0.44	0.44	0.01	0.54	0.54	0.13	0.66	0.66
Delay/Veh:	37.0	34.0	34.0	33.7	33.7	33.7	43.1	21.2	21.2	36.6	18.4	18.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	37.0	34.0	34.0	33.7	33.7	33.7	43.1	21.2	21.2	36.6	18.4	18.4
LOS by Move:	D	C	C	C	C	C	D	C	C	D	B	B
HCM2kAvgQ:	7	6	6	4	4	4	0	10	10	1	14	14

Note: Queue reported is the number of cars per lane.

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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
                    (JN: 07893) Existing (2013) Conditions
                                 AM Peak Hour
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                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #6 Nimitz Boulevard (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         120               Critical Vol./Cap.(X):        0.732
Loss Time (sec):      16               Average Delay (sec/veh):       61.2
Optimal Cycle: OPTIMIZED               Level Of Service:                 E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Protected        Protected        Protected        Protected
Rights:           Ovl            Include          Include          Include
Min. Green:    10   30    30   10   30    30   10   28    28   10   28    28
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20   30    42   310  317   212   216  722    18   113 1037    48
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   20   30    42   310  317   212   216  722    18   113 1037    48
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:    21   32    44   326  334   223   227  760    19   119 1092    51
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   21   32    44   326  334   223   227  760    19   119 1092    51
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   21   32    44   326  334   223   227  760    19   119 1092    51
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.85  0.95 0.89  0.89  0.95 0.95  0.95  0.95 0.94  0.94
Lanes:       1.00 2.00  1.00  1.00 1.20  0.80  1.00 1.95  0.05  1.00 1.91  0.09
Final Sat.:  1805 3610  1615  1805 2033  1360  1805 3508    87  1805 3426   159
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.01  0.03  0.18 0.16  0.16  0.13 0.22  0.22  0.07 0.32  0.32
Crit Moves:       ****        ****              ****                  ****
Green/Cycle: 0.11 0.25  0.37  0.18 0.32  0.32  0.12 0.32  0.32  0.12 0.31  0.31
Volume/Cap:  0.11 0.03  0.07  1.01 0.51  0.51  1.01 0.67  0.67  0.57 1.01  1.01
Delay/Veh:   48.7 34.1  24.9 103.1 33.5  33.5 116.3 36.6  36.6  54.0 71.5  71.5
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  48.7 34.1  24.9 103.1 33.5  33.5 116.3 36.6  36.6  54.0 71.5  71.5
LOS by Move:    D    C     C     F    C     C     F    D     D     D    E     E
HCM2kAvgQ:      1    0     1    18    9     9    11   13    13     4   23    23
********************************************************************************
Note: Queue reported is the number of cars per lane.
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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
                  (JN: 07893) Existing (2013) Conditions
                               AM Peak Hour
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                    Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         120                Critical Vol./Cap.(X):         0.847
Loss Time (sec):      16                Average Delay (sec/veh):        97.2
Optimal Cycle: OPTIMIZED                Level Of Service:                  F
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    10   38    38    10   38    38    10   31    31    10   31    31
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  0  1  0    1  0  3  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     502  238   103   332  270     6     5 1152   399   157 1401   196
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  502  238   103   332  270     6     5 1152   399   157 1401   196
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:   526  249   108   348  283     6     5 1208   418   165 1469   205
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  526  249   108   348  283     6     5 1208   418   165 1469   205
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  526  249   108   348  283     6     5 1208   418   165 1469   205
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.85  0.95 1.00  1.00  0.95 0.91  0.85  0.92 0.95  0.85
Lanes:       2.00 1.00  1.00  1.00 0.98  0.02  1.00 3.00  1.00  2.00 2.00  1.00
Final Sat.:  3502 1900  1615  1805 1853    41  1805 5187  1615  3502 3610  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.13  0.07  0.19 0.15  0.15  0.00 0.23  0.26  0.05 0.41  0.13
Crit Moves:       ****        ****              ****                  ****
Green/Cycle: 0.15 0.32  0.32  0.15 0.32  0.32  0.08 0.30  0.30  0.10 0.32  0.32
Volume/Cap:  1.00 0.41  0.21  1.28 0.48  0.48  0.03 0.77  0.86  0.48 1.28  0.40
Delay/Veh:   90.6 32.7  30.2 204.3 33.7  33.7  50.7 40.4  53.2  52.4  176  32.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  90.6 32.7  30.2 204.3 33.7  33.7  50.7 40.4  53.2  52.4  176  32.6
LOS by Move:    F    C     C     F    C     C     D    D     D     D    F     C
HCM2kAvgQ:     15    7     3    25    9     9     0   15    15     3   48     6
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	1291	34	172	1545	240	79	428	118	175	263	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5064		3433	5085	1555	1770	3539	1557	3433	3539	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5064		3433	5085	1555	1770	3539	1557	3433	3539	1557
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	274	1373	36	183	1644	255	84	455	126	186	280	186
RTOR Reduction (vph)	0	2	0	0	0	140	0	0	86	0	0	125
Lane Group Flow (vph)	274	1407	0	183	1644	115	84	455	40	186	280	61
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	11.9	46.6		10.4	45.1	45.1	7.9	38.1	38.1	8.9	39.1	39.1
Effective Green, g (s)	11.9	46.6		10.4	45.1	45.1	7.9	38.1	38.1	8.9	39.1	39.1
Actuated g/C Ratio	0.10	0.39		0.09	0.38	0.38	0.07	0.32	0.32	0.07	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	340	1966		297	1911	584	116	1123	494	254	1153	507
v/s Ratio Prot	c0.08	0.28		0.05	c0.32		0.05	c0.13		c0.05	0.08	
v/s Ratio Perm						0.07			0.03			0.04
v/c Ratio	0.81	0.72		0.62	0.86	0.20	0.72	0.41	0.08	0.73	0.24	0.12
Uniform Delay, d1	52.9	31.1		52.9	34.5	25.2	55.0	32.1	28.7	54.4	29.6	28.4
Progression Factor	1.00	1.00		1.36	0.60	0.43	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.0	2.3		3.0	4.3	0.6	19.9	1.1	0.3	10.4	0.5	0.5
Delay (s)	65.9	33.3		74.9	25.1	11.6	74.9	33.2	29.0	64.8	30.1	28.9
Level of Service	E	C		E	C	B	E	C	C	E	C	C
Approach Delay (s)		38.7			27.8			37.6			39.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	877	1274	540	384	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3539	3539	1551	3433	1583
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3539	3539	1551	3433	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	914	1327	562	400	66
RTOR Reduction (vph)	0	0	0	311	0	0
Lane Group Flow (vph)	0	914	1327	251	400	66
Confl. Peds. (#/hr)				5		
Turn Type		NA	NA	Perm	NA	Free
Protected Phases		4	4		3	
Permitted Phases				4		Free
Actuated Green, G (s)		29.0	29.0	29.0	14.6	81.6
Effective Green, g (s)		29.0	29.0	29.0	14.6	81.6
Actuated g/C Ratio		0.36	0.36	0.36	0.18	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1257	1257	551	614	1583
v/s Ratio Prot		0.26	c0.37		c0.12	
v/s Ratio Perm				0.16		c0.04
v/c Ratio		0.73	1.06	0.45	0.65	0.04
Uniform Delay, d1		22.9	26.3	20.2	31.1	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.1	41.5	0.6	2.5	0.0
Delay (s)		25.0	67.8	20.8	33.6	0.0
Level of Service		C	E	C	C	A
Approach Delay (s)		25.0	53.8		28.9	
Approach LOS		C	D		C	

Intersection Summary			
HCM 2000 Control Delay	42.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	81.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	1275	0	0	1687	327	136	184	10	229	161	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91			0.91	1.00	0.91	0.91		0.91	0.86	0.91
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.99		1.00	0.99	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99		0.95	0.98	1.00
Satd. Flow (prot)	3433	5085			5085	1558	1610	3347		1610	3126	1417
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99		0.95	0.98	1.00
Satd. Flow (perm)	3433	5085			5085	1558	1610	3347		1610	3126	1417
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	119	1314	0	0	1739	337	140	190	10	236	166	112
RTOR Reduction (vph)	0	0	0	0	0	134	0	3	0	0	2	84
Lane Group Flow (vph)	119	1314	0	0	1739	203	111	226	0	135	276	17
Confl. Peds. (#/hr)						5						5
Turn Type	Prot	NA			NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	8.5	74.8			62.3	62.3	12.7	12.7		20.5	20.5	20.5
Effective Green, g (s)	8.5	74.8			62.3	62.3	12.7	12.7		20.5	20.5	20.5
Actuated g/C Ratio	0.07	0.62			0.52	0.52	0.11	0.11		0.17	0.17	0.17
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	243	3169			2639	808	170	354		275	534	242
v/s Ratio Prot	c0.03	0.26			c0.34		c0.07	0.07		0.08	c0.09	
v/s Ratio Perm						0.13						0.01
v/c Ratio	0.49	0.41			0.66	0.25	0.65	0.64		0.49	0.52	0.07
Uniform Delay, d1	53.7	11.5			21.1	16.0	51.5	51.5		45.0	45.2	41.8
Progression Factor	1.14	0.67			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.3			1.3	0.7	8.7	3.8		1.4	0.8	0.1
Delay (s)	62.5	8.0			22.4	16.7	60.2	55.2		46.4	46.1	41.9
Level of Service	E	A			C	B	E	E		D	D	D
Approach Delay (s)		12.5			21.5			56.9			45.3	
Approach LOS		B			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	237	53	0	0	0	33
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	260	58	0	0	0	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			319		290	290
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			319		290	290
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1241		701	750

Direction, Lane #	EB 1	NB 1
Volume Total	319	36
Volume Left	0	0
Volume Right	58	36
cSH	1700	750
Volume to Capacity	0.19	0.05
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	10.0
Lane LOS		B
Approach Delay (s)	0.0	10.0
Approach LOS		B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	Camino Del Rio / I-8 East
Agency or Company	Urban Crossroads, Inc.	Junction	I-5 NB Loop On Ramp
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing (2013)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 25.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	852	0.97	Level	4	0	0.980	1.00	896
Ramp	794	0.97	Level	4	0	0.980	1.00	835
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F\,(P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 896 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	896	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	61	Exhibit 25-14	4500	No
V_R	835	Exhibit 25-3	1900	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	896	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$

D_R = 4.9 (pc/mi/ln)

LOS = A (Exhibit 25-4)

Speed Determination

D_s = 0.633 (Exhibit 25-19)

S_R= 46.8 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 46.8 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 SB On-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing (2013)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1005	0.95	Level	4	0	0.980	1.00	1079
Ramp	220	0.95	Level	4	0	0.980	1.00	236
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 1079 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	1079	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	843	Exhibit 25-14	4500	No
V_R	236	Exhibit 25-3	2100	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1079	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$

D_R = 11.4 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

D_s = 0.319 (Exhibit 25-19)

S_R= 50.8 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 50.8 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information		Site Information	
Analyst	DL	Freeway/Dir of Travel	I-5 NB Off-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/13/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	Existing (2013)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1984	0.95	Level	4	0	0.980	1.00	2130
Ramp	338	0.95	Level	4	0	0.980	1.00	363
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 1.000 using Equation (Exhibit 25-5)

V_{12} = 2130 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2493	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2493	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = 15.3 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

M_S = 0.233 (Exibit 25-19)

S_R= 52.0 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 52.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

 HCS+TM Version 5.21 Generated: 6/17/2013 9:54 AM

```
--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
                  (JN: 07893) Existing (2013) Conditions
                               PM Peak Hour
--------------------------------------------------------------------------------

                    Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #1 Shelter Island Drive (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.680
Loss Time (sec):      12              Average Delay (sec/veh):       28.1
Optimal Cycle: OPTIMIZED              Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    27   27    27   27   27    27   10   24    24   10   24    24
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        0  0  1! 0  0   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      26   31   155   37   48    11    6 1086    39  266  703    20
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   26   31   155   37   48    11    6 1086    39  266  703    20
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.99 0.99  0.99 0.99 0.99  0.99 0.99 0.99  0.99 0.99 0.99  0.99
PHF Volume:    26   31   157   38   49    11    6 1103    40  270  714    20
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   26   31   157   38   49    11    6 1103    40  270  714    20
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   26   31   157   38   49    11    6 1103    40  270  714    20
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.86 0.86  0.86 0.84 0.84  0.84 0.95 0.95  0.95 0.95 0.95  0.95
Lanes:       0.12 0.15  0.73 0.39 0.50  0.11 1.00 1.93  0.07 1.00 1.94  0.06
Final Sat.:   201  240  1200  612  795   182 1805 3467   125 1805 3496    99
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.13  0.13 0.06 0.06  0.06 0.00 0.32  0.32 0.15 0.20  0.20
Crit Moves:       ****                           ****       ****
Green/Cycle: 0.27 0.27  0.27 0.27 0.27  0.27 0.18 0.41  0.41 0.20 0.43  0.43
Volume/Cap:  0.49 0.49  0.49 0.23 0.23  0.23 0.02 0.77  0.77 0.77 0.47  0.47
Delay/Veh:   31.5 31.5  31.5 28.7 28.7  28.7 33.8 27.6  27.6 47.8 20.6  20.6
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  31.5 31.5  31.5 28.7 28.7  28.7 33.8 27.6  27.6 47.8 20.6  20.6
LOS by Move:    C    C     C    C    C     C    C    C     C    D    C     C
HCM2kAvgQ:      5    5     5    2    2     2    0   17    17    8    8     8
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing (2013) Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 Shelter Island Drive (NS) / Scott Street (EW)

Cycle (sec):	90	Critical Vol./Cap.(X):	0.936
Loss Time (sec):	12	Average Delay (sec/veh):	20.3
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Prot+Permit			Prot+Permit		
Rights:	Ovl			Include			Include			Include		
Min. Green:	10	10	10	23	23	23	10	25	25	10	25	25
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1 0 0 1			0 1 0 0 1			1 0 0 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	24	152	255	33	233	40	19	410	16	79	82	27
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	24	152	255	33	233	40	19	410	16	79	82	27
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	25	158	265	34	242	42	20	426	17	82	85	28
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	25	158	265	34	242	42	20	426	17	82	85	28
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	25	158	265	34	242	42	20	426	17	82	85	28
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.93	0.85	0.95	0.95	0.85	0.95	0.99	0.99	0.95	0.91	0.91
Lanes:	0.14	0.86	1.00	0.12	0.88	1.00	1.00	0.96	0.04	1.00	1.50	0.50
Final Sat.:	242	1533	1615	223	1578	1615	1805	1818	71	1805	2615	861
Capacity Analysis Module:												
Vol/Sat:	0.10	0.10	0.16	0.15	0.15	0.03	0.01	0.23	0.23	0.05	0.03	0.03
Crit Moves:					****			****		****		
Green/Cycle:	0.30	0.30	0.41	0.30	0.30	0.30	0.61	0.46	0.46	0.52	0.41	0.41
Volume/Cap:	0.34	0.34	0.40	0.51	0.51	0.09	0.02	0.51	0.51	0.17	0.08	0.08
Delay/Veh:	25.1	25.1	19.1	27.0	27.0	22.8	6.9	17.9	17.9	11.6	16.5	16.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	25.1	25.1	19.1	27.0	27.0	22.8	6.9	17.9	17.9	11.6	16.5	16.5
LOS by Move:	C	C	B	C	C	C	A	B	B	B	B	B
HCM2kAvgQ:	4	4	5	6	6	1	0	9	9	1	1	1

Note: Queue reported is the number of cars per lane.

```
--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
                  (JN: 07893) Existing (2013) Conditions
                               PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #3 Shelter Island Drive (NS) / Shafter Street (EW)
********************************************************************************
Average Delay (sec/veh):      1.4      Worst Case Level Of Service: C[ 18.1]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:       0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      18  427    22    17  304     8     7   10    20    10    6     5
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   18  427    22    17  304     8     7   10    20    10    6     5
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94
PHF Volume:    19  456    24    18  325     9     7   11    21    11    6     5
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   19  456    24    18  325     9     7   11    21    11    6     5
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  333 xxxx xxxxx   480 xxxx xxxxx   878  884   329   888  876   468
Potent Cap.: 1237 xxxx xxxxx  1093 xxxx xxxxx   271  287   717   267  289   599
Move Cap.:   1237 xxxx xxxxx  1093 xxxx xxxxx   257  277   717   245  280   599
Volume/Cap:  0.02 xxxx  xxxx  0.02 xxxx  xxxx  0.03 0.04  0.03  0.04 0.02  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.0 xxxx xxxxx   8.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  406 xxxxx  xxxx  297 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx  0.2 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 14.8 xxxxx xxxxx 18.1 xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     *    C     *
ApproachDel:    xxxxxx           xxxxxx            14.8             18.1
ApproachLOS:         *                *               B                C
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
                  (JN: 07893) Existing (2013) Conditions
                               PM Peak Hour
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
            2000 HCM Unsignalized Method (Base Volume Alternative)
********************************************************************************
Intersection #4 Shelter Island Drive (NS) / Anchorage Lane (EW)
********************************************************************************
Average Delay (sec/veh):      1.7      Worst Case Level Of Service: B[ 12.9]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      44  414     0     0  287    15    20    0    62     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   44  414     0     0  287    15    20    0    62     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    48  454     0     0  315    16    22    0    68     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   48  454     0     0  315    16    22    0    68     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  332 xxxx xxxxx  xxxx xxxx xxxxx   874  874   323   908  883   454
Potent Cap.: 1239 xxxx xxxxx  xxxx xxxx xxxxx   323  290   722   258  287   610
Move Cap.:   1239 xxxx xxxxx  xxxx xxxx xxxxx   313  279   722   227  276   610
Volume/Cap:  0.04 xxxx  xxxx  xxxx xxxx  xxxx  0.07 0.00  0.09  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  548 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.6 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  8.0 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 12.9 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             12.9            xxxxxx
ApproachLOS:        *                *                 B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
                  (JN: 07893) Existing (2013) Conditions
                               PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #5 Hugo Street / North Harbor Drive (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          95                Critical Vol./Cap.(X):        0.796
Loss Time (sec):      12                Average Delay (sec/veh):       28.9
Optimal Cycle: OPTIMIZED                Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    27   27    27   27   27    27   10   24    24   10   24    24
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  1  0   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     341   91   124   55   32     6    6 1266   153   46  885    13
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  341   91   124   55   32     6    6 1266   153   46  885    13
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.97 0.97  0.97 0.97 0.97  0.97 0.97 0.97  0.97 0.97 0.97  0.97
PHF Volume:   353   94   128   57   33     6    6 1309   158   48  915    13
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  353   94   128   57   33     6    6 1309   158   48  915    13
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  353   94   128   57   33     6    6 1309   158   48  915    13
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.73 0.91  0.91 0.74 0.74  0.74 0.95 0.93  0.93 0.95 0.95  0.95
Lanes:       1.00 0.42  0.58 0.60 0.34  0.06 1.00 1.78  0.22 1.00 1.97  0.03
Final Sat.:  1378  734  1000  831  483    91 1805 3169   383 1805 3551    52
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.13  0.13 0.07 0.07  0.07 0.00 0.41  0.41 0.03 0.26  0.26
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.29 0.29  0.29 0.29 0.29  0.29 0.17 0.47  0.47 0.11 0.41  0.41
Volume/Cap:  0.87 0.44  0.44 0.23 0.23  0.23 0.02 0.87  0.87 0.25 0.63  0.63
Delay/Veh:   49.9 27.8  27.8 25.7 25.7  25.7 33.0 27.6  27.6 39.8 23.0  23.0
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  49.9 27.8  27.8 25.7 25.7  25.7 33.0 27.6  27.6 39.8 23.0  23.0
LOS by Move:    D    C     C    C    C     C    C    C     C    D    C     C
HCM2kAvgQ:     13    6     6    2    2     2    0   20    20    1   10    10
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
                    (JN: 07893) Existing (2013) Conditions
                                PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Base Volume Alternative)
********************************************************************************
Intersection #6 Nimitz Boulevard (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          120                Critical Vol./Cap.(X):         0.853
Loss Time (sec):       16                Average Delay (sec/veh):        65.4
Optimal Cycle: OPTIMIZED                 Level Of Service:                  E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl            Include          Include          Include
Min. Green:    10   30    30   10   30    30   10   28    28   10   28    28
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  2  0  1   1  0  1  1  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      38  329   151  257  225   171  332 1178    33  155  945   144
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   38  329   151  257  225   171  332 1178    33  155  945   144
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98
PHF Volume:    39  335   154  262  229   174  338 1201    34  158  963   147
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   39  335   154  262  229   174  338 1201    34  158  963   147
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   39  335   154  262  229   174  338 1201    34  158  963   147
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.95 0.95  0.85 0.95 0.89  0.89 0.95 0.95  0.95 0.95 0.93  0.93
Lanes:       1.00 2.00  1.00 1.00 1.14  0.86 1.00 1.95  0.05 1.00 1.74  0.26
Final Sat.:  1805 3610  1615 1805 1918  1458 1805 3498    98 1805 3070   468
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.09  0.10 0.15 0.12  0.12 0.19 0.34  0.34 0.09 0.31  0.31
Crit Moves:       ****       ****            ****                  ****
Green/Cycle: 0.10 0.25  0.35 0.14 0.29  0.29 0.18 0.38  0.38 0.10 0.30  0.30
Volume/Cap:  0.22 0.37  0.27 1.05 0.41  0.41 1.05 0.90  0.90 0.90 1.05  1.05
Delay/Veh:   50.6 37.5  28.5 121.8 34.5  34.5 112.5 43.5  43.5 94.6 83.2  83.2
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  50.6 37.5  28.5 121.8 34.5  34.5 112.5 43.5  43.5 94.6 83.2  83.2
LOS by Move:    D    D     C    F    C     C    F    D     D    F    F     F
HCM2kAvgQ:      1    5     4   15    6     6   15   22    22    5   24    24
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing (2013) Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

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Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)

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Cycle (sec):	120	Critical Vol./Cap.(X):	0.843
Loss Time (sec):	16	Average Delay (sec/veh):	67.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	E

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Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	10	38	38	10	38	38	10	31	31	10	31	31
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0 1 0 1			1 0 0 1 0			1 0 3 0 1			2 0 2 0 1		
Volume Module:												
Base Vol:	422	339	187	253	275	9	21	1591	546	142	1181	260
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	422	339	187	253	275	9	21	1591	546	142	1181	260
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	442	355	196	265	288	9	22	1668	572	149	1238	273
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	442	355	196	265	288	9	22	1668	572	149	1238	273
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	442	355	196	265	288	9	22	1668	572	149	1238	273
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	1.00	1.00	0.95	0.91	0.85	0.92	0.95	0.85
Lanes:	2.00	1.00	1.00	1.00	0.97	0.03	1.00	3.00	1.00	2.00	2.00	1.00
Final Sat.:	3502	1900	1615	1805	1831	60	1805	5187	1615	3502	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.13	0.19	0.12	0.15	0.16	0.16	0.01	0.32	0.35	0.04	0.34	0.17
Crit Moves:		****		****					****	****		
Green/Cycle:	0.13	0.32	0.32	0.14	0.32	0.32	0.08	0.33	0.33	0.08	0.33	0.33
Volume/Cap:	0.98	0.59	0.38	1.07	0.49	0.49	0.15	0.97	1.07	0.51	1.04	0.51
Delay/Veh:	88.2	36.0	32.4	130.2	33.1	33.1	51.5	55.8	100.6	54.2	77.1	33.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	88.2	36.0	32.4	130.2	33.1	33.1	51.5	55.8	100.6	54.2	77.1	33.3
LOS by Move:	F	D	C	F	C	C	D	E	F	D	E	C
HCM2kAvgQ:	13	11	6	16	9	9	1	23	26	3	28	8

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Note: Queue reported is the number of cars per lane.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	399	1809	81	397	1397	360	141	595	319	288	523	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5049		3433	5085	1555	1770	3539	1557	3433	3539	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5049		3433	5085	1555	1770	3539	1557	3433	3539	1557
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	407	1846	83	405	1426	367	144	607	326	294	534	243
RTOR Reduction (vph)	0	4	0	0	0	154	0	0	146	0	0	166
Lane Group Flow (vph)	407	1925	0	405	1426	213	144	607	180	294	534	77
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	15.9	44.0		12.0	40.1	40.1	10.0	38.0	38.0	10.0	38.0	38.0
Effective Green, g (s)	15.9	44.0		12.0	40.1	40.1	10.0	38.0	38.0	10.0	38.0	38.0
Actuated g/C Ratio	0.13	0.37		0.10	0.33	0.33	0.08	0.32	0.32	0.08	0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	454	1851		343	1699	519	147	1120	493	286	1120	493
v/s Ratio Prot	0.12	c0.38		c0.12	0.28		c0.08	c0.17		c0.09	0.15	
v/s Ratio Perm						0.14			0.12			0.05
v/c Ratio	0.90	1.04		1.18	0.84	0.41	0.98	0.54	0.37	1.03	0.48	0.16
Uniform Delay, d1	51.2	38.0		54.0	37.0	30.8	54.9	33.8	31.7	55.0	33.0	29.5
Progression Factor	1.00	1.00		0.62	0.45	0.18	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.8	32.2		96.1	2.7	1.2	67.2	1.9	2.1	60.6	1.5	0.7
Delay (s)	71.1	70.2		129.8	19.4	6.8	122.1	35.7	33.8	115.6	34.5	30.1
Level of Service	E	E		F	B	A	F	D	C	F	C	C
Approach Delay (s)		70.3			37.6			46.7			55.8	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	53.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1218	1065	773	794	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3539	3539	1548	3433	1583
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3539	3539	1548	3433	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1256	1098	797	819	125
RTOR Reduction (vph)	0	0	0	522	0	0
Lane Group Flow (vph)	0	1256	1098	275	819	125
Confl. Peds. (#/hr)				5		
Turn Type		NA	NA	Perm	NA	Free
Protected Phases		4	4		3	
Permitted Phases				4		Free
Actuated Green, G (s)		34.0	34.0	34.0	26.4	98.4
Effective Green, g (s)		34.0	34.0	34.0	26.4	98.4
Actuated g/C Ratio		0.35	0.35	0.35	0.27	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1222	1222	534	921	1583
v/s Ratio Prot		c0.35	0.31		c0.24	
v/s Ratio Perm				0.18		c0.08
v/c Ratio		1.03	0.90	0.52	0.89	0.08
Uniform Delay, d1		32.2	30.6	25.6	34.6	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		33.1	9.0	0.8	10.5	0.1
Delay (s)		65.3	39.5	26.5	45.1	0.1
Level of Service		E	D	C	D	A
Approach Delay (s)		65.3	34.1		39.1	
Approach LOS		E	C		D	

Intersection Summary			
HCM 2000 Control Delay	44.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	1576	0	0	1650	648	225	359	22	529	427	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91			0.91	1.00	0.91	0.91		0.91	0.86	0.91
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.99		1.00	0.99	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	3433	5085			5085	1558	1610	3352		1610	3134	1417
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	3433	5085			5085	1558	1610	3352		1610	3134	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	340	1592	0	0	1667	655	227	363	22	534	431	259
RTOR Reduction (vph)	0	0	0	0	0	354	0	3	0	0	2	119
Lane Group Flow (vph)	340	1592	0	0	1667	301	200	409	0	326	663	114
Confl. Peds. (#/hr)						5						5
Turn Type	Prot	NA			NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	9.0	55.0			42.0	42.0	18.5	18.5		34.5	34.5	34.5
Effective Green, g (s)	9.0	55.0			42.0	42.0	18.5	18.5		34.5	34.5	34.5
Actuated g/C Ratio	0.08	0.46			0.35	0.35	0.15	0.15		0.29	0.29	0.29
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	257	2330			1779	545	248	516		462	901	407
v/s Ratio Prot	c0.10	0.31			c0.33		c0.12	0.12		0.20	c0.21	
v/s Ratio Perm						0.19						0.08
v/c Ratio	1.32	0.68			0.94	0.55	0.81	0.79		0.71	0.74	0.28
Uniform Delay, d1	55.5	25.6			37.7	31.4	49.0	48.9		38.2	38.6	33.1
Progression Factor	1.19	0.95			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	153.2	0.5			10.9	4.0	17.2	8.1		4.9	3.2	0.4
Delay (s)	219.0	24.9			48.6	35.4	66.2	57.0		43.1	41.8	33.5
Level of Service	F	C			D	D	E	E		D	D	C
Approach Delay (s)		59.0			44.9			60.0			40.6	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	390	58	0	0	0	161
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	398	59	0	0	0	164
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			457		428	428
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			457		428	428
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	74
cM capacity (veh/h)			1104		584	627

Direction, Lane #	EB 1	NB 1
Volume Total	457	164
Volume Left	0	0
Volume Right	59	164
cSH	1700	627
Volume to Capacity	0.27	0.26
Queue Length 95th (ft)	0	26
Control Delay (s)	0.0	12.8
Lane LOS		B
Approach Delay (s)	0.0	12.8
Approach LOS		B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	Camino Del Rio / I-8 East
Agency or Company	Urban Crossroads, Inc.	Junction	I-5 NB Loop On Ramp
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing (2013)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 25.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1451	0.99	Level	4	0	0.980	1.00	1495
Ramp	1155	0.99	Level	4	0	0.980	1.00	1190
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 1495 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	1495	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	305	Exhibit 25-14	4500	No
V_R	1190	Exhibit 25-3	1900	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1495	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = 10.0 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

D_s = 0.665 (Exhibit 25-19)

S_R= 46.4 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 46.4 mph (Exhibit 25-15)

 HCS+[TM] Version 5.21 Generated: 6/17/2013 9:44 AM

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 SB On-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing (2013)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D,V_R,V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2116	0.97	Level	4	0	0.980	1.00	2225
Ramp	434	0.97	Level	4	0	0.980	1.00	456
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 2225 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2225	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	1769	Exhibit 25-14	4500	No
V_R	456	Exhibit 25-3	2100	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2225	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$$

D_R = 21.2 (pc/mi/ln)

LOS = C (Exhibit 25-4)

Speed Determination

D_s = 0.339 (Exhibit 25-19)

S_R= 50.6 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 50.6 mph (Exhibit 25-15)

 HCS+TM Version 5.21 Generated: 6/17/2013 9:46 AM

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 NB Off-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/13/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	Existing (2013)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp	Terrain: Level	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☑ No ☐ Off		☑ No ☐ Off
L_{up} = ft		L_{down} = ft
V_u = veh/h	S_{FF} = 55.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1360	0.97	Level	4	0	0.980	1.00	1430
Ramp	649	0.97	Level	4	0	0.980	1.00	682
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 1.000 using Equation (Exhibit 25-5)

V_{12} = 1430 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2112	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2112	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$$

D_R = 12.2 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

M_S = 0.218 (Exibit 25-19)

S_R= 52.2 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 52.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

 HCS+TM Version 5.21 Generated: 6/17/2013 9:55 AM

Attachment C

Existing (2013) Conditions Traffic Signal Warrant Analysis Worksheets

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Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **Existing (2013) Conditions - Weekday PM Peak Hour**

Major Street Name = **Shelter Island Drive**

Total of Both Approaches (VPH) = **796**

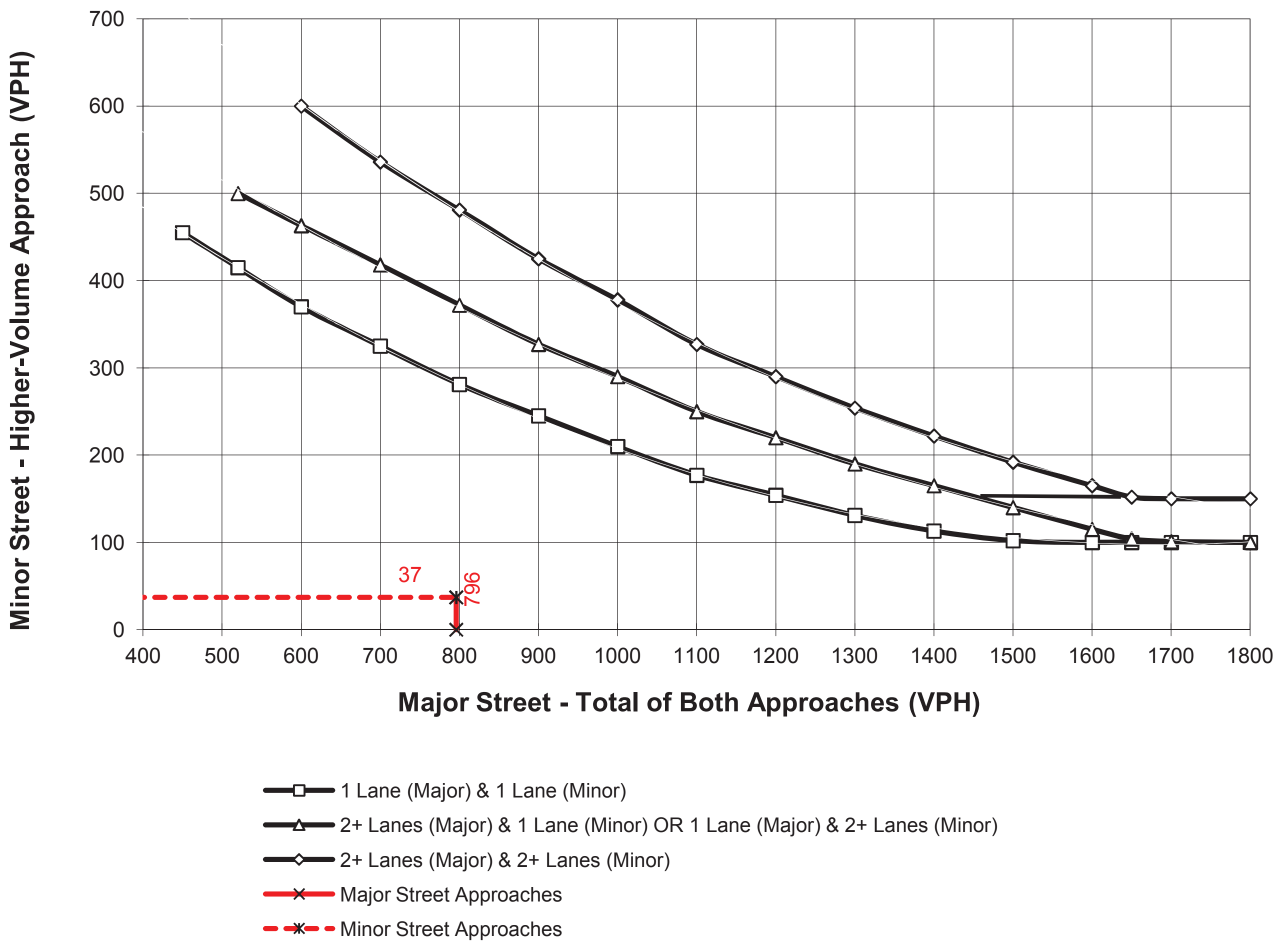
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Shafter Street**

High Volume Approach (VPH) = **37**

Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **Existing (2013) Conditions - Weekday PM Peak Hour**

Major Street Name = **Shelter Island Drive**

Total of Both Approaches (VPH) = **760**

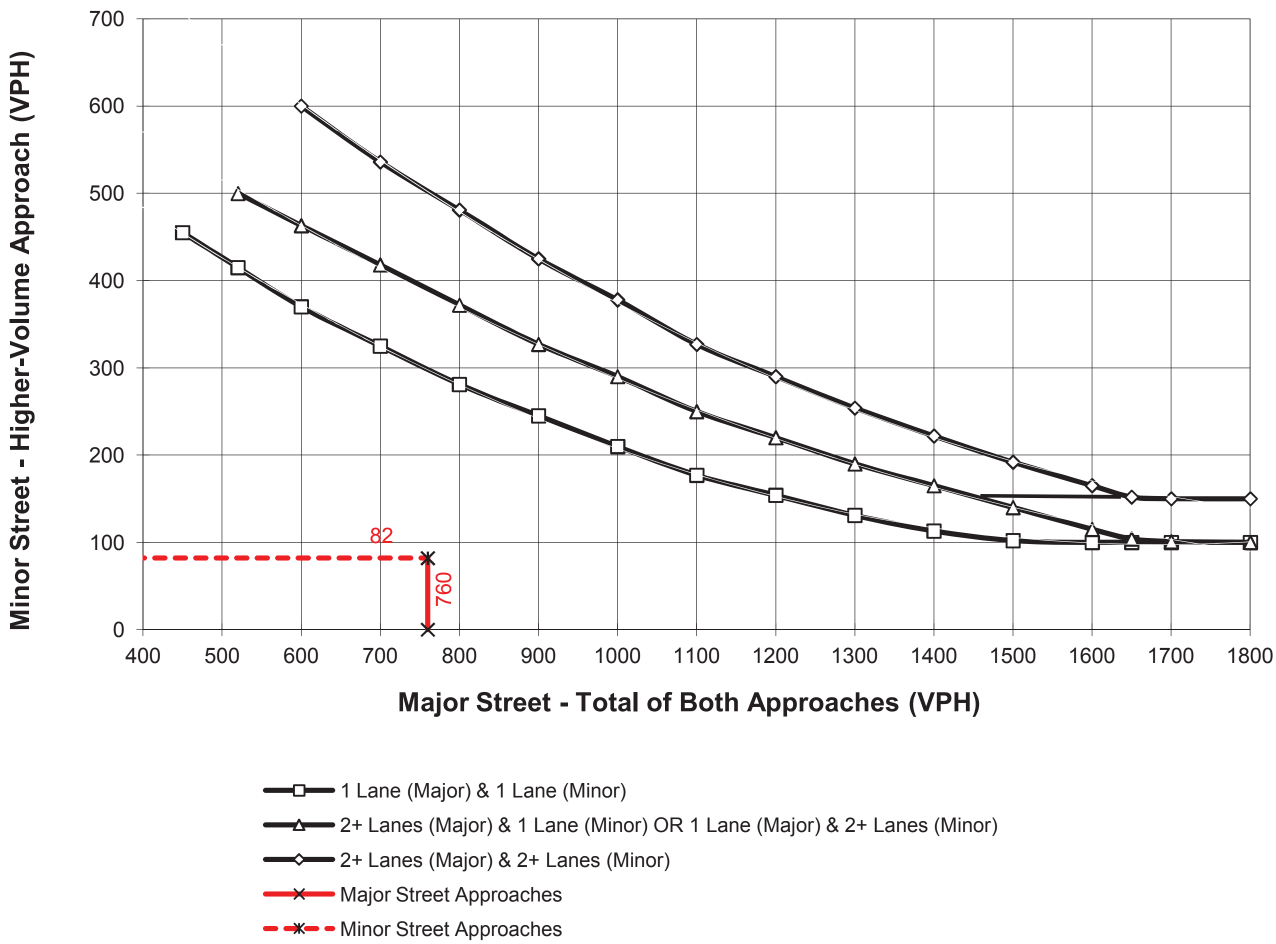
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Anchorage Lane**

High Volume Approach (VPH) = **82**

Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Attachment D

Existing Plus Project (Local Disposal Materials) Conditions Intersection Operations Analysis Worksheets

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Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Uncontaminated) Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Shelter Island Drive (NS) / Rosecrans Street (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.485
Loss Time (sec):	12	Average Delay (sec/veh):	20.5
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	27	27	27	27	27	27	10	24	24	10	24	24
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	9	8	58	20	17	17	2	584	15	83	1235	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	8	58	20	17	17	2	584	15	83	1235	10
Added Vol:	0	0	16	0	0	0	0	0	0	28	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	8	74	20	17	17	2	584	15	111	1235	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	10	9	80	22	18	18	2	635	16	121	1342	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	9	80	22	18	18	2	635	16	121	1342	11
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	9	80	22	18	18	2	635	16	121	1342	11
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	0.87	0.87	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Lanes:	0.10	0.09	0.81	0.38	0.31	0.31	1.00	1.95	0.05	1.00	1.98	0.02
Final Sat.:	163	145	1343	599	509	509	1805	3506	90	1805	3577	29
Capacity Analysis Module:												
Vol/Sat:	0.06	0.06	0.06	0.04	0.04	0.04	0.00	0.18	0.18	0.07	0.38	0.38
Crit Moves:		****					****				****	
Green/Cycle:	0.23	0.23	0.23	0.23	0.23	0.23	0.08	0.48	0.48	0.20	0.59	0.59
Volume/Cap:	0.27	0.27	0.27	0.16	0.16	0.16	0.01	0.38	0.38	0.34	0.63	0.63
Delay/Veh:	38.7	38.7	38.7	37.6	37.6	37.6	50.5	20.2	20.2	41.9	16.6	16.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.7	38.7	38.7	37.6	37.6	37.6	50.5	20.2	20.2	41.9	16.6	16.6
LOS by Move:	D	D	D	D	D	D	D	C	C	D	B	B
HCM2kAvgQ:	3	3	3	2	2	2	0	8	8	4	17	17

Note: Queue reported is the number of cars per lane.

```
--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
        (JN: 07893)  Existing plus Project (Uncontaminated) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #2 Shelter Island Drive (NS) / Scott Street (EW)
********************************************************************************
Cycle (sec):          90               Critical Vol./Cap.(X):        0.936
Loss Time (sec):      12               Average Delay (sec/veh):       18.8
Optimal Cycle: OPTIMIZED               Level Of Service:                 B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted      Prot+Permit      Prot+Permit
Rights:            Ovl            Include          Include          Include
Min. Green:    10   10    10   23   23    23   10   25    25   10   25    25
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        0  1  0  0  1   0  1  0  0  1   1  0  0  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:       9   88   102    9  160    12   14  181    15  217  196    23
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:    9   88   102    9  160    12   14  181    15  217  196    23
Added Vol:      0   16     0    0   28     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:    9  104   102    9  188    12   14  181    15  217  196    23
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92 0.92 0.92  0.92 0.92 0.92  0.92 0.92 0.92  0.92
PHF Volume:    10  114   111   10  205    13   15  198    16  237  214    25
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   10  114   111   10  205    13   15  198    16  237  214    25
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   10  114   111   10  205    13   15  198    16  237  214    25
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.98 0.98  0.85 0.99 0.99  0.85 0.95 0.99  0.99 0.95 0.93  0.93
Lanes:       0.08 0.92  1.00 0.05 0.95  1.00 1.00 0.92  0.08 1.00 1.79  0.21
Final Sat.:   148 1707  1615   86 1791  1615 1805 1734   144 1805 3179   373
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.07  0.07 0.11 0.11  0.01 0.01 0.11  0.11 0.13 0.07  0.07
Crit Moves:                       ****              ****        ****
Green/Cycle: 0.27 0.27  0.59 0.27 0.27  0.27 0.45 0.28  0.28 0.64 0.42  0.42
Volume/Cap:  0.24 0.24  0.12 0.42 0.42  0.03 0.02 0.41  0.41 0.29 0.16  0.16
Delay/Veh:   25.6 25.6   8.2 27.3 27.3  23.9 13.9 27.0  27.0  7.6 16.1  16.1
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  25.6 25.6   8.2 27.3 27.3  23.9 13.9 27.0  27.0  7.6 16.1  16.1
LOS by Move:    C    C     A    C    C     C    B    C     C    A    B     B
HCM2kAvgQ:      3    3     1    5    5     0    0    5     5    3    2     2
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
        (JN: 07893)  Existing plus Project (Uncontaminated) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #3 Shelter Island Drive (NS) / Shafter Street (EW)
********************************************************************************
Average Delay (sec/veh):      1.1       Worst Case Level Of Service: C[ 17.8]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11  198     7     5  383     8     4    6    16    14    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   11  198     7     5  383     8     4    6    16    14    2     0
Added Vol:      0   16     0     0   28     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   11  214     7     5  411     8     4    6    16    14    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:    13  247     8     6  475     9     5    7    18    16    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   13  247     8     6  475     9     5    7    18    16    2     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5 xxxxx
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0 xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  484 xxxx xxxxx   255 xxxx xxxxx   769  772   480   781  773 xxxxx
Potent Cap.: 1089 xxxx xxxxx  1321 xxxx xxxxx   320  332   590   315  332 xxxxx
Move Cap.:   1089 xxxx xxxxx  1321 xxxx xxxxx   315  327   590   296  327 xxxxx
Volume/Cap:  0.01 xxxx  xxxx  0.00 xxxx  xxxx  0.01 0.02  0.03  0.05 0.01  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.3 xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  447 xxxxx   300 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx   0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.6 xxxxx  17.8 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     C    *     *
ApproachDel:     xxxxxx           xxxxxx             13.6             17.8
ApproachLOS:        *                *                 B                C
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
        (JN: 07893)  Existing plus Project (Uncontaminated) Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Shelter Island Drive (NS) / Anchorage Lane (EW)
********************************************************************************
Average Delay (sec/veh):      1.3      Worst Case Level Of Service: B[ 11.9]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0   0  0  0  1  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      22  198     0     0  359    14     3    0    59     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   22  198     0     0  359    14     3    0    59     0    0     0
Added Vol:      0   16     0     0   28     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   22  214     0     0  387    14     3    0    59     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    25  244     0     0  442    16     3    0    67     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   25  244     0     0  442    16     3    0    67     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  458 xxxx xxxxx  xxxx xxxx xxxxx   744  744   450   778  752   244
Potent Cap.: 1114 xxxx xxxxx  xxxx xxxx xxxxx   385  345   614   316  341   799
Move Cap.:   1114 xxxx xxxxx  xxxx xxxx xxxxx   378  337   614   276  334   799
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.11  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  596 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  8.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.9 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             11.9            xxxxxx
ApproachLOS:        *                *                 B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

```
--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
        (JN: 07893)  Existing plus Project (Uncontaminated) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Hugo Street / North Harbor Drive (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         105              Critical Vol./Cap.(X):        0.579
Loss Time (sec):      12              Average Delay (sec/veh):       23.1
Optimal Cycle: OPTIMIZED              Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    27   27    27    27   27    27    10   24    24    10   24    24
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     202   26   167    78   31     9     2  728    81    39 1169     7
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  202   26   167    78   31     9     2  728    81    39 1169     7
Added Vol:      0    0     0     0    0     0     0   16     0     0   28     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  202   26   167    78   31     9     2  744    81    39 1197     7
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93  0.93 0.93  0.93
PHF Volume:   217   28   179    84   33    10     2  797    87    42 1283     8
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  217   28   179    84   33    10     2  797    87    42 1283     8
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  217   28   179    84   33    10     2  797    87    42 1283     8
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.74 0.87  0.87  0.59 0.59  0.59  0.95 0.94  0.94  0.95 0.95  0.95
Lanes:       1.00 0.13  0.87  0.66 0.26  0.08  1.00 1.80  0.20  1.00 1.99  0.01
Final Sat.:  1408  223  1430   745  296    86  1805 3207   349  1805 3585    21
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.13  0.13  0.11 0.11  0.11  0.00 0.25  0.25  0.02 0.36  0.36
Crit Moves:  ****                              ****                   ****
Green/Cycle: 0.26 0.26  0.26  0.26 0.26  0.26  0.10 0.45  0.45  0.17 0.53  0.53
Volume/Cap:  0.60 0.49  0.49  0.44 0.44  0.44  0.01 0.55  0.55  0.13 0.67  0.67
Delay/Veh:   37.0 34.0  34.0  33.7 33.7  33.7  43.1 21.2  21.2  36.9 18.7  18.7
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  37.0 34.0  34.0  33.7 33.7  33.7  43.1 21.2  21.2  36.9 18.7  18.7
LOS by Move:    D    C     C     C    C     C     D    C     C     D    B     B
HCM2kAvgQ:      7    6     6     4    4     4     0   11    11     1   15    15
********************************************************************************
Note: Queue reported is the number of cars per lane.
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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
        (JN: 07893)  Existing plus Project (Uncontaminated) Conditions
                              AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #6 Nimitz Boulevard (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          120              Critical Vol./Cap.(X):        0.741
Loss Time (sec):       16              Average Delay (sec/veh):       63.0
Optimal Cycle: OPTIMIZED               Level Of Service:                 E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl             Include          Include          Include
Min. Green:    10   30    30   10   30    30   10   28    28   10   28    28
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  2  0  1   1  0  1  1  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      20   30    42  310  317   212  216  722    18  113 1037    48
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   20   30    42  310  317   212  216  722    18  113 1037    48
Added Vol:      0    0     0    0    0     0    0   16     0    0   28     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   20   30    42  310  317   212  216  738    18  113 1065    48
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95
PHF Volume:    21   32    44  326  334   223  227  777    19  119 1121    51
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   21   32    44  326  334   223  227  777    19  119 1121    51
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   21   32    44  326  334   223  227  777    19  119 1121    51
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.95 0.95  0.85 0.95 0.89  0.89 0.95 0.95  0.95 0.95 0.94  0.94
Lanes:       1.00 2.00  1.00 1.00 1.20  0.80 1.00 1.95  0.05 1.00 1.91  0.09
Final Sat.:  1805 3610  1615 1805 2033  1360 1805 3510    86 1805 3434   155
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.01  0.03 0.18 0.16  0.16 0.13 0.22  0.22 0.07 0.33  0.33
Crit Moves:       ****       ****            ****                  ****
Green/Cycle: 0.11 0.25  0.37 0.18 0.32  0.32 0.12 0.32  0.32 0.12 0.32  0.32
Volume/Cap:  0.11 0.03  0.07 1.03 0.51  0.51 1.03 0.68  0.68 0.57 1.03  1.03
Delay/Veh:   48.7 34.1  24.9 107.0 33.7 33.7 120.3 36.8 36.8 53.9 74.6  74.6
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  48.7 34.1  24.9 107.0 33.7 33.7 120.3 36.8 36.8 53.9 74.6  74.6
LOS by Move:    D    C     C    F    C     C    F    D     D    D    E     E
HCM2kAvgQ:      1    0     1   18    9     9   11   13    13    4   24    24
********************************************************************************
Note: Queue reported is the number of cars per lane.

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
        (JN: 07893)  Existing plus Project (Uncontaminated) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          120                Critical Vol./Cap.(X):         0.849
Loss Time (sec):       16                Average Delay (sec/veh):        99.2
Optimal Cycle: OPTIMIZED                 Level Of Service:                  F
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    10   38    38    10   38    38    10   31    31    10   31    31
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  0  1  0    1  0  3  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     502  238   103   332  270     6     5 1152   399   157 1401   196
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  502  238   103   332  270     6     5 1152   399   157 1401   196
Added Vol:     22    0     0     0    0     0     0    0    16     0    6     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  524  238   103   332  270     6     5 1152   415   157 1407   196
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:   549  249   108   348  283     6     5 1208   435   165 1475   205
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  549  249   108   348  283     6     5 1208   435   165 1475   205
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  549  249   108   348  283     6     5 1208   435   165 1475   205
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.85  0.95 1.00  1.00  0.95 0.91  0.85  0.92 0.95  0.85
Lanes:       2.00 1.00  1.00  1.00 0.98  0.02  1.00 3.00  1.00  2.00 2.00  1.00
Final Sat.:  3502 1900  1615  1805 1853    41  1805 5187  1615  3502 3610  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.13  0.07  0.19 0.15  0.15  0.00 0.23  0.27  0.05 0.41  0.13
Crit Moves:       ****        ****              ****                   ****
Green/Cycle: 0.15 0.32  0.32  0.15 0.32  0.32  0.08 0.31  0.31  0.09 0.32  0.32
Volume/Cap:  1.05 0.41  0.21  1.29 0.48  0.48  0.03 0.76  0.88  0.50 1.29  0.40
Delay/Veh:  103.6 32.7  30.2 205.9 33.7  33.7  50.7 39.9  56.2  52.8  178  32.6
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh: 103.6 32.7  30.2 205.9 33.7  33.7  50.7 39.9  56.2  52.8  178  32.6
LOS by Move:    F    C     C     F    C     C     D    D     E     D    F     C
HCM2kAvgQ:     16    7     3    25    9     9     0   15    16     3   49     6
********************************************************************************
Note: Queue reported is the number of cars per lane.

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	1291	34	172	1551	240	79	428	118	175	263	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5064		3433	5085	1555	1770	3539	1557	3433	3539	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5064		3433	5085	1555	1770	3539	1557	3433	3539	1557
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	274	1373	36	183	1650	255	84	455	126	186	280	186
RTOR Reduction (vph)	0	2	0	0	0	139	0	0	86	0	0	125
Lane Group Flow (vph)	274	1407	0	183	1650	116	84	455	40	186	280	61
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	11.9	46.6		10.4	45.1	45.1	7.9	38.1	38.1	8.9	39.1	39.1
Effective Green, g (s)	11.9	46.6		10.4	45.1	45.1	7.9	38.1	38.1	8.9	39.1	39.1
Actuated g/C Ratio	0.10	0.39		0.09	0.38	0.38	0.07	0.32	0.32	0.07	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	340	1966		297	1911	584	116	1123	494	254	1153	507
v/s Ratio Prot	c0.08	0.28		0.05	c0.32		0.05	c0.13		c0.05	0.08	
v/s Ratio Perm						0.07			0.03			0.04
v/c Ratio	0.81	0.72		0.62	0.86	0.20	0.72	0.41	0.08	0.73	0.24	0.12
Uniform Delay, d1	52.9	31.1		52.9	34.6	25.3	55.0	32.1	28.7	54.4	29.6	28.4
Progression Factor	1.00	1.00		1.36	0.60	0.43	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.0	2.3		3.0	4.4	0.6	19.9	1.1	0.3	10.4	0.5	0.5
Delay (s)	65.9	33.3		74.9	25.2	11.5	74.9	33.2	29.0	64.8	30.1	28.9
Level of Service	E	C		E	C	B	E	C	C	E	C	C
Approach Delay (s)		38.7			27.9			37.6			39.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	893	1296	540	384	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3539	3539	1551	3433	1583
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3539	3539	1551	3433	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	930	1350	562	400	66
RTOR Reduction (vph)	0	0	0	306	0	0
Lane Group Flow (vph)	0	930	1350	256	400	66
Confl. Peds. (#/hr)				5		
Turn Type		NA	NA	Perm	NA	Free
Protected Phases		4	4		3	
Permitted Phases				4		Free
Actuated Green, G (s)		29.0	29.0	29.0	14.6	81.6
Effective Green, g (s)		29.0	29.0	29.0	14.6	81.6
Actuated g/C Ratio		0.36	0.36	0.36	0.18	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1257	1257	551	614	1583
v/s Ratio Prot		0.26	c0.38		c0.12	
v/s Ratio Perm				0.17		c0.04
v/c Ratio		0.74	1.07	0.47	0.65	0.04
Uniform Delay, d1		23.0	26.3	20.3	31.1	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.3	47.8	0.6	2.5	0.0
Delay (s)		25.3	74.1	20.9	33.6	0.0
Level of Service		C	E	C	C	A
Approach Delay (s)		25.3	58.5		28.9	
Approach LOS		C	E		C	

Intersection Summary			
HCM 2000 Control Delay	45.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	81.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	1275	0	0	1693	327	136	184	10	229	161	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91			0.91	1.00	0.91	0.91		0.91	0.86	0.91
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.99		1.00	0.99	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99		0.95	0.98	1.00
Satd. Flow (prot)	3433	5085			5085	1558	1610	3347		1610	3126	1417
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99		0.95	0.98	1.00
Satd. Flow (perm)	3433	5085			5085	1558	1610	3347		1610	3126	1417
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	119	1314	0	0	1745	337	140	190	10	236	166	112
RTOR Reduction (vph)	0	0	0	0	0	134	0	3	0	0	2	84
Lane Group Flow (vph)	119	1314	0	0	1745	203	111	226	0	135	276	17
Confl. Peds. (#/hr)						5						5
Turn Type	Prot	NA			NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	8.5	74.8			62.3	62.3	12.7	12.7		20.5	20.5	20.5
Effective Green, g (s)	8.5	74.8			62.3	62.3	12.7	12.7		20.5	20.5	20.5
Actuated g/C Ratio	0.07	0.62			0.52	0.52	0.11	0.11		0.17	0.17	0.17
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	243	3169			2639	808	170	354		275	534	242
v/s Ratio Prot	c0.03	0.26			c0.34		c0.07	0.07		0.08	c0.09	
v/s Ratio Perm						0.13						0.01
v/c Ratio	0.49	0.41			0.66	0.25	0.65	0.64		0.49	0.52	0.07
Uniform Delay, d1	53.7	11.5			21.1	16.0	51.5	51.5		45.0	45.2	41.8
Progression Factor	1.14	0.67			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.3			1.3	0.7	8.7	3.8		1.4	0.8	0.1
Delay (s)	62.5	8.0			22.4	16.7	60.2	55.2		46.4	46.1	41.9
Level of Service	E	A			C	B	E	E		D	D	D
Approach Delay (s)		12.5			21.5			56.9			45.3	
Approach LOS		B			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	237	53	0	0	0	33
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	260	58	0	0	0	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			319		290	290
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			319		290	290
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1241		701	750

Direction, Lane #	EB 1	NB 1
Volume Total	319	36
Volume Left	0	0
Volume Right	58	36
cSH	1700	750
Volume to Capacity	0.19	0.05
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	10.0
Lane LOS		B
Approach Delay (s)	0.0	10.0
Approach LOS		B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	Camino Del Rio / I-8 East
Agency or Company	Urban Crossroads, Inc.	Junction	I-5 NB Loop On Ramp
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P(Uncontaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 25.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	852	0.97	Level	4	0	0.980	1.00	896
Ramp	794	0.97	Level	4	0	0.980	1.00	835
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F\ (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 896 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	896	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	61	Exhibit 25-14	4500	No
V_R	835	Exhibit 25-3	1900	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	896	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.0009\ L_D$

D_R = 4.9 (pc/mi/ln)

LOS = A (Exhibit 25-4)

Speed Determination

D_s = 0.633 (Exhibit 25-19)

S_R= 46.8 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 46.8 mph (Exhibit 25-15)

 HCS+™ Version 5.21 Generated: 6/17/2013 10:05 AM

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 SB On-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P(Uncontaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1021	0.95	Level	4	0	0.980	1.00	1096
Ramp	220	0.95	Level	4	0	0.980	1.00	236
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 1096 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	1096	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	860	Exhibit 25-14	4500	No
V_R	236	Exhibit 25-3	2100	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1096	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$

D_R = 11.5 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

D_s = 0.319 (Exhibit 25-19)

S_R= 50.8 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 50.8 mph (Exhibit 25-15)

 HCS+™ Version 5.21 Generated: 6/17/2013 10:04 AM

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 NB Off-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/13/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P(Uncontaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2006	0.95	Level	4	0	0.980	1.00	2154
Ramp	338	0.95	Level	4	0	0.980	1.00	363
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 1.000 using Equation (Exhibit 25-5)

V_{12} = 2154 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2517	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2517	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 15.5 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

M_S = 0.234 (Exibit 25-19)

S_R= 52.0 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 52.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

 HCS+[TM] Version 5.21 Generated: 6/17/2013 10:05 AM

Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Uncontaminated) Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Shelter Island Drive (NS) / Rosecrans Street (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.710
Loss Time (sec):	12	Average Delay (sec/veh):	28.9
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	27	27	27	27	27	27	10	24	24	10	24	24
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	26	31	155	37	48	11	6	1086	39	266	703	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	31	155	37	48	11	6	1086	39	266	703	20
Added Vol:	0	0	28	0	0	0	0	0	0	16	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	26	31	183	37	48	11	6	1086	39	282	703	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
PHF Volume:	26	31	186	38	49	11	6	1103	40	286	714	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	26	31	186	38	49	11	6	1103	40	286	714	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	26	31	186	38	49	11	6	1103	40	286	714	20
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.86	0.86	0.86	0.81	0.81	0.81	0.95	0.95	0.95	0.95	0.95	0.95
Lanes:	0.11	0.13	0.76	0.39	0.50	0.11	1.00	1.93	0.07	1.00	1.94	0.06
Final Sat.:	178	212	1253	594	771	177	1805	3467	125	1805	3496	99
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.15	0.06	0.06	0.06	0.00	0.32	0.32	0.16	0.20	0.20
Crit Moves:		****						****		****		
Green/Cycle:	0.27	0.27	0.27	0.27	0.27	0.27	0.18	0.41	0.41	0.20	0.43	0.43
Volume/Cap:	0.55	0.55	0.55	0.23	0.23	0.23	0.02	0.78	0.78	0.78	0.47	0.47
Delay/Veh:	32.8	32.8	32.8	28.7	28.7	28.7	33.8	28.6	28.6	48.1	20.6	20.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.8	32.8	32.8	28.7	28.7	28.7	33.8	28.6	28.6	48.1	20.6	20.6
LOS by Move:	C	C	C	C	C	C	C	C	C	D	C	C
HCM2kAvgQ:	6	6	6	2	2	2	0	18	18	8	8	8

Note: Queue reported is the number of cars per lane.

Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Uncontaminated) Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Shelter Island Drive (NS) / Scott Street (EW)

Cycle (sec):	90	Critical Vol./Cap.(X):	0.936
Loss Time (sec):	12	Average Delay (sec/veh):	20.5
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Prot+Permit			Prot+Permit		
Rights:	Ovl			Include			Include			Include		
Min. Green:	10	10	10	23	23	23	10	25	25	10	25	25
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 1	0 0	1	0 1	0 0	1	1 0	0 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	24	152	255	33	233	40	19	410	16	79	82	27
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	24	152	255	33	233	40	19	410	16	79	82	27
Added Vol:	0	28	0	0	16	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	24	180	255	33	249	40	19	410	16	79	82	27
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	25	187	265	34	259	42	20	426	17	82	85	28
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	25	187	265	34	259	42	20	426	17	82	85	28
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	25	187	265	34	259	42	20	426	17	82	85	28
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.94	0.85	0.95	0.95	0.85	0.95	0.99	0.99	0.95	0.91	0.91
Lanes:	0.12	0.88	1.00	0.12	0.88	1.00	1.00	0.96	0.04	1.00	1.50	0.50
Final Sat.:	210	1578	1615	210	1585	1615	1805	1818	71	1805	2615	861
Capacity Analysis Module:												
Vol/Sat:	0.12	0.12	0.16	0.16	0.16	0.03	0.01	0.23	0.23	0.05	0.03	0.03
Crit Moves:					****			****		****		
Green/Cycle:	0.31	0.31	0.42	0.31	0.31	0.31	0.60	0.45	0.45	0.51	0.40	0.40
Volume/Cap:	0.38	0.38	0.39	0.53	0.53	0.08	0.02	0.53	0.53	0.17	0.08	0.08
Delay/Veh:	24.7	24.7	18.4	26.5	26.5	22.1	7.3	18.7	18.7	12.1	16.9	16.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	24.7	24.7	18.4	26.5	26.5	22.1	7.3	18.7	18.7	12.1	16.9	16.9
LOS by Move:	C	C	B	C	C	C	A	B	B	B	B	B
HCM2kAvgQ:	5	5	5	7	7	1	0	9	9	1	1	1

Note: Queue reported is the number of cars per lane.

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
         (JN: 07893) Existing plus Project (Uncontaminated) Conditions
                                  PM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #3 Shelter Island Drive (NS) / Shafter Street (EW)
********************************************************************************
Average Delay (sec/veh):      1.4      Worst Case Level Of Service: C[ 19.1]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      18  427    22    17  304     8     7   10    20    10    6     5
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   18  427    22    17  304     8     7   10    20    10    6     5
Added Vol:      0   28     0     0   16     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   18  455    22    17  320     8     7   10    20    10    6     5
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94
PHF Volume:    19  486    24    18  342     9     7   11    21    11    6     5
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   19  486    24    18  342     9     7   11    21    11    6     5
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  350 xxxx xxxxx   510 xxxx xxxxx   925  931   346   935  923   498
Potent Cap.: 1220 xxxx xxxxx  1066 xxxx xxxxx   252  269   701   248  272   576
Move Cap.:   1220 xxxx xxxxx  1066 xxxx xxxxx   239  260   701   227  263   576
Volume/Cap:  0.02 xxxx  xxxx  0.02 xxxx  xxxx  0.03 0.04  0.03  0.05 0.02  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.0 xxxx xxxxx   8.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  384 xxxxx  xxxx  278 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx  0.3 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.4 xxxxx xxxxx 19.1 xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    C     *
ApproachDel:     xxxxxx           xxxxxx             15.4             19.1
ApproachLOS:        *                *                 C                C
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
         (JN: 07893) Existing plus Project (Uncontaminated) Conditions
                                PM Peak Hour
--------------------------------------------------------------------------------

                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Shelter Island Drive (NS) / Anchorage Lane (EW)
********************************************************************************
Average Delay (sec/veh):      1.6       Worst Case Level Of Service: B[ 13.3]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled       Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      44  414     0     0  287    15    20    0    62     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   44  414     0     0  287    15    20    0    62     0    0     0
Added Vol:      0   28     0     0   16     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   44  442     0     0  303    15    20    0    62     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    48  485     0     0  333    16    22    0    68     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   48  485     0     0  333    16    22    0    68     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  349 xxxx xxxxx  xxxx xxxx xxxxx   923  923   341   957  931   485
Potent Cap.: 1221 xxxx xxxxx  xxxx xxxx xxxxx   302  272   706   239  269   586
Move Cap.:   1221 xxxx xxxxx  xxxx xxxx xxxxx   293  261   706   210  258   586
Volume/Cap:  0.04 xxxx  xxxx  xxxx xxxx  xxxx  0.07 0.00  0.10  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  525 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.6 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  8.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.3 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             13.3           xxxxxx
ApproachLOS:        *                *                 B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
         (JN: 07893) Existing plus Project (Uncontaminated) Conditions
                               PM Peak Hour
--------------------------------------------------------------------------------

                     Level Of Service Computation Report
           2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Hugo Street / North Harbor Drive (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          95              Critical Vol./Cap.(X):        0.805
Loss Time (sec):      12              Average Delay (sec/veh):       29.3
Optimal Cycle: OPTIMIZED              Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    27   27    27   27   27    27   10   24    24   10   24    24
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  1  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     341   91   124   55   32     6    6 1266   153   46  885    13
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse: 341   91   124   55   32     6    6 1266   153   46  885    13
Added Vol:     0    0     0    0    0     0    0   28     0    0   16     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut: 341   91   124   55   32     6    6 1294   153   46  901    13
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.97 0.97  0.97 0.97 0.97  0.97 0.97 0.97  0.97 0.97 0.97  0.97
PHF Volume:   353   94   128   57   33     6    6 1338   158   48  932    13
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  353   94   128   57   33     6    6 1338   158   48  932    13
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  353   94   128   57   33     6    6 1338   158   48  932    13
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.73 0.91  0.91 0.73 0.73  0.73 0.95 0.93  0.93 0.95 0.95  0.95
Lanes:       1.00 0.42  0.58 0.60 0.34  0.06 1.00 1.79  0.21 1.00 1.97  0.03
Final Sat.:  1379  734  1000  825  480    90 1805 3177   376 1805 3552    51
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.13  0.13 0.07 0.07  0.07 0.00 0.42  0.42 0.03 0.26  0.26
Crit Moves:  ****                                  ****        ****
Green/Cycle: 0.29 0.29  0.29 0.29 0.29  0.29 0.17 0.48  0.48 0.11 0.42  0.42
Volume/Cap:  0.88 0.44  0.44 0.24 0.24  0.24 0.02 0.88  0.88 0.25 0.63  0.63
Delay/Veh:   51.8 28.1  28.1 26.0 26.0  26.0 33.1 28.1  28.1 39.8 22.8  22.8
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  51.8 28.1  28.1 26.0 26.0  26.0 33.1 28.1  28.1 39.8 22.8  22.8
LOS by Move:    D    C     C    C    C     C    C    C     C    D    C     C
HCM2kAvgQ:     13    6     6    2    2     2    0   21    21    1   10    10
********************************************************************************
Note: Queue reported is the number of cars per lane.
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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
         (JN: 07893) Existing plus Project (Uncontaminated) Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #6 Nimitz Boulevard (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          120                Critical Vol./Cap.(X):        0.858
Loss Time (sec):       16                Average Delay (sec/veh):       66.8
Optimal Cycle: OPTIMIZED                 Level Of Service:                 E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl             Include          Include          Include
Min. Green:    10   30    30   10   30    30   10   28    28   10   28    28
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  2  0  1   1  0  1  1  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      38  329   151  257  225   171  332 1178    33  155  945   144
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   38  329   151  257  225   171  332 1178    33  155  945   144
Added Vol:      0    0     0    0    0     0    0   28     0    0   16     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   38  329   151  257  225   171  332 1206    33  155  961   144
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98
PHF Volume:    39  335   154  262  229   174  338 1229    34  158  980   147
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   39  335   154  262  229   174  338 1229    34  158  980   147
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   39  335   154  262  229   174  338 1229    34  158  980   147
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.95 0.95  0.85 0.95 0.89  0.89 0.95 0.95  0.95 0.95 0.93  0.93
Lanes:       1.00 2.00  1.00 1.00 1.14  0.86 1.00 1.95  0.05 1.00 1.74  0.26
Final Sat.:  1805 3610  1615 1805 1918  1458 1805 3500    96 1805 3080   462
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.09  0.10 0.15 0.12  0.12 0.19 0.35  0.35 0.09 0.32  0.32
Crit Moves:       ****       ****             ****                  ****
Green/Cycle: 0.10 0.25  0.35 0.14 0.29  0.29 0.18 0.38  0.38 0.10 0.30  0.30
Volume/Cap:  0.22 0.37  0.28 1.06 0.41  0.41 1.06 0.92  0.92 0.92 1.06  1.06
Delay/Veh:   50.7 37.5  28.7 124.1 34.6  34.6 114.9 44.9  44.9 98.7 85.2  85.2
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  50.7 37.5  28.7 124.1 34.6  34.6 114.9 44.9  44.9 98.7 85.2  85.2
LOS by Move:    D    D     C    F    C     C    F    D     D    F    F     F
HCM2kAvgQ:      1    5     4   15    6     6   15   23    23    5   24    24
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
         (JN: 07893) Existing plus Project (Uncontaminated) Conditions
                                PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          120                Critical Vol./Cap.(X):        0.860
Loss Time (sec):       16                Average Delay (sec/veh):       67.7
Optimal Cycle: OPTIMIZED                 Level Of Service:                 E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    10   38    38    10   38    38    10   31    31    10   31    31
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  0  1  0    1  0  3  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     422  339   187   253  275     9    21 1591   546   142 1181   260
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  422  339   187   253  275     9    21 1591   546   142 1181   260
Added Vol:     16    0     0     0    0     0     0    6    22     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  438  339   187   253  275     9    21 1597   568   142 1181   260
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:   459  355   196   265  288     9    22 1674   595   149 1238   273
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  459  355   196   265  288     9    22 1674   595   149 1238   273
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  459  355   196   265  288     9    22 1674   595   149 1238   273
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.85  0.95 1.00  1.00  0.95 0.91  0.85  0.92 0.95  0.85
Lanes:       2.00 1.00  1.00  1.00 0.97  0.03  1.00 3.00  1.00  2.00 2.00  1.00
Final Sat.:  3502 1900  1615  1805 1831    60  1805 5187  1615  3502 3610  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.19  0.12  0.15 0.16  0.16  0.01 0.32  0.37  0.04 0.34  0.17
Crit Moves:       ****        ****                            ****  ****
Green/Cycle: 0.13 0.32  0.32  0.13 0.32  0.32  0.08 0.33  0.33  0.08 0.33  0.33
Volume/Cap:  1.00 0.59  0.38  1.10 0.50  0.50  0.15 0.97  1.10  0.51 1.03  0.51
Delay/Veh:   92.8 36.0  32.4 141.1 33.8  33.8  51.5 53.9 110.6  54.2 73.2  32.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  92.8 36.0  32.4 141.1 33.8  33.8  51.5 53.9 110.6  54.2 73.2  32.8
LOS by Move:    F    D     C     F    C     C     D    D     F     D    E     C
HCM2kAvgQ:     13   11     6    16    9     9     1   23    28     3   28     8
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	399	1815	81	397	1397	360	141	595	319	288	523	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5049		3433	5085	1555	1770	3539	1557	3433	3539	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5049		3433	5085	1555	1770	3539	1557	3433	3539	1557
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	407	1852	83	405	1426	367	144	607	326	294	534	243
RTOR Reduction (vph)	0	4	0	0	0	154	0	0	146	0	0	166
Lane Group Flow (vph)	407	1931	0	405	1426	213	144	607	180	294	534	77
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	15.9	44.0		12.0	40.1	40.1	10.0	38.0	38.0	10.0	38.0	38.0
Effective Green, g (s)	15.9	44.0		12.0	40.1	40.1	10.0	38.0	38.0	10.0	38.0	38.0
Actuated g/C Ratio	0.13	0.37		0.10	0.33	0.33	0.08	0.32	0.32	0.08	0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	454	1851		343	1699	519	147	1120	493	286	1120	493
v/s Ratio Prot	0.12	c0.38		c0.12	0.28		c0.08	c0.17		c0.09	0.15	
v/s Ratio Perm						0.14			0.12			0.05
v/c Ratio	0.90	1.04		1.18	0.84	0.41	0.98	0.54	0.37	1.03	0.48	0.16
Uniform Delay, d1	51.2	38.0		54.0	37.0	30.8	54.9	33.8	31.7	55.0	33.0	29.5
Progression Factor	1.00	1.00		0.62	0.45	0.18	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.8	33.2		96.1	2.7	1.2	67.2	1.9	2.1	60.6	1.5	0.7
Delay (s)	71.1	71.2		129.8	19.4	6.8	122.1	35.7	33.8	115.6	34.5	30.1
Level of Service	E	E		F	B	A	F	D	C	F	C	C
Approach Delay (s)		71.2			37.6			46.7			55.8	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	53.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1240	1081	773	794	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3539	3539	1548	3433	1583
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3539	3539	1548	3433	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1278	1114	797	819	125
RTOR Reduction (vph)	0	0	0	522	0	0
Lane Group Flow (vph)	0	1278	1114	275	819	125
Confl. Peds. (#/hr)				5		
Turn Type		NA	NA	Perm	NA	Free
Protected Phases		4	4		3	
Permitted Phases				4		Free
Actuated Green, G (s)		34.0	34.0	34.0	26.4	98.4
Effective Green, g (s)		34.0	34.0	34.0	26.4	98.4
Actuated g/C Ratio		0.35	0.35	0.35	0.27	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1222	1222	534	921	1583
v/s Ratio Prot		c0.36	0.31		c0.24	
v/s Ratio Perm				0.18		c0.08
v/c Ratio		1.05	0.91	0.52	0.89	0.08
Uniform Delay, d1		32.2	30.8	25.6	34.6	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		38.6	10.3	0.8	10.5	0.1
Delay (s)		70.8	41.1	26.5	45.1	0.1
Level of Service		E	D	C	D	A
Approach Delay (s)		70.8	35.0		39.1	
Approach LOS		E	C		D	

Intersection Summary			
HCM 2000 Control Delay	47.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	1582	0	0	1650	648	225	359	22	529	427	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91			0.91	1.00	0.91	0.91		0.91	0.86	0.91
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.99		1.00	0.99	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	3433	5085			5085	1558	1610	3352		1610	3134	1417
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	3433	5085			5085	1558	1610	3352		1610	3134	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	340	1598	0	0	1667	655	227	363	22	534	431	259
RTOR Reduction (vph)	0	0	0	0	0	354	0	3	0	0	2	119
Lane Group Flow (vph)	340	1598	0	0	1667	301	200	409	0	326	663	114
Confl. Peds. (#/hr)						5						5
Turn Type	Prot	NA			NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	9.0	55.0			42.0	42.0	18.5	18.5		34.5	34.5	34.5
Effective Green, g (s)	9.0	55.0			42.0	42.0	18.5	18.5		34.5	34.5	34.5
Actuated g/C Ratio	0.08	0.46			0.35	0.35	0.15	0.15		0.29	0.29	0.29
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	257	2330			1779	545	248	516		462	901	407
v/s Ratio Prot	c0.10	0.31			c0.33		c0.12	0.12		0.20	c0.21	
v/s Ratio Perm						0.19						0.08
v/c Ratio	1.32	0.69			0.94	0.55	0.81	0.79		0.71	0.74	0.28
Uniform Delay, d1	55.5	25.7			37.7	31.4	49.0	48.9		38.2	38.6	33.1
Progression Factor	1.19	0.95			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	153.0	0.5			10.9	4.0	17.2	8.1		4.9	3.2	0.4
Delay (s)	218.9	24.9			48.6	35.4	66.2	57.0		43.1	41.8	33.5
Level of Service	F	C			D	D	E	E		D	D	C
Approach Delay (s)		59.0			44.9			60.0			40.6	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	50.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	390	58	0	0	0	161
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	398	59	0	0	0	164
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			457		428	428
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			457		428	428
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	74
cM capacity (veh/h)			1104		584	627

Direction, Lane #	EB 1	NB 1
Volume Total	457	164
Volume Left	0	0
Volume Right	59	164
cSH	1700	627
Volume to Capacity	0.27	0.26
Queue Length 95th (ft)	0	26
Control Delay (s)	0.0	12.8
Lane LOS		B
Approach Delay (s)	0.0	12.8
Approach LOS		B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	Camino Del Rio / I-8 East
Agency or Company	Urban Crossroads, Inc.	Junction	I-5 NB Loop On Ramp
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P(Uncontaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 25.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1451	0.99	Level	4	0	0.980	1.00	1495
Ramp	1161	0.99	Level	4	0	0.980	1.00	1196
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 1495 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	1495	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	299	Exhibit 25-14	4500	No
V_R	1196	Exhibit 25-3	1900	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1495	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = 10.0 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

D_s = 0.666 (Exhibit 25-19)

S_R= 46.3 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 46.3 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 SB On-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P(Uncontaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2138	0.97	Level	4	0	0.980	1.00	2248
Ramp	434	0.97	Level	4	0	0.980	1.00	456
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 2248 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2248	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	1792	Exhibit 25-14	4500	No
V_R	456	Exhibit 25-3	2100	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2248	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$

D_R = 21.4 (pc/mi/ln)

LOS = C (Exhibit 25-4)

Speed Determination

D_s = 0.339 (Exhibit 25-19)

S_R= 50.6 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 50.6 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 NB Off-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/13/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P(Uncontaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp	Terrain: Level	Downstream Adj Ramp
☐ Yes ☐ On		☐ Yes ☐ On
☑ No ☐ Off		☑ No ☐ Off
L_{up} = ft		L_{down} = ft
V_u = veh/h	S_{FF} = 55.0 mph S_{FR} = 45.0 mph Sketch (show lanes, L_A, L_D, V_R, V_f)	V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1376	0.97	Level	4	0	0.980	1.00	1447
Ramp	649	0.97	Level	4	0	0.980	1.00	682
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 1.000 using Equation (Exhibit 25-5)

V_{12} = 1447 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2129	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2129	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 12.4 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

M_S = 0.219 (Exibit 25-19)

S_R= 52.2 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 52.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

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Attachment E

Existing Plus Project (Local Disposal Materials) Conditions Traffic Signal Warrant Analysis Worksheets

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Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **E+P (Uncontaminated Materials) Conditions - Weekday PM Peak Hour**

Major Street Name = **Shelter Island Drive**

Total of Both Approaches (VPH) = **840**

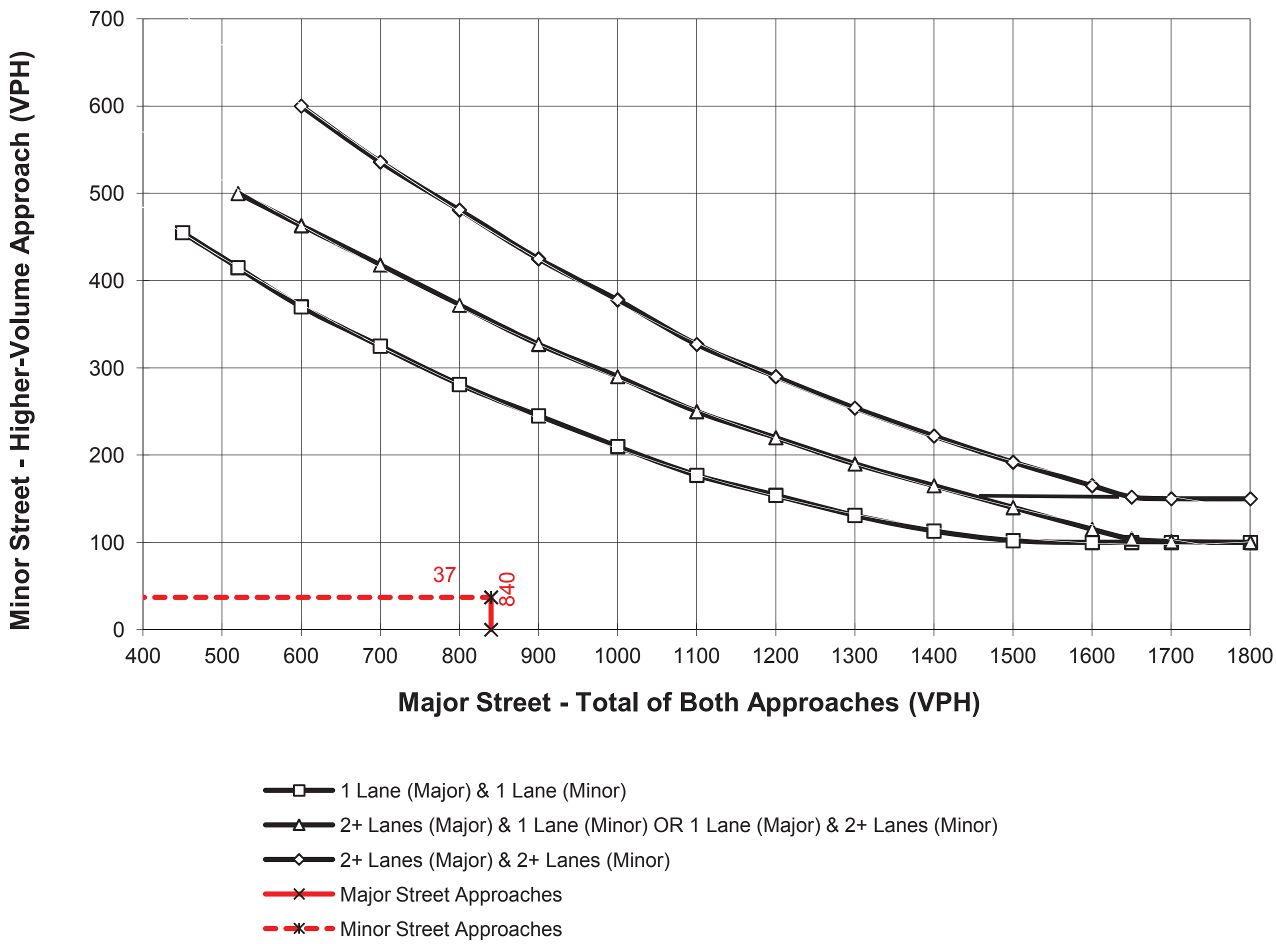
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Shafter Street**

High Volume Approach (VPH) = **37**

Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **E+P (Uncontaminated Materials) Conditions - Weekday PM Peak Hour**

Major Street Name = **Shelter Island Drive**

Total of Both Approaches (VPH) = **804**

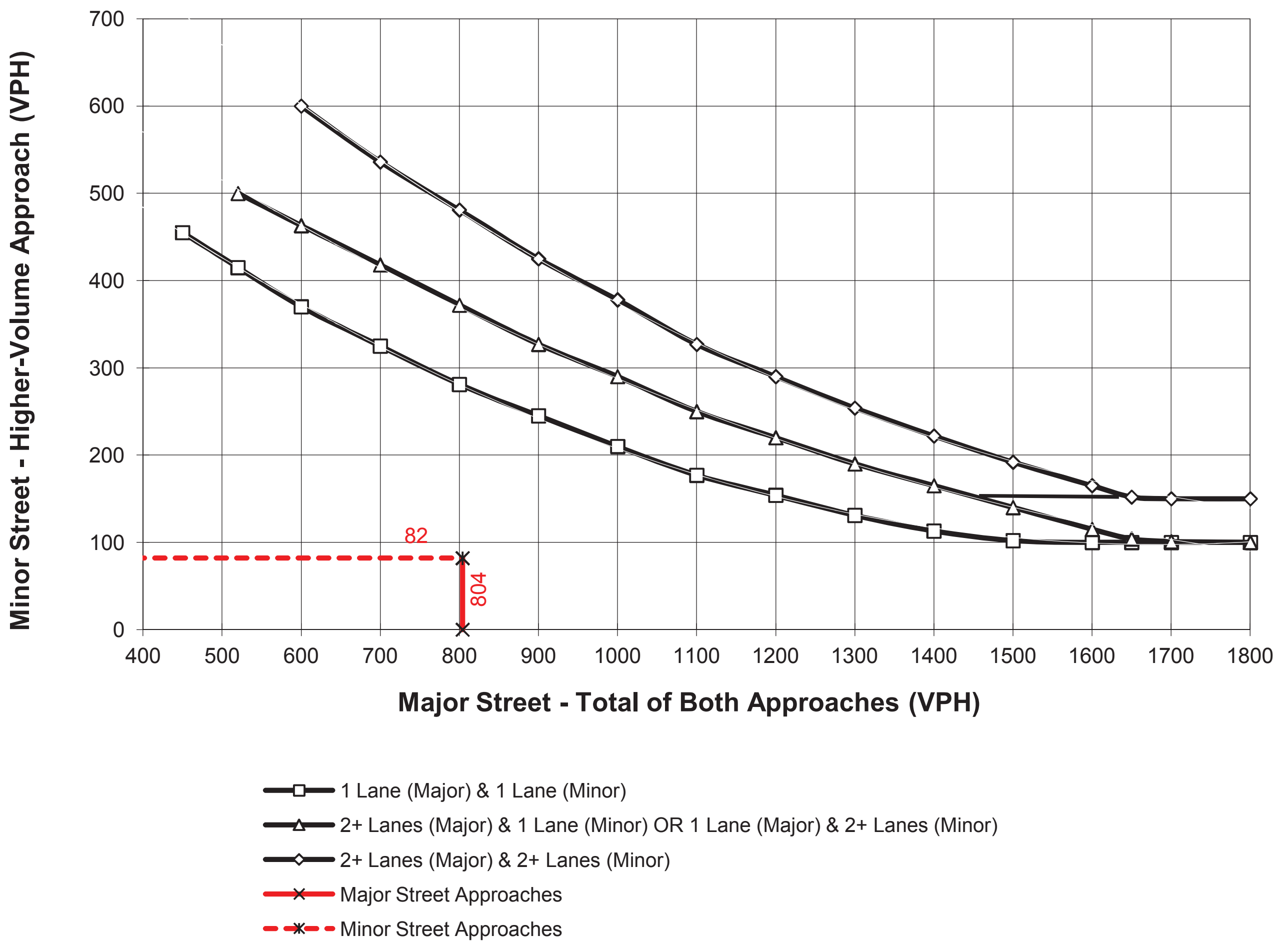
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Anchorage Lane**

High Volume Approach (VPH) = **82**

Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Attachment F

Existing Plus Project (Local Disposal Materials) Conditions Intersection Operations Analysis Worksheets, with Mitigation Measure

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Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Uncontaminated) Conditions
AM Peak Hour - WITH MITIGATION MEASURES

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.849
Loss Time (sec):	16	Average Delay (sec/veh):	98.2
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Protected			Protected			Protected			Protected	
Rights:		Include			Include			Include			Include	
Min. Green:	10	38	38	10	38	38	10	31	31	10	31	31
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:		2 0 1 0 1			1 0 0 1 0			1 0 3 0 1			2 0 2 0 1	
Volume Module:												
Base Vol:	502	238	103	332	270	6	5	1152	399	157	1401	196
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	502	238	103	332	270	6	5	1152	399	157	1401	196
Added Vol:	22	0	0	0	0	0	0	0	16	0	6	0
PasserByVol:	-16	0	0	0	0	0	0	0	-16	0	0	0
Initial Fut:	508	238	103	332	270	6	5	1152	399	157	1407	196
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	532	249	108	348	283	6	5	1208	418	165	1475	205
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	532	249	108	348	283	6	5	1208	418	165	1475	205
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	532	249	108	348	283	6	5	1208	418	165	1475	205
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	1.00	1.00	0.95	0.91	0.85	0.92	0.95	0.85
Lanes:	2.00	1.00	1.00	1.00	0.98	0.02	1.00	3.00	1.00	2.00	2.00	1.00
Final Sat.:	3502	1900	1615	1805	1853	41	1805	5187	1615	3502	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.15	0.13	0.07	0.19	0.15	0.15	0.00	0.23	0.26	0.05	0.41	0.13
Crit Moves:		****		****			****				****	
Green/Cycle:	0.15	0.32	0.32	0.15	0.32	0.32	0.08	0.30	0.30	0.10	0.32	0.32
Volume/Cap:	1.02	0.41	0.21	1.29	0.48	0.48	0.03	0.77	0.85	0.48	1.29	0.40
Delay/Veh:	94.5	32.7	30.2	205.9	33.7	33.7	50.7	40.4	53.1	52.4	178	32.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	94.5	32.7	30.2	205.9	33.7	33.7	50.7	40.4	53.1	52.4	178	32.6
LOS by Move:	F	C	C	F	C	C	D	D	D	D	F	C
HCM2kAvgQ:	15	7	3	25	9	9	0	15	15	3	49	6

Note: Queue reported is the number of cars per lane.

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Attachment G

Existing Plus Project (Non-Local Disposal Materials) Conditions Intersection Operations Analysis Worksheets

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Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Contaminated) Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Shelter Island Drive (NS) / Rosecrans Street (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.485
Loss Time (sec):	12	Average Delay (sec/veh):	20.5
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	27	27	27	27	27	27	10	24	24	10	24	24
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	9	8	58	20	17	17	2	584	15	83	1235	10
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	9	8	58	20	17	17	2	584	15	83	1235	10
Added Vol:	0	0	16	0	0	0	0	0	0	28	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	9	8	74	20	17	17	2	584	15	111	1235	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	10	9	80	22	18	18	2	635	16	121	1342	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	10	9	80	22	18	18	2	635	16	121	1342	11
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	10	9	80	22	18	18	2	635	16	121	1342	11
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	0.87	0.87	0.85	0.85	0.85	0.95	0.95	0.95	0.95	0.95	0.95
Lanes:	0.10	0.09	0.81	0.38	0.31	0.31	1.00	1.95	0.05	1.00	1.98	0.02
Final Sat.:	163	145	1343	599	509	509	1805	3506	90	1805	3577	29
Capacity Analysis Module:												
Vol/Sat:	0.06	0.06	0.06	0.04	0.04	0.04	0.00	0.18	0.18	0.07	0.38	0.38
Crit Moves:		****					****				****	
Green/Cycle:	0.23	0.23	0.23	0.23	0.23	0.23	0.08	0.48	0.48	0.20	0.59	0.59
Volume/Cap:	0.27	0.27	0.27	0.16	0.16	0.16	0.01	0.38	0.38	0.34	0.63	0.63
Delay/Veh:	38.7	38.7	38.7	37.6	37.6	37.6	50.5	20.2	20.2	41.9	16.6	16.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	38.7	38.7	38.7	37.6	37.6	37.6	50.5	20.2	20.2	41.9	16.6	16.6
LOS by Move:	D	D	D	D	D	D	D	C	C	D	B	B
HCM2kAvgQ:	3	3	3	2	2	2	0	8	8	4	17	17

Note: Queue reported is the number of cars per lane.

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #2 Shelter Island Drive (NS) / Scott Street (EW)
********************************************************************************
Cycle (sec):          90               Critical Vol./Cap.(X):        0.936
Loss Time (sec):      12               Average Delay (sec/veh):       18.8
Optimal Cycle: OPTIMIZED               Level Of Service:                 B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted      Prot+Permit      Prot+Permit
Rights:            Ovl            Include          Include          Include
Min. Green:   10   10    10   23   23    23   10   25    25   10   25    25
Y+R:         4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:       0  1  0  0  1   0  1  0  0  1   1  0  0  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      9   88   102    9  160    12   14  181    15  217  196    23
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   9   88   102    9  160    12   14  181    15  217  196    23
Added Vol:     0   16     0    0   28     0    0    0     0    0    0     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   9  104   102    9  188    12   14  181    15  217  196    23
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.92 0.92  0.92 0.92 0.92  0.92 0.92 0.92  0.92 0.92 0.92  0.92
PHF Volume:   10  114   111   10  205    13   15  198    16  237  214    25
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  10  114   111   10  205    13   15  198    16  237  214    25
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  10  114   111   10  205    13   15  198    16  237  214    25
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.98 0.98  0.85 0.99 0.99  0.85 0.95 0.99  0.99 0.95 0.93  0.93
Lanes:       0.08 0.92  1.00 0.05 0.95  1.00 1.00 0.92  0.08 1.00 1.79  0.21
Final Sat.:   148 1707  1615   86 1791  1615 1805 1734   144 1805 3179   373
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.07 0.07  0.07 0.11 0.11  0.01 0.01 0.11  0.11 0.13 0.07  0.07
Crit Moves:                       ****             ****        ****
Green/Cycle: 0.27 0.27  0.59 0.27 0.27  0.27 0.45 0.28  0.28 0.64 0.42  0.42
Volume/Cap:  0.24 0.24  0.12 0.42 0.42  0.03 0.02 0.41  0.41 0.29 0.16  0.16
Delay/Veh:   25.6 25.6   8.2 27.3 27.3  23.9 13.9 27.0  27.0  7.6 16.1  16.1
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  25.6 25.6   8.2 27.3 27.3  23.9 13.9 27.0  27.0  7.6 16.1  16.1
LOS by Move:    C    C     A    C    C     C    B    C     C    A    B     B
HCM2kAvgQ:      3    3     1    5    5     0    0    5     5    3    2     2
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------

                     Level Of Service Computation Report
          2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #3 Shelter Island Drive (NS) / Shafter Street (EW)
********************************************************************************
Average Delay (sec/veh):      1.1       Worst Case Level Of Service: C[ 17.8]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0    0  0  1! 0  0    0  0  1! 0  0    0  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11  198     7     5  383     8     4    6    16    14    2     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   11  198     7     5  383     8     4    6    16    14    2     0
Added Vol:      0   16     0     0   28     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   11  214     7     5  411     8     4    6    16    14    2     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87  0.87 0.87  0.87
PHF Volume:    13  247     8     6  475     9     5    7    18    16    2     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   13  247     8     6  475     9     5    7    18    16    2     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5 xxxxx
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0 xxxxx
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  484 xxxx xxxxx   255 xxxx xxxxx   769  772   480   781  773 xxxxx
Potent Cap.: 1089 xxxx xxxxx  1321 xxxx xxxxx   320  332   590   315  332 xxxxx
Move Cap.:   1089 xxxx xxxxx  1321 xxxx xxxxx   315  327   590   296  327 xxxxx
Volume/Cap:  0.01 xxxx  xxxx  0.00 xxxx  xxxx  0.01 0.02  0.03  0.05 0.01  xxxx
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.0 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.3 xxxx xxxxx   7.7 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  447 xxxxx   300 xxxx xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.2 xxxxx   0.2 xxxx xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.6 xxxxx  17.8 xxxx xxxxx
Shared LOS:     *    *     *     *    *     *     *    B     *     C    *     *
ApproachDel:      xxxxxx           xxxxxx             13.6             17.8
ApproachLOS:         *                *                 B                C
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                 AM Peak Hour
--------------------------------------------------------------------------------

                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Shelter Island Drive (NS) / Anchorage Lane (EW)
********************************************************************************
Average Delay (sec/veh):      1.3      Worst Case Level Of Service: B[ 11.9]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0    0  0  0  1  0    0  0  1! 0  0    0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      22  198     0     0  359    14     3    0    59     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   22  198     0     0  359    14     3    0    59     0    0     0
Added Vol:      0   16     0     0   28     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   22  214     0     0  387    14     3    0    59     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88  0.88 0.88  0.88
PHF Volume:    25  244     0     0  442    16     3    0    67     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   25  244     0     0  442    16     3    0    67     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  458 xxxx xxxxx  xxxx xxxx xxxxx   744  744   450   778  752   244
Potent Cap.: 1114 xxxx xxxxx  xxxx xxxx xxxxx   385  345   614   316  341   799
Move Cap.:   1114 xxxx xxxxx  xxxx xxxx xxxxx   378  337   614   276  334   799
Volume/Cap:  0.02 xxxx  xxxx  xxxx xxxx  xxxx  0.01 0.00  0.11  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  596 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.4 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  8.3 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 11.9 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:     xxxxxx           xxxxxx             11.9           xxxxxx
ApproachLOS:          *                *                B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Hugo Street / North Harbor Drive (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          105               Critical Vol./Cap.(X):         0.579
Loss Time (sec):       12               Average Delay (sec/veh):        23.1
Optimal Cycle: OPTIMIZED                Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    27   27    27   27   27    27   10   24    24   10   24    24
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  0  1  0   0  0  1! 0  0   1  0  1  1  0   1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     202   26   167   78   31     9    2  728    81   39 1169     7
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  202   26   167   78   31     9    2  728    81   39 1169     7
Added Vol:      0    0     0    0    0     0    0   16     0    0   28     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  202   26   167   78   31     9    2  744    81   39 1197     7
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.93 0.93  0.93 0.93 0.93  0.93 0.93 0.93  0.93 0.93 0.93  0.93
PHF Volume:   217   28   179   84   33    10    2  797    87   42 1283     8
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  217   28   179   84   33    10    2  797    87   42 1283     8
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  217   28   179   84   33    10    2  797    87   42 1283     8
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.74 0.87  0.87 0.59 0.59  0.59 0.95 0.94  0.94 0.95 0.95  0.95
Lanes:       1.00 0.13  0.87 0.66 0.26  0.08 1.00 1.80  0.20 1.00 1.99  0.01
Final Sat.:  1408  223  1430  745  296    86 1805 3207   349 1805 3585    21
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.13  0.13 0.11 0.11  0.11 0.00 0.25  0.25 0.02 0.36  0.36
Crit Moves:  ****                             ****                   ****
Green/Cycle: 0.26 0.26  0.26 0.26 0.26  0.26 0.10 0.45  0.45 0.17 0.53  0.53
Volume/Cap:  0.60 0.49  0.49 0.44 0.44  0.44 0.01 0.55  0.55 0.13 0.67  0.67
Delay/Veh:   37.0 34.0  34.0 33.7 33.7  33.7 43.1 21.2  21.2 36.9 18.7  18.7
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  37.0 34.0  34.0 33.7 33.7  33.7 43.1 21.2  21.2 36.9 18.7  18.7
LOS by Move:    D    C     C    C    C     C    D    C     C    D    B     B
HCM2kAvgQ:      7    6     6    4    4     4    0   11    11    1   15    15
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Contaminated) Conditions
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #6 Nimitz Boulevard (NS) / Rosecrans Street (EW)

Cycle (sec):	120	Critical Vol./Cap.(X):	0.741
Loss Time (sec):	16	Average Delay (sec/veh):	63.0
Optimal Cycle:	OPTIMIZED	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Include			Include		
Min. Green:	10	30	30	10	30	30	10	28	28	10	28	28
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1 0 2 0 1			1 0 1 1 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	20	30	42	310	317	212	216	722	18	113	1037	48
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	20	30	42	310	317	212	216	722	18	113	1037	48
Added Vol:	0	0	0	0	0	0	0	16	0	0	28	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	20	30	42	310	317	212	216	738	18	113	1065	48
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	21	32	44	326	334	223	227	777	19	119	1121	51
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	21	32	44	326	334	223	227	777	19	119	1121	51
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	21	32	44	326	334	223	227	777	19	119	1121	51
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.95	0.89	0.89	0.95	0.95	0.95	0.95	0.94	0.94
Lanes:	1.00	2.00	1.00	1.00	1.20	0.80	1.00	1.95	0.05	1.00	1.91	0.09
Final Sat.:	1805	3610	1615	1805	2033	1360	1805	3510	86	1805	3434	155
Capacity Analysis Module:												
Vol/Sat:	0.01	0.01	0.03	0.18	0.16	0.16	0.13	0.22	0.22	0.07	0.33	0.33
Crit Moves:		****		****			****				****	
Green/Cycle:	0.11	0.25	0.37	0.18	0.32	0.32	0.12	0.32	0.32	0.12	0.32	0.32
Volume/Cap:	0.11	0.03	0.07	1.03	0.51	0.51	1.03	0.68	0.68	0.57	1.03	1.03
Delay/Veh:	48.7	34.1	24.9	107.0	33.7	33.7	120.3	36.8	36.8	53.9	74.6	74.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.7	34.1	24.9	107.0	33.7	33.7	120.3	36.8	36.8	53.9	74.6	74.6
LOS by Move:	D	C	C	F	C	C	F	D	D	D	E	E
HCM2kAvgQ:	1	0	1	18	9	9	11	13	13	4	24	24

Note: Queue reported is the number of cars per lane.

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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                AM Peak Hour
--------------------------------------------------------------------------------

                     Level Of Service Computation Report
           2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          120              Critical Vol./Cap.(X):         0.854
Loss Time (sec):       16              Average Delay (sec/veh):       100.1
Optimal Cycle: OPTIMIZED               Level Of Service:                  F
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    10   38    38   10   38    38   10   31    31   10   31    31
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        2  0  1  0  1   1  0  0  1  0   1  0  3  0  1   2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     502  238   103  332  270     6    5 1152   399  157 1401   196
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:  502  238   103  332  270     6    5 1152   399  157 1401   196
Added Vol:      6    0     0    0    0     0    0   16     0    0   22     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  508  238   103  332  270     6    5 1168   399  157 1423   196
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95
PHF Volume:   532  249   108  348  283     6    5 1224   418  165 1492   205
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  532  249   108  348  283     6    5 1224   418  165 1492   205
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:  532  249   108  348  283     6    5 1224   418  165 1492   205
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.92 1.00  0.85 0.95 1.00  1.00 0.95 0.91  0.85 0.92 0.95  0.85
Lanes:       2.00 1.00  1.00 1.00 0.98  0.02 1.00 3.00  1.00 2.00 2.00  1.00
Final Sat.:  3502 1900  1615 1805 1853    41 1805 5187  1615 3502 3610  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.15 0.13  0.07 0.19 0.15  0.15 0.00 0.24  0.26 0.05 0.41  0.13
Crit Moves:       ****       ****            ****                  ****
Green/Cycle: 0.15 0.32  0.32 0.15 0.32  0.32 0.08 0.30  0.30 0.10 0.32  0.32
Volume/Cap:  1.02 0.41  0.21 1.30 0.48  0.48 0.03 0.78  0.85 0.48 1.30  0.40
Delay/Veh:   96.9 32.7  30.2 210.1 33.7  33.7 50.7 40.6  52.7 52.3  182  32.5
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  96.9 32.7  30.2 210.1 33.7  33.7 50.7 40.6  52.7 52.3  182  32.5
LOS by Move:    F    C     C    F    C     C    D    D     D    D    F     C
HCM2kAvgQ:     15    7     3   25    9     9    0   15    15    3   50     5
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	258	1307	34	172	1567	240	79	428	118	175	263	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5064		3433	5085	1555	1770	3539	1557	3433	3539	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5064		3433	5085	1555	1770	3539	1557	3433	3539	1557
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	274	1390	36	183	1667	255	84	455	126	186	280	186
RTOR Reduction (vph)	0	2	0	0	0	137	0	0	86	0	0	125
Lane Group Flow (vph)	274	1424	0	183	1667	118	84	455	40	186	280	61
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	11.9	46.6		10.4	45.1	45.1	7.9	38.1	38.1	8.9	39.1	39.1
Effective Green, g (s)	11.9	46.6		10.4	45.1	45.1	7.9	38.1	38.1	8.9	39.1	39.1
Actuated g/C Ratio	0.10	0.39		0.09	0.38	0.38	0.07	0.32	0.32	0.07	0.33	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	340	1966		297	1911	584	116	1123	494	254	1153	507
v/s Ratio Prot	c0.08	0.28		0.05	c0.33		0.05	c0.13		c0.05	0.08	
v/s Ratio Perm						0.08			0.03			0.04
v/c Ratio	0.81	0.72		0.62	0.87	0.20	0.72	0.41	0.08	0.73	0.24	0.12
Uniform Delay, d1	52.9	31.2		52.9	34.8	25.3	55.0	32.1	28.7	54.4	29.6	28.4
Progression Factor	1.00	1.00		1.36	0.60	0.42	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.0	2.4		3.0	4.7	0.6	19.9	1.1	0.3	10.4	0.5	0.5
Delay (s)	65.9	33.6		74.9	25.5	11.3	74.9	33.2	29.0	64.8	30.1	28.9
Level of Service	E	C		E	C	B	E	C	C	E	C	C
Approach Delay (s)		38.8			28.1			37.6			39.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	34.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	87.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	877	1280	540	384	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3539	3539	1551	3433	1583
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3539	3539	1551	3433	1583
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	0	914	1333	562	400	66
RTOR Reduction (vph)	0	0	0	309	0	0
Lane Group Flow (vph)	0	914	1333	253	400	66
Confl. Peds. (#/hr)				5		
Turn Type		NA	NA	Perm	NA	Free
Protected Phases		4	4		3	
Permitted Phases				4		Free
Actuated Green, G (s)		29.0	29.0	29.0	14.6	81.6
Effective Green, g (s)		29.0	29.0	29.0	14.6	81.6
Actuated g/C Ratio		0.36	0.36	0.36	0.18	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1257	1257	551	614	1583
v/s Ratio Prot		0.26	c0.38		c0.12	
v/s Ratio Perm				0.16		c0.04
v/c Ratio		0.73	1.06	0.46	0.65	0.04
Uniform Delay, d1		22.9	26.3	20.3	31.1	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		2.1	43.1	0.6	2.5	0.0
Delay (s)		25.0	69.4	20.9	33.6	0.0
Level of Service		C	E	C	C	A
Approach Delay (s)		25.0	55.0		28.9	
Approach LOS		C	D		C	

Intersection Summary			
HCM 2000 Control Delay	42.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	81.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	115	1291	0	0	1709	327	136	184	10	229	161	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91			0.91	1.00	0.91	0.91		0.91	0.86	0.91
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.99		1.00	0.99	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.99		0.95	0.98	1.00
Satd. Flow (prot)	3433	5085			5085	1558	1610	3347		1610	3126	1417
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.99		0.95	0.98	1.00
Satd. Flow (perm)	3433	5085			5085	1558	1610	3347		1610	3126	1417
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	119	1331	0	0	1762	337	140	190	10	236	166	112
RTOR Reduction (vph)	0	0	0	0	0	133	0	3	0	0	2	84
Lane Group Flow (vph)	119	1331	0	0	1762	204	111	226	0	135	276	17
Confl. Peds. (#/hr)						5						5
Turn Type	Prot	NA			NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	8.5	74.8			62.3	62.3	12.7	12.7		20.5	20.5	20.5
Effective Green, g (s)	8.5	74.8			62.3	62.3	12.7	12.7		20.5	20.5	20.5
Actuated g/C Ratio	0.07	0.62			0.52	0.52	0.11	0.11		0.17	0.17	0.17
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	243	3169			2639	808	170	354		275	534	242
v/s Ratio Prot	0.03	c0.26			c0.35		c0.07	0.07		0.08	c0.09	
v/s Ratio Perm						0.13						0.01
v/c Ratio	0.49	0.42			0.67	0.25	0.65	0.64		0.49	0.52	0.07
Uniform Delay, d1	53.7	11.5			21.2	16.0	51.5	51.5		45.0	45.2	41.8
Progression Factor	1.14	0.68			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.1	0.3			1.4	0.8	8.7	3.8		1.4	0.8	0.1
Delay (s)	62.3	8.1			22.6	16.7	60.2	55.2		46.4	46.1	41.9
Level of Service	E	A			C	B	E	E		D	D	D
Approach Delay (s)		12.6			21.6			56.9			45.3	
Approach LOS		B			C			E			D	

Intersection Summary			
HCM 2000 Control Delay	24.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	237	53	0	0	0	33
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	260	58	0	0	0	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			319		290	290
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			319		290	290
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			1241		701	750

Direction, Lane #	EB 1	NB 1
Volume Total	319	36
Volume Left	0	0
Volume Right	58	36
cSH	1700	750
Volume to Capacity	0.19	0.05
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	10.0
Lane LOS		B
Approach Delay (s)	0.0	10.0
Approach LOS		B

Intersection Summary			
Average Delay	1.0		
Intersection Capacity Utilization	25.7%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	Camino Del Rio / I-8 East
Agency or Company	Urban Crossroads, Inc.	Junction	I-5 NB Loop On Ramp
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P (Contaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 25.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	852	0.97	Level	4	0	0.980	1.00	896
Ramp	810	0.97	Level	4	0	0.980	1.00	852
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 896 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	896	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	44	Exhibit 25-14	4500	No
V_R	852	Exhibit 25-3	1900	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	896	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = 4.9 (pc/mi/ln)

LOS = A (Exhibit 25-4)

Speed Determination

D_s = 0.635 (Exhibit 25-19)

S_R= 46.7 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 46.7 mph (Exhibit 25-15)

 HCS+™ Version 5.21 Generated: 6/17/2013 10:07 AM

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 SB On-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P (Contaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1005	0.95	Level	4	0	0.980	1.00	1079
Ramp	220	0.95	Level	4	0	0.980	1.00	236
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F\,(P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 1079 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	1079	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	843	Exhibit 25-14	4500	No
V_R	236	Exhibit 25-3	2100	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1079	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$

D_R = 11.4 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

D_s = 0.319 (Exhibit 25-19)

S_R= 50.8 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 50.8 mph (Exhibit 25-15)

 HCS+™ Version 5.21 Generated: 6/17/2013 10:07 AM

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 NB Off-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/13/2013	Jurisdiction	Caltrans
Analysis Time Period	AM Peak Hour	Analysis Year	E+P (Contaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1990	0.95	Level	4	0	0.980	1.00	2137
Ramp	338	0.95	Level	4	0	0.980	1.00	363
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F\,(P_{FM})$$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 1.000 using Equation (Exhibit 25-5)

V_{12} = 2137 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2500	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2500	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$$

D_R = 15.4 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

M_S = 0.234 (Exibit 25-19)

S_R= 52.0 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 52.0 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

 HCS+™ Version 5.21 Generated: 6/17/2013 10:08 AM

Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Contaminated) Conditions
PM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 Shelter Island Drive (NS) / Rosecrans Street (EW)

Cycle (sec):	100	Critical Vol./Cap.(X):	0.710
Loss Time (sec):	12	Average Delay (sec/veh):	28.9
Optimal Cycle:	OPTIMIZED	Level Of Service:	C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	27	27	27	27	27	27	10	24	24	10	24	24
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	0 0 1! 0 0			0 0 1! 0 0			1 0 1 1 0			1 0 1 1 0		
Volume Module:												
Base Vol:	26	31	155	37	48	11	6	1086	39	266	703	20
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	26	31	155	37	48	11	6	1086	39	266	703	20
Added Vol:	0	0	28	0	0	0	0	0	0	16	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	26	31	183	37	48	11	6	1086	39	282	703	20
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
PHF Volume:	26	31	186	38	49	11	6	1103	40	286	714	20
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	26	31	186	38	49	11	6	1103	40	286	714	20
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	26	31	186	38	49	11	6	1103	40	286	714	20
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.86	0.86	0.86	0.81	0.81	0.81	0.95	0.95	0.95	0.95	0.95	0.95
Lanes:	0.11	0.13	0.76	0.39	0.50	0.11	1.00	1.93	0.07	1.00	1.94	0.06
Final Sat.:	178	212	1253	594	771	177	1805	3467	125	1805	3496	99
Capacity Analysis Module:												
Vol/Sat:	0.15	0.15	0.15	0.06	0.06	0.06	0.00	0.32	0.32	0.16	0.20	0.20
Crit Moves:		****						****		****		
Green/Cycle:	0.27	0.27	0.27	0.27	0.27	0.27	0.18	0.41	0.41	0.20	0.43	0.43
Volume/Cap:	0.55	0.55	0.55	0.23	0.23	0.23	0.02	0.78	0.78	0.78	0.47	0.47
Delay/Veh:	32.8	32.8	32.8	28.7	28.7	28.7	33.8	28.6	28.6	48.1	20.6	20.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	32.8	32.8	32.8	28.7	28.7	28.7	33.8	28.6	28.6	48.1	20.6	20.6
LOS by Move:	C	C	C	C	C	C	C	C	C	D	C	C
HCM2kAvgQ:	6	6	6	2	2	2	0	18	18	8	8	8

Note: Queue reported is the number of cars per lane.

```
--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                PM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
             2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #2 Shelter Island Drive (NS) / Scott Street (EW)
********************************************************************************
Cycle (sec):          90                Critical Vol./Cap.(X):         0.936
Loss Time (sec):      12                Average Delay (sec/veh):        20.5
Optimal Cycle: OPTIMIZED                Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted      Prot+Permit      Prot+Permit
Rights:           Ovl             Include          Include          Include
Min. Green:    10   10    10   23   23    23   10   25    25   10   25    25
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        0  1  0  0  1    0  1  0  0  1    1  0  0  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      24  152   255   33  233    40   19  410    16   79   82    27
Growth Adj:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Initial Bse:   24  152   255   33  233    40   19  410    16   79   82    27
Added Vol:      0   28     0    0   16     0    0    0     0    0    0     0
PasserByVol:    0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:   24  180   255   33  249    40   19  410    16   79   82    27
User Adj:    1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
PHF Adj:     0.96 0.96  0.96 0.96 0.96  0.96 0.96 0.96  0.96 0.96 0.96  0.96
PHF Volume:    25  187   265   34  259    42   20  426    17   82   85    28
Reduct Vol:     0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:   25  187   265   34  259    42   20  426    17   82   85    28
PCE Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
FinalVolume:   25  187   265   34  259    42   20  426    17   82   85    28
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900 1900 1900  1900 1900 1900  1900 1900 1900  1900
Adjustment:  0.94 0.94  0.85 0.95 0.95  0.85 0.95 0.99  0.99 0.95 0.91  0.91
Lanes:       0.12 0.88  1.00 0.12 0.88  1.00 1.00 0.96  0.04 1.00 1.50  0.50
Final Sat.:   210 1578  1615  210 1585  1615 1805 1818    71 1805 2615   861
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.12 0.12  0.16 0.16 0.16  0.03 0.01 0.23  0.23 0.05 0.03  0.03
Crit Moves:                       ****              ****       ****
Green/Cycle: 0.31 0.31  0.42 0.31 0.31  0.31 0.60 0.45  0.45 0.51 0.40  0.40
Volume/Cap:  0.38 0.38  0.39 0.53 0.53  0.08 0.02 0.53  0.53 0.17 0.08  0.08
Delay/Veh:   24.7 24.7  18.4 26.5 26.5  22.1  7.3 18.7  18.7 12.1 16.9  16.9
User DelAdj: 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
AdjDel/Veh:  24.7 24.7  18.4 26.5 26.5  22.1  7.3 18.7  18.7 12.1 16.9  16.9
LOS by Move:    C    C     B    C    C     C    A    B     B    B    B     B
HCM2kAvgQ:      5    5     5    7    7     1    0    9     9    1    1     1
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #3 Shelter Island Drive (NS) / Shafter Street (EW)
********************************************************************************
Average Delay (sec/veh):      1.4      Worst Case Level Of Service: C[ 19.1]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      18  427    22    17  304     8     7   10    20    10    6     5
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   18  427    22    17  304     8     7   10    20    10    6     5
Added Vol:      0   28     0     0   16     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   18  455    22    17  320     8     7   10    20    10    6     5
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94  0.94 0.94  0.94
PHF Volume:    19  486    24    18  342     9     7   11    21    11    6     5
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   19  486    24    18  342     9     7   11    21    11    6     5
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx   4.1 xxxx xxxxx   7.1  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx   2.2 xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  350 xxxx xxxxx   510 xxxx xxxxx   925  931   346   935  923   498
Potent Cap.: 1220 xxxx xxxxx  1066 xxxx xxxxx   252  269   701   248  272   576
Move Cap.:   1220 xxxx xxxxx  1066 xxxx xxxxx   239  260   701   227  263   576
Volume/Cap:  0.02 xxxx  xxxx  0.02 xxxx  xxxx  0.03 0.04  0.03  0.05 0.02  0.01
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.0 xxxx xxxxx   0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.0 xxxx xxxxx   8.4 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     A    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  384 xxxxx  xxxx  278 xxxxx
SharedQueue:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.3 xxxxx xxxxx  0.3 xxxxx
Shrd ConDel:xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx 15.4 xxxxx xxxxx 19.1 xxxxx
Shared LOS:     *    *     *     *    *     *     *    C     *     *    C     *
ApproachDel:     xxxxxx           xxxxxx             15.4             19.1
ApproachLOS:         *                *                 C                C
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                PM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM Unsignalized Method (Future Volume Alternative)
********************************************************************************
Intersection #4 Shelter Island Drive (NS) / Anchorage Lane (EW)
********************************************************************************
Average Delay (sec/veh):      1.6       Worst Case Level Of Service: B[ 13.3]
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Uncontrolled     Uncontrolled      Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Lanes:        0  1  0  0  0   0  0  0  1  0   0  0  1! 0  0   0  0  1! 0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      44  414     0     0  287    15    20    0    62     0    0     0
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   44  414     0     0  287    15    20    0    62     0    0     0
Added Vol:      0   28     0     0   16     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   44  442     0     0  303    15    20    0    62     0    0     0
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91  0.91 0.91  0.91
PHF Volume:    48  485     0     0  333    16    22    0    68     0    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
FinalVolume:   48  485     0     0  333    16    22    0    68     0    0     0
------------|---------------||---------------||---------------||---------------|
Critical Gap Module:
Critical Gp:  4.1 xxxx xxxxx xxxxx xxxx xxxxx   6.4  6.5   6.2   7.1  6.5   6.2
FollowUpTim:  2.2 xxxx xxxxx xxxxx xxxx xxxxx   3.5  4.0   3.3   3.5  4.0   3.3
------------|---------------||---------------||---------------||---------------|
Capacity Module:
Cnflict Vol:  349 xxxx xxxxx  xxxx xxxx xxxxx   923  923   341   957  931   485
Potent Cap.: 1221 xxxx xxxxx  xxxx xxxx xxxxx   302  272   706   239  269   586
Move Cap.:   1221 xxxx xxxxx  xxxx xxxx xxxxx   293  261   706   210  258   586
Volume/Cap:  0.04 xxxx  xxxx  xxxx xxxx  xxxx  0.07 0.00  0.10  0.00 0.00  0.00
------------|---------------||---------------||---------------||---------------|
Level Of Service Module:
2Way95thQ:    0.1 xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx xxxx xxxxx
Control Del:  8.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx xxxxx xxxx xxxxx
LOS by Move:    A    *     *     *    *     *     *    *     *     *    *     *
Movement:     LT - LTR - RT    LT - LTR - RT    LT - LTR - RT    LT - LTR - RT
Shared Cap.: xxxx xxxx xxxxx  xxxx xxxx xxxxx  xxxx  525 xxxxx  xxxx    0 xxxxx
SharedQueue:  0.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx  0.6 xxxxx xxxxx xxxx xxxxx
Shrd ConDel:  8.1 xxxx xxxxx xxxxx xxxx xxxxx xxxxx 13.3 xxxxx xxxxx xxxx xxxxx
Shared LOS:     A    *     *     *    *     *     *    B     *     *    *     *
ApproachDel:      xxxxxx           xxxxxx             13.3            xxxxxx
ApproachLOS:        *                *                 B                *
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #5 Hugo Street / North Harbor Drive (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          95                Critical Vol./Cap.(X):        0.805
Loss Time (sec):      12                Average Delay (sec/veh):       29.3
Optimal Cycle: OPTIMIZED                Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Permitted        Permitted        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    27   27    27    27   27    27    10   24    24    10   24    24
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        1  0  0  1  0    0  0  1! 0  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     341   91   124    55   32     6     6 1266   153    46  885    13
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  341   91   124    55   32     6     6 1266   153    46  885    13
Added Vol:      0    0     0     0    0     0     0   28     0     0   16     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  341   91   124    55   32     6     6 1294   153    46  901    13
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.97 0.97  0.97  0.97 0.97  0.97  0.97 0.97  0.97  0.97 0.97  0.97
PHF Volume:   353   94   128    57   33     6     6 1338   158    48  932    13
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  353   94   128    57   33     6     6 1338   158    48  932    13
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  353   94   128    57   33     6     6 1338   158    48  932    13
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.73 0.91  0.91  0.73 0.73  0.73  0.95 0.93  0.93  0.95 0.95  0.95
Lanes:       1.00 0.42  0.58  0.60 0.34  0.06  1.00 1.79  0.21  1.00 1.97  0.03
Final Sat.:  1379  734  1000   825  480    90  1805 3177   376  1805 3552    51
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.26 0.13  0.13  0.07 0.07  0.07  0.00 0.42  0.42  0.03 0.26  0.26
Crit Moves:  ****                                   ****        ****
Green/Cycle: 0.29 0.29  0.29  0.29 0.29  0.29  0.17 0.48  0.48  0.11 0.42  0.42
Volume/Cap:  0.88 0.44  0.44  0.24 0.24  0.24  0.02 0.88  0.88  0.25 0.63  0.63
Delay/Veh:   51.8 28.1  28.1  26.0 26.0  26.0  33.1 28.1  28.1  39.8 22.8  22.8
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  51.8 28.1  28.1  26.0 26.0  26.0  33.1 28.1  28.1  39.8 22.8  22.8
LOS by Move:    D    C     C     C    C     C     C    C     C     D    C     C
HCM2kAvgQ:     13    6     6     2    2     2     0   21    21     1   10    10
********************************************************************************
Note: Queue reported is the number of cars per lane.
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  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------
                        Level Of Service Computation Report
             2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #6 Nimitz Boulevard (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):         120              Critical Vol./Cap.(X):        0.858
Loss Time (sec):      16              Average Delay (sec/veh):       66.8
Optimal Cycle: OPTIMIZED              Level Of Service:                 E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:            Ovl             Include          Include          Include
Min. Green:    10   30    30   10   30    30   10   28    28   10   28    28
Y+R:          4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:        1  0  2  0  1    1  0  1  1  0    1  0  1  1  0    1  0  1  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      38  329   151   257  225   171   332 1178    33   155  945   144
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:   38  329   151   257  225   171   332 1178    33   155  945   144
Added Vol:      0    0     0     0    0     0     0   28     0     0   16     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   38  329   151   257  225   171   332 1206    33   155  961   144
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    39  335   154   262  229   174   338 1229    34   158  980   147
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   39  335   154   262  229   174   338 1229    34   158  980   147
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:   39  335   154   262  229   174   338 1229    34   158  980   147
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.95 0.95  0.85  0.95 0.89  0.89  0.95 0.95  0.95  0.95 0.93  0.93
Lanes:       1.00 2.00  1.00  1.00 1.14  0.86  1.00 1.95  0.05  1.00 1.74  0.26
Final Sat.:  1805 3610  1615  1805 1918  1458  1805 3500    96  1805 3080   462
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.09  0.10  0.15 0.12  0.12  0.19 0.35  0.35  0.09 0.32  0.32
Crit Moves:       ****        ****             ****                  ****
Green/Cycle: 0.10 0.25  0.35  0.14 0.29  0.29  0.18 0.38  0.38  0.10 0.30  0.30
Volume/Cap:  0.22 0.37  0.28  1.06 0.41  0.41  1.06 0.92  0.92  0.92 1.06  1.06
Delay/Veh:   50.7 37.5  28.7 124.1 34.6  34.6 114.9 44.9  44.9  98.7 85.2  85.2
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  50.7 37.5  28.7 124.1 34.6  34.6 114.9 44.9  44.9  98.7 85.2  85.2
LOS by Move:    D    D     C     F    C     C     F    D     D     F    F     F
HCM2kAvgQ:      1    5     4    15    6     6    15   23    23     5   24    24
********************************************************************************
Note: Queue reported is the number of cars per lane.
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--------------------------------------------------------------------------------
  Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
          (JN: 07893) Existing plus Project (Contaminated) Conditions
                                 PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
             2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)
********************************************************************************
Cycle (sec):          120              Critical Vol./Cap.(X):         0.848
Loss Time (sec):       16              Average Delay (sec/veh):        68.9
Optimal Cycle: OPTIMIZED               Level Of Service:                  E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:    10   38    38    10   38    38    10   31    31    10   31    31
Y+R:          4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0   4.0  4.0   4.0
Lanes:        2  0  1  0  1    1  0  0  1  0    1  0  3  0  1    2  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     422  339   187   253  275     9    21 1591   546   142 1181   260
Growth Adj:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Initial Bse:  422  339   187   253  275     9    21 1591   546   142 1181   260
Added Vol:      0    0     0     0    0     0     0   22     6     0   16     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  422  339   187   253  275     9    21 1613   552   142 1197   260
User Adj:    1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:   442  355   196   265  288     9    22 1691   579   149 1255   273
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  442  355   196   265  288     9    22 1691   579   149 1255   273
PCE Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
MLF Adj:     1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
FinalVolume:  442  355   196   265  288     9    22 1691   579   149 1255   273
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900  1900  1900 1900  1900  1900 1900  1900  1900 1900  1900
Adjustment:  0.92 1.00  0.85  0.95 1.00  1.00  0.95 0.91  0.85  0.92 0.95  0.85
Lanes:       2.00 1.00  1.00  1.00 0.97  0.03  1.00 3.00  1.00  2.00 2.00  1.00
Final Sat.:  3502 1900  1615  1805 1831    60  1805 5187  1615  3502 3610  1615
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.13 0.19  0.12  0.15 0.16  0.16  0.01 0.33  0.36  0.04 0.35  0.17
Crit Moves:       ****        ****                          ****  ****
Green/Cycle: 0.13 0.32  0.32  0.14 0.32  0.32  0.08 0.33  0.33  0.08 0.33  0.33
Volume/Cap:  0.98 0.59  0.38  1.08 0.49  0.49  0.15 0.98  1.08  0.51 1.05  0.51
Delay/Veh:   88.9 36.0  32.4 133.1 33.2  33.2  51.5 58.0 103.3  54.2 80.4  33.1
User DelAdj: 1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
AdjDel/Veh:  88.9 36.0  32.4 133.1 33.2  33.2  51.5 58.0 103.3  54.2 80.4  33.1
LOS by Move:    F    D     C     F    C     C     D    E     F     D    F     C
HCM2kAvgQ:     13   11     6    16    9     9     1   24    26     3   29     8
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	399	1831	81	397	1413	360	141	595	319	288	523	238
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91		0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5049		3433	5085	1555	1770	3539	1557	3433	3539	1557
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5049		3433	5085	1555	1770	3539	1557	3433	3539	1557
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	407	1868	83	405	1442	367	144	607	326	294	534	243
RTOR Reduction (vph)	0	4	0	0	0	154	0	0	146	0	0	166
Lane Group Flow (vph)	407	1947	0	405	1442	213	144	607	180	294	534	77
Confl. Peds. (#/hr)			5			5			5			5
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases						6			8			4
Actuated Green, G (s)	15.9	44.0		12.0	40.1	40.1	10.0	38.0	38.0	10.0	38.0	38.0
Effective Green, g (s)	15.9	44.0		12.0	40.1	40.1	10.0	38.0	38.0	10.0	38.0	38.0
Actuated g/C Ratio	0.13	0.37		0.10	0.33	0.33	0.08	0.32	0.32	0.08	0.32	0.32
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	454	1851		343	1699	519	147	1120	493	286	1120	493
v/s Ratio Prot	0.12	c0.39		c0.12	0.28		c0.08	c0.17		c0.09	0.15	
v/s Ratio Perm						0.14			0.12			0.05
v/c Ratio	0.90	1.05		1.18	0.85	0.41	0.98	0.54	0.37	1.03	0.48	0.16
Uniform Delay, d1	51.2	38.0		54.0	37.1	30.8	54.9	33.8	31.7	55.0	33.0	29.5
Progression Factor	1.00	1.00		0.62	0.45	0.18	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	19.8	36.1		95.8	2.8	1.2	67.2	1.9	2.1	60.6	1.5	0.7
Delay (s)	71.1	74.1		129.4	19.5	6.8	122.1	35.7	33.8	115.6	34.5	30.1
Level of Service	E	E		F	B	A	F	D	C	F	C	C
Approach Delay (s)		73.6			37.5			46.7			55.8	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	54.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	101.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	1224	1065	773	794	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		0.95	0.95	1.00	0.97	1.00
Frpb, ped/bikes		1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00
Frt		1.00	1.00	0.85	1.00	0.85
Flt Protected		1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)		3539	3539	1548	3433	1583
Flt Permitted		1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)		3539	3539	1548	3433	1583
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	1262	1098	797	819	125
RTOR Reduction (vph)	0	0	0	522	0	0
Lane Group Flow (vph)	0	1262	1098	275	819	125
Confl. Peds. (#/hr)				5		
Turn Type		NA	NA	Perm	NA	Free
Protected Phases		4	4		3	
Permitted Phases				4		Free
Actuated Green, G (s)		34.0	34.0	34.0	26.4	98.4
Effective Green, g (s)		34.0	34.0	34.0	26.4	98.4
Actuated g/C Ratio		0.35	0.35	0.35	0.27	1.00
Clearance Time (s)		4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		1222	1222	534	921	1583
v/s Ratio Prot		c0.36	0.31		c0.24	
v/s Ratio Perm				0.18		c0.08
v/c Ratio		1.03	0.90	0.52	0.89	0.08
Uniform Delay, d1		32.2	30.6	25.6	34.6	0.0
Progression Factor		1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		34.5	9.0	0.8	10.5	0.1
Delay (s)		66.7	39.5	26.5	45.1	0.1
Level of Service		E	D	C	D	A
Approach Delay (s)		66.7	34.1		39.1	
Approach LOS		E	C		D	

Intersection Summary			
HCM 2000 Control Delay	45.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	10.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	337	1598	0	0	1666	648	225	359	22	529	427	256
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.91			0.91	1.00	0.91	0.91		0.91	0.86	0.91
Frpb, ped/bikes	1.00	1.00			1.00	0.98	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00			1.00	0.85	1.00	0.99		1.00	0.99	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	3433	5085			5085	1558	1610	3352		1610	3134	1417
Flt Permitted	0.95	1.00			1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	3433	5085			5085	1558	1610	3352		1610	3134	1417
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	340	1614	0	0	1683	655	227	363	22	534	431	259
RTOR Reduction (vph)	0	0	0	0	0	351	0	3	0	0	2	119
Lane Group Flow (vph)	340	1614	0	0	1683	304	200	409	0	326	663	114
Confl. Peds. (#/hr)						5						5
Turn Type	Prot	NA			NA	Perm	Split	NA		Split	NA	Perm
Protected Phases	5	2			6		8	8		4	4	
Permitted Phases						6						4
Actuated Green, G (s)	9.0	55.0			42.0	42.0	18.5	18.5		34.5	34.5	34.5
Effective Green, g (s)	9.0	55.0			42.0	42.0	18.5	18.5		34.5	34.5	34.5
Actuated g/C Ratio	0.08	0.46			0.35	0.35	0.15	0.15		0.29	0.29	0.29
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	257	2330			1779	545	248	516		462	901	407
v/s Ratio Prot	c0.10	0.32			c0.33		c0.12	0.12		0.20	c0.21	
v/s Ratio Perm						0.20						0.08
v/c Ratio	1.32	0.69			0.95	0.56	0.81	0.79		0.71	0.74	0.28
Uniform Delay, d1	55.5	25.8			37.9	31.5	49.0	48.9		38.2	38.6	33.1
Progression Factor	1.19	0.95			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	152.7	0.5			11.9	4.1	17.2	8.1		4.9	3.2	0.4
Delay (s)	218.5	25.1			49.8	35.6	66.2	57.0		43.1	41.8	33.5
Level of Service	F	C			D	D	E	E		D	D	C
Approach Delay (s)		58.7			45.8			60.0			40.6	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay	50.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	390	58	0	0	0	161
Sign Control	Free			Free	Yield	
Grade	0%			0%	0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	398	59	0	0	0	164
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			457		428	428
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			457		428	428
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	74
cM capacity (veh/h)			1104		584	627

Direction, Lane #	EB 1	NB 1
Volume Total	457	164
Volume Left	0	0
Volume Right	59	164
cSH	1700	627
Volume to Capacity	0.27	0.26
Queue Length 95th (ft)	0	26
Control Delay (s)	0.0	12.8
Lane LOS		B
Approach Delay (s)	0.0	12.8
Approach LOS		B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	40.7%	ICU Level of Service	A
Analysis Period (min)	15		

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	Camino Del Rio / I-8 East
Agency or Company	Urban Crossroads, Inc.	Junction	I-5 NB Loop On Ramp
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P (Contaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 25.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp

☐ Yes ☐ On

☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	1451	0.99	Level	4	0	0.980	1.00	1495
Ramp	1177	0.99	Level	4	0	0.980	1.00	1213
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = using Equation (Exhibit 25-5)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes,V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = 1.000 using Equation (Exhibit 25-12)

V_{12} = 1495 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes,V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	1495	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	282	Exhibit 25-14	4500	No
V_R	1213	Exhibit 25-3	1900	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	1495	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.0009\, L_D$

D_R = 10.0 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

D_s = 0.667 (Exhibit 25-19)

S_R= 46.3 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 46.3 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 SB On-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/14/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P (Contaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2122	0.97	Level	4	0	0.980	1.00	2231
Ramp	434	0.97	Level	4	0	0.980	1.00	456
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$$V_{12} = V_F (P_{FM})$$

L_{EQ} = (Equation 25-2 or 25-3)
P_{FM} = using Equation (Exhibit 25-5)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 25-4 or 25-5)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 25-7		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 25-7		

Level of Service Determination (if not F)

$$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$$

D_R = (pc/mi/ln)
LOS = (Exhibit 25-4)

Speed Determination

M_S = (Exibit 25-19)
S_R= mph (Exhibit 25-19)
S_0= mph (Exhibit 25-19)
S = mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$$V_{12} = V_R + (V_F - V_R)P_{FD}$$

L_{EQ} = (Equation 25-8 or 25-9)
P_{FD} = 1.000 using Equation (Exhibit 25-12)
V_{12} = 2231 pc/h
V_3 or V_{av34} 0 pc/h (Equation 25-15 or 25-16)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	2231	Exhibit 25-14	4500	No
$V_{FO} = V_F - V_R$	1775	Exhibit 25-14	4500	No
V_R	456	Exhibit 25-3	2100	No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2231	Exhibit 25-14	4400:All	No

Level of Service Determination (if not F)

$$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$$

D_R = 21.3 (pc/mi/ln)
LOS = C (Exhibit 25-4)

Speed Determination

D_s = 0.339 (Exhibit 25-19)
S_R= 50.6 mph (Exhibit 25-19)
S_0= N/A mph (Exhibit 25-19)
S = 50.6 mph (Exhibit 25-15)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	DL	Freeway/Dir of Travel	I-5 NB Off-Ramp
Agency or Company	Urban Crossroads, Inc.	Junction	Pacific Coast Highway
Date Performed	6/13/2013	Jurisdiction	Caltrans
Analysis Time Period	PM Peak Hour	Analysis Year	E+P (Contaminated Conditions)

Project Description Shelter Island Boat Launch Facility Imp TIA (JN: 07893)

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{up} = ft

V_u = veh/h

Terrain: Level

S_{FF} = 55.0 mph S_{FR} = 45.0 mph

Sketch (show lanes, L_A, L_D, V_R, V_f)

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	1360	0.97	Level	4	0	0.980	1.00	1430
Ramp	649	0.97	Level	4	0	0.980	1.00	682
UpStream								
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 25-2 or 25-3)

P_{FM} = 1.000 using Equation (Exhibit 25-5)

V_{12} = 1430 pc/h

V_3 or V_{av34} 0 pc/h (Equation 25-4 or 25-5)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 25-8)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	2112	Exhibit 25-7		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2112	Exhibit 25-7	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734 v_R + 0.0078 V_{12} - 0.00627 L_A$

D_R = 12.2 (pc/mi/ln)

LOS = B (Exhibit 25-4)

Speed Determination

M_S = 0.218 (Exibit 25-19)

S_R= 52.2 mph (Exhibit 25-19)

S_0= N/A mph (Exhibit 25-19)

S = 52.2 mph (Exhibit 25-14)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 25-8 or 25-9)

P_{FD} = using Equation (Exhibit 25-12)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 25-15 or 25-16)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 25-18)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 25-14		
$V_{FO} = V_F - V_R$		Exhibit 25-14		
V_R		Exhibit 25-3		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 25-14		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 25-4)

Speed Determination

D_s = (Exhibit 25-19)

S_R= mph (Exhibit 25-19)

S_0= mph (Exhibit 25-19)

S = mph (Exhibit 25-15)

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Attachment H

Existing Plus Project (Non-Local Disposal Materials) Conditions Traffic Signal Warrant Analysis Worksheets

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Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **E+P (Contaminated Materials) Conditions - Weekday PM Peak Hour**

Major Street Name = **Shelter Island Drive**

Total of Both Approaches (VPH) = **840**

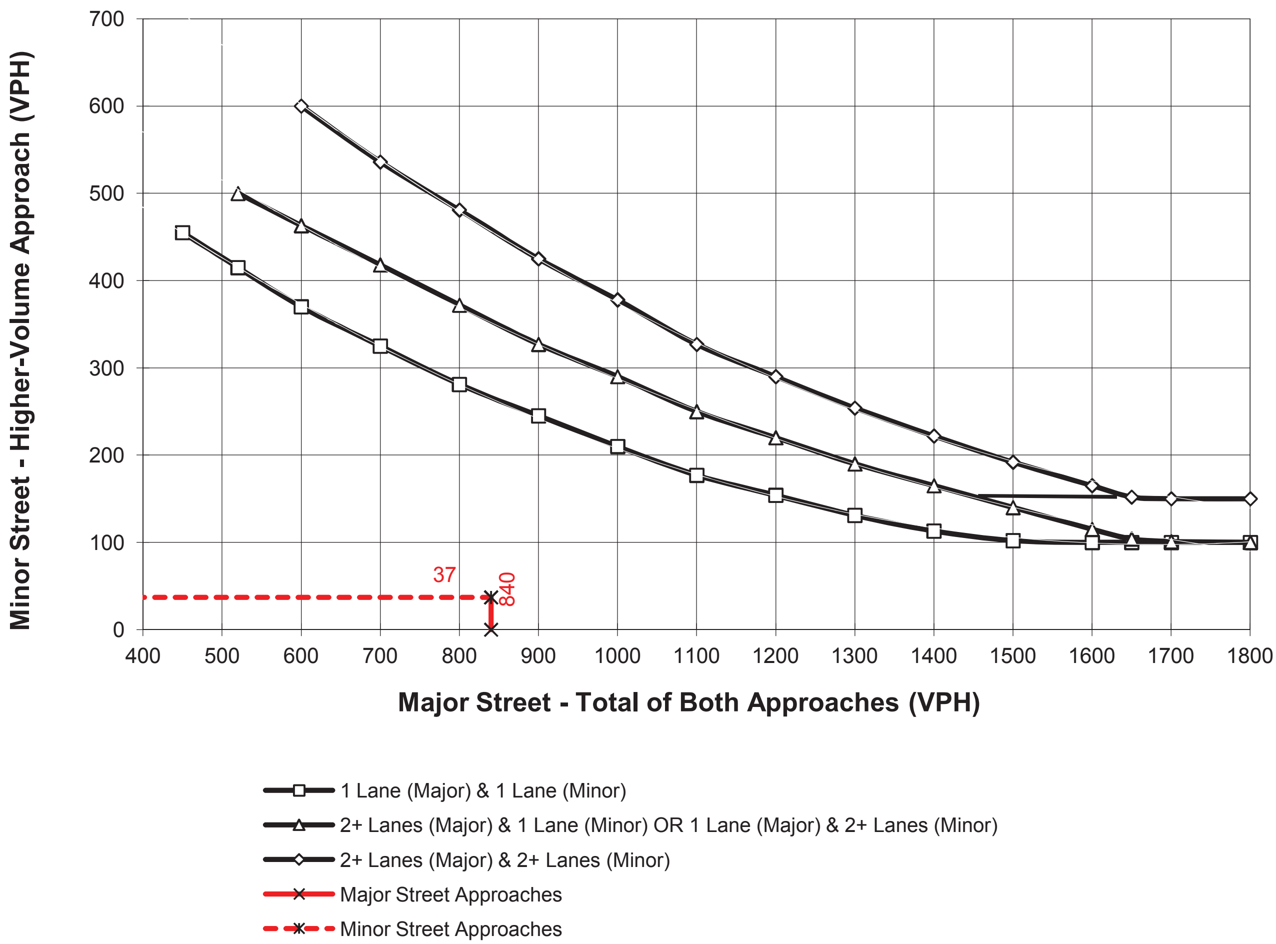
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Shafter Street**

High Volume Approach (VPH) = **37**

Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-3. Warrant 3, Peak Hour

Traffic Conditions = **E+P (Contaminated Materials) Conditions - Weekday PM Peak Hour**

Major Street Name = **Shelter Island Drive**

Total of Both Approaches (VPH) = **804**

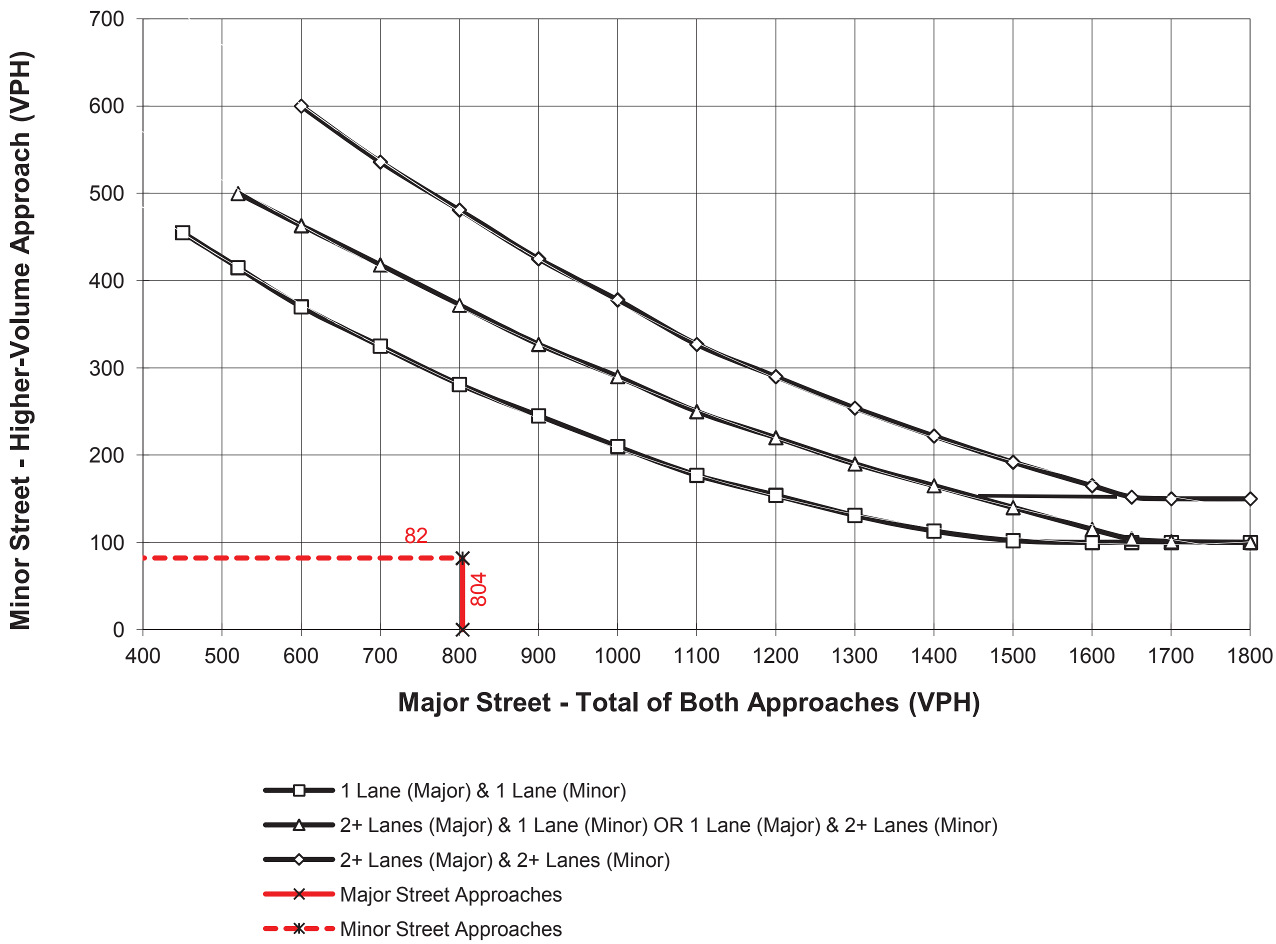
Number of Approach Lanes on Major Street = **1**

Minor Street Name = **Anchorage Lane**

High Volume Approach (VPH) = **82**

Number of Approach Lanes On Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 150 vph applies as the lower threshold for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold for a minor-street approach with one lane

Attachment I

Existing Plus Project (Non-Local Disposal Materials) Conditions Intersection Operations Analysis Worksheets, with Mitigation Measure

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Shelter Island Boat Launch Facility Improvements Traffic Impact Assessment
(JN: 07893) Existing plus Project (Contaminated) Conditions
AM Peak Hour - WITH MITIGATION MEASURES

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

****

Intersection #7 Lytton Street / Barnett Avenue (NS) / Rosecrans Street (EW)

****

Cycle (sec):	120	Critical Vol./Cap.(X):	0.849
Loss Time (sec):	16	Average Delay (sec/veh):	98.2
Optimal Cycle:	OPTIMIZED	Level Of Service:	F

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:		Protected			Protected			Protected			Protected	
Rights:		Include			Include			Include			Include	
Min. Green:	10	38	38	10	38	38	10	31	31	10	31	31
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	2 0	1	0 1	1 0	0	1 0	1 0	3	0 1	2 0	2	0 1
Volume Module:												
Base Vol:	502	238	103	332	270	6	5	1152	399	157	1401	196
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	502	238	103	332	270	6	5	1152	399	157	1401	196
Added Vol:	6	0	0	0	0	0	0	16	0	0	22	0
PasserByVol:	0	0	0	0	0	0	0	-16	0	0	-16	0
Initial Fut:	508	238	103	332	270	6	5	1152	399	157	1407	196
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	532	249	108	348	283	6	5	1208	418	165	1475	205
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	532	249	108	348	283	6	5	1208	418	165	1475	205
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	532	249	108	348	283	6	5	1208	418	165	1475	205
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	0.85	0.95	1.00	1.00	0.95	0.91	0.85	0.92	0.95	0.85
Lanes:	2.00	1.00	1.00	1.00	0.98	0.02	1.00	3.00	1.00	2.00	2.00	1.00
Final Sat.:	3502	1900	1615	1805	1853	41	1805	5187	1615	3502	3610	1615
Capacity Analysis Module:												
Vol/Sat:	0.15	0.13	0.07	0.19	0.15	0.15	0.00	0.23	0.26	0.05	0.41	0.13
Crit Moves:		****		****			****				****	
Green/Cycle:	0.15	0.32	0.32	0.15	0.32	0.32	0.08	0.30	0.30	0.10	0.32	0.32
Volume/Cap:	1.02	0.41	0.21	1.29	0.48	0.48	0.03	0.77	0.85	0.48	1.29	0.40
Delay/Veh:	94.5	32.7	30.2	205.9	33.7	33.7	50.7	40.4	53.1	52.4	178	32.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	94.5	32.7	30.2	205.9	33.7	33.7	50.7	40.4	53.1	52.4	178	32.6
LOS by Move:	F	C	C	F	C	C	D	D	D	D	F	C
HCM2kAvgQ:	15	7	3	25	9	9	0	15	15	3	49	6

****

Note: Queue reported is the number of cars per lane.

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Reference Copy

63789

RESOLUTION 2016-07

RESOLUTION ADOPTING THE FINAL MITIGATED NEGATIVE DECLARATION, ADOPTING THE MITIGATION MONITORING AND REPORTING PROGRAM, AND DIRECTING FILING OF THE NOTICE OF DETERMINATION

WHEREAS, the San Diego Unified Port District (District) is a public corporation created by the Legislature in 1962 pursuant to Harbors and Navigation Code Appendix I (Port Act); and

WHEREAS, the Shelter Island Boat Launch Facility (SIBLF) is a free public boat launching facility located on Shelter Island in San Diego that provides waterfront access opportunities to the public; and

WHEREAS, the SIBLF, which was constructed in 1956 and last upgraded in 2005, is in need of renovation due to the corrosive and wearing actions of seawater, heavy use by boaters, increased congestion and delays when launching boats in the limited basin area, and limited boat access during low tide; and

WHEREAS, the District is proposing to implement the Shelter Island Boat Launch Facility Improvements Project (Project), which involves repair, maintenance, and replacement of the boat launch ramp, jetties (including public walkways), gangways, and floating docks, as well as minor improvements to the kayak launching area, restrooms, and parking; and

WHEREAS, pursuant to the California Environmental Quality Act (CEQA), the District, as Lead Agency, prepared a Draft Initial Study and Mitigated Negative Declaration (collectively, MND) for the Project, and circulated the Draft MND for a 30-day public review period that started on June 12, 2015, and ended on July 14, 2015; and

WHEREAS, in conformance with CEQA, a Mitigation Monitoring and Reporting Program (MMRP) has been prepared for the Project and circulated with the Draft MND and includes a program for reporting on and monitoring mitigation measures for the Project; and

WHEREAS, a complete copy of the MND and MMRP are on file with the District and can be viewed at:
https://www.portofsandiego.org/environment/environmental-downloads/cat_view/157-environment/608-land-use-planning.html; and

WHEREAS, the District received comment letters from four agencies on the Draft MND, and staff responded to those letters in writing; and

WHEREAS, after the public comment period and in response to public comments received, errata to the Final MND (Errata) has been prepared to clarify (1) the demolition phasing proposed for the launch ramp and (2) minor modifications proposed for the restrooms and parking facilities supporting the SIBLF, as well as to correct minor typographical errors and outdated information; and

WHEREAS, the comment letters and written responses, and Errata do not present a substantial revision to the Draft MND, as defined by State CEQA Guidelines Section 15073.5(b), but clarify the MND; and

WHEREAS, the comment letters and written responses, and Errata are included in and part of the Final MND; and

WHEREAS, the Final MND finds that the Project, with the incorporation of mitigation measures identified in the MMRP, would not result in significant adverse impacts to the environment; and

WHEREAS, the Final MND and MMRP have been prepared in accordance with CEQA, the State CEQA Guidelines, and the District's Guidelines for Compliance with CEQA (District Guidelines); and

WHEREAS, all materials with regard to the Project were made available to the Board of Port Commissioners for its independent review and consideration of the Project including, but not limited to, the following:

1. The Draft MND; and

2. The Final MND; and

3. Errata to the Final MND; and

4. The Staff Report and Agenda sheet dated January 12, 2016; and

5. The proposed MMRP; and

6. All documents and records filed in this proceeding by the District and all interested parties; and

WHEREAS, having reviewed and considered all the materials made available to the BPC, including, but not limited to, the Draft MND, the Final MND and Errata, the proposed MMRP, the staff reports and all the evidence in the record of the proceedings with respect to the Project, the BPC took the actions hereinafter set forth below; and

WHEREAS, the Final MND and the MMRP are, by this reference, incorporated into this Resolution as if fully set forth herein; and

WHEREAS, a duly noticed public hearing was held on January 12, 2016, before the BPC, at which the BPC received public testimony, reviewed and considered all testimony and materials made available to the BPC regarding the Project.

NOW, THEREFORE, BE IT RESOLVED by the Board of Port Commissioners of the San Diego Unified Port District (BPC), as follows:

1. The BPC finds the facts recited above are true and further finds that this BPC has jurisdiction to consider, approve and adopt the subject of this Resolution.

2. The BPC finds and determines that the applicable provisions of the CEQA, CEQA Guidelines, and District Guidelines have been duly observed in conjunction with said hearing and the considerations of this matter and all of the previous proceedings related thereto.

3. The BPC has independently reviewed, analyzed and considered the MND, Errata and MMRP and the whole record before it, including without limitation the initial study, comments received and responses to the same, and finds and determines, on the basis of the whole record before the BPC, that:

(a) No substantial revisions have been made to the MND requiring recirculation, meaning (1) there are no new, avoidable significant effects that have been identified requiring mitigation measures or project revisions to reduce such effects to a level of insignificance and (2) the District has not determined that the proposed mitigation measures or project revisions will not reduce potential effects to less than significance or that new mitigation measures or revisions are required;

(b) There is no substantial evidence supporting a fair argument that the Project will have a significant unmitigated effect on the environment;

(c) The Final MND is complete and adequate in scope and has been completed in compliance with CEQA, the CEQA Guidelines and District Guidelines for implementation thereof;

(d) Mitigation Measures identified in the Final MND and MMRP are applicable and mitigate all potentially significant impacts to below a level of significance and thus, no additional mitigation measures are required; and

(e) The Final MND reflect the District's independent judgment and analysis.

4. The BPC hereby adopts the Final MND and MMRP for the Project.

5. Pursuant to Public Resources Code Section 21152 and CEQA Guidelines Section 15075, the Clerk of the BPC shall cause a Notice of Determination to be filed with the Clerk of the County of San Diego and the State Office of Planning and Research.

6. Pursuant to Public Resources Code Section 21081.6(a)(2) and CEQA Guidelines Section 15074(c), the location and custodian of the documents and other materials which constitute the record of proceedings on which this Resolution is based is the Clerk, San Diego Unified Port District, 3165 Pacific Highway, San Diego, California 92101.

APPROVED AS TO FORM AND LEGALITY:
GENERAL COUNSEL

By: ~~Assistant~~/Deputy

PASSED AND ADOPTED by the Board of Port Commissioners of the San Diego Unified Port District, this 12th day of January, 2016, by the following vote:

AYES: Bonelli, Castellanos, Malcolm, Merrifield, Moore, Nelson, and Valderrama.
NAYS: None.
EXCUSED: None.
ABSENT: None.
ABSTAIN: None.

Marshall Merrifield, Chairman
Board of Port Commissioners

ATTEST:

Timothy A. Deuel
District Clerk

(Seal)

San Diego Unified Port District

3165 Pacific Hwy.
San Diego, CA 92101

Item No. 13

File #:2015-1711

DATE: January 12, 2016

SUBJECT:

SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS PROJECT
A) CONDUCT PUBLIC HEARING AND ADOPT RESOLUTION ADOPTING THE FINAL MITIGATED NEGATIVE DECLARATION, ADOPTING THE MITIGATION MONITORING AND REPORTING PROGRAM, AND DIRECTING FILING OF THE NOTICE OF DETERMINATION
B) CONDUCT PUBLIC HEARING AND ADOPT RESOLUTION APPROVING THE PORT MASTER PLAN AMENDMENT AND DIRECTING FILING WITH THE CALIFORNIA COASTAL COMMISSION FOR CERTIFICATION

EXECUTIVE SUMMARY:

The Shelter Island Boat Launch Facility (SIBLF) is a free public boat launching facility located on Shelter Island in San Diego that provides waterfront access opportunities to the public. The SIBLF, which was constructed in 1956 and last upgraded in 2005, is in need of renovation due to the corrosive and wearing actions of seawater, heavy use by boaters, increased congestion and delays when launching boats in the limited basin area, and limited boat access during low tide. Accordingly, the District is proposing to implement the Shelter Island Boat Launch Facility Improvements Project and Port Master Plan Amendment (Project), which involves repair, maintenance, and replacement of the boat launch ramp, jetties (including public walkways), gangways, and floating docks, as well as minor improvements to the kayak launching area, restrooms, and parking. Construction of the Project, which is estimated to cost $9,350,000, is anticipated to be funded entirely through grants from the California Division of Boating and Waterways (DBW) and the California Wildlife Conservation Board (WCB).

Pursuant to the California Environmental Quality Act (CEQA), the District, as Lead Agency, prepared a Draft Mitigated Negative Declaration (MND) for the Project, which was circulated for a 30-day public review period. The District received comment letters from four agencies on the Draft MND, and staff determined that these comments did not raise any significant environmental issues not already addressed and analyzed in the Draft MND. The comment letters and responses to all written comments received on the Draft MND are included in the Final MND. In addition, Errata to the Final MND have been prepared to clarify the demolition phasing proposed for the launch ramp and minor modifications proposed for the restrooms and parking facilities supporting the SIBLF, as well as to correct minor typographical errors and outdated information. The MND finds that the Project, with the incorporation of mitigation measures identified in the Mitigation Monitoring and Reporting Program (MMRP), would not result in significant adverse impacts to the environment. The Final MND and MMRP have been prepared in accordance with CEQA, the State CEQA Guidelines, and the District's *Guidelines for Compliance with CEQA*. Copies of the Final MND and MMRP have been provided to

ACTION TAKEN: 01-12-2016 - Resolution 2016-007 and Resolution 2016-008 the Board.

Furthermore, a Draft Port Master Plan Amendment (PMPA) has been prepared to facilitate the Project. Notices of the Draft PMPA availability and proposed public hearing have been published and distributed consistent with applicable California Coastal Act (Coastal Act) requirements. A public hearing on the Draft PMPA prior to its adoption is required by the Coastal Act. Staff has coordinated with California Coastal Commission (Coastal Commission) staff and other stakeholders on the Project. The Draft PMPA is anticipated to be considered by the Coastal Commission for certification in summer 2016.

Staff recommends the Board conduct a public hearing and adopt the Final MND and MMRP and direct filing of the Notice of Determination (NOD). Staff also recommends the Board conduct a public hearing and approve the PMPA and direct filing with the Coastal Commission for certification.

RECOMMENDATION:

Shelter Island Boat Launch Facility Improvements Project:

A) Conduct a public hearing and adopt a resolution adopting the Final Mitigated Negative Declaration, adopting the Mitigation Monitoring and Reporting Program, and directing filing of the Notice of Determination

B) Conduct a public hearing and adopt a resolution approving the Port Master Plan Amendment and directing filing with the California Coastal Commission for certification

FISCAL IMPACT:

The Board's adoption of the Final MND, adoption of the MMRP, authorization to file the NOD, and approval of the PMPA have no direct fiscal impact to the District's FY 15/16 approved budget.

Construction of the Project, which is estimated to cost $9,350,000, is anticipated to be funded entirely through grants from DBW and WCB.

COMPASS STRATEGIC GOALS:

The Board's adoption of the Final MND, adoption of the MMRP, authorization to file the NOD, and approval of the PMPA will enable the District to obtain the remaining entitlements for the Project. The Board's approval ultimately supports implementation of the Project, which will improve boating opportunities, waterfront access, and safety for members of the public.

This agenda item supports the following Strategic Goal(s).

- A vibrant waterfront destination where residents and visitors converge.
- A Port with a healthy and sustainable bay and its environment.
- A Port that is a safe place to visit, work and play.
- A financially sustainable Port that drives job creation and regional economic vitality.

DISCUSSION:

<u>Background</u>

The SIBLF is a free public boat launching facility located at 2210 Shelter Island Drive in San Diego that provides waterfront access opportunities to the public (Attachment A). The SIBLF was constructed in 1956 and upgraded in 1976 with reconstruction of the launch ramp. The SIBLF was last upgraded in 2005 with installation of an Americans with Disabilities Act (ADA) accessible dock. Since its opening in 1956, the SIBLF has become a popular facility, with approximately 50,000 boat launches occurring each year. As further detailed below, the SIBLF is in need of renovation due to the corrosive and wearing actions of seawater, heavy use by boaters, increased congestion and delays when launching boats, and limited boat access during low tide.

In 2004, a conceptual design study for potential improvements to the SIBLF was conducted, and in 2005, DBW awarded grant funds to the District to plan, design, and construct the improvements recommended at that time. In 2006, the improvements, which included repairing the concrete ramp and replacing the floating docks, were presented to local stakeholders and the public. The feedback received included requests for the following additional improvements to be evaluated: expanding the basin to address boating congestion; moving and widening the basin opening to improve access; and improving the landside facilities, including a new comfort station, landscaping, parking pavement rehabilitation, public art, and outdoor showers. Based on this input, District and DBW staff made a joint decision to re-evaluate both landside and waterside improvements prior to proceeding.

In 2007, DBW awarded additional grant funds to the District to conduct landside and waterside feasibility studies. The conceptual designs resulting from the feasibility studies were presented to stakeholders and the public at two separate public outreach meetings, one in September 2007 and one in June 2008. Through these outreach meetings, a consensus was reached on that the following landside and waterside improvements should be studied:

1) Demolition and replacement of the existing deteriorating launching ramp;
2) Removal of the rubble mound jetties and construction of sheet pile bulkhead walls to expand the basin;
3) Replacement and rearrangement of the floating docks;
4) Construction of a kayak launching area to minimize interference with motorboats;
5) Construction of a new comfort station;
6) New landscaping;
7) Rehabilitation of the parking pavement;
8) Public art; and
9) Construction of outdoor showers.

The estimated cost to improve the landside and waterside facilities was $8,400,000: $3,160,000 for landside improvements and $5,240,000 for waterside improvements. DBW staff recommended that the District request grant funding only for the waterside improvements at that time; as a result, the major landside improvements were deferred. The District then proceeded to study and design the currently proposed Project as described below.

In 2008, DBW tentatively awarded grant funds to the District for the initial planning, design, and permit work for the Project. However, the State budget crisis delayed DBW's ability to award any additional grants, and the Project was placed on hold. Final approval of the funds for the initial planning, design, and permit work was delayed until 2011. Once funding was approved in September 2011, the District proceeded with the design for the Project. The 60% design was completed in April 2013.

Project Description

As discussed above, the Project is intended to provide accessibility for users with disabilities, to provide more navigable water area within the existing breakwater basin to launch and retrieve boats, to improve boat maneuverability, to reduce boat congestion, and to improve boat safety and operations at the SIBLF. The Project includes the following components, which are detailed on the Project site plan provided as Attachment B to this agenda sheet.

1) Replacement of the existing 10-lane boat launching ramp
2) Replacement of the existing rock jetties with concrete sheet pile (bulkhead) walls
3) Installation of publicly accessible walking platforms with viewing areas atop the bulkhead walls
4) Replacement of the existing floating docks
5) Installation of new gangways to the floating docks
6) Improvements to the existing kayak launching area
7) Construction of a sidewalk with curb and gutter
8) Re-grading and re-paving of the vehicle/trailer maneuvering area to raise the elevation of the upper area of the launch ramp
9) Installation of signage
10) Minor re-grading of the beach area to reinstate the pre-construction beach profile
11) Completion of rock slope protection measures within the basin
12) Installation of updated launch ramp lighting
13) Replacement of two existing masonry screen walls within the restrooms
14) Restriping of two existing ADA accessible parking stalls to provide two 40-foot-long ADA accessible parking stalls near the restrooms for vehicles with boat trailers

The Project will not increase the number of lanes comprising the existing boat launching ramp; therefore, an increase in the operational capacity of the SIBLF will not occur. No changes to other ancillary facilities are proposed. A more detailed description of the Project follows.

Launching Ramp

The Project will demolish the existing 10-lane, approximately 16,090-square-foot concrete launching ramp and construct a new 10-lane, approximately 18,430-square-foot cast-in-place concrete launching ramp in the same location. The slight increase in ramp area is necessary to raise the top of the ramp by approximately two feet to accommodate future anticipated sea level rise and will result in the ramp being extended 23 feet southward. A temporary steel sheet pile cofferdam will be installed to allow the ramp to be constructed in dry conditions. Demolition of the existing launch ramp would be conducted in two phases to allow continued operation of the Seal Tours by Old Town Trolley Tours of San Diego, Inc. (OTT), which has a current lease for the non-exclusive use of the facility.[1] The demolition phasing will allow OTT to access an approximately 15-foot-wide section of launch ramp during the majority of the Project construction period. There may be small windows where the ramp may become unavailable due to safety concerns or construction conflicts.

Jetties and Bulkhead Walls
The Project will remove approximately 27,154 square feet of the existing rock jetties and replace the jetties with permanent concrete sheet pile bulkhead walls to expand the boat basin within the existing jetty footprint from approximately 22,800 square feet to approximately 41,000 square feet, creating approximately 18,200 square feet of additional navigable water area within the existing basin. Two new bulkhead walls will be installed within the existing jetty footprint; the west wall will be 338 feet long and the east wall will be 169 feet long. The bulkhead walls will have a 60-foot wide opening to allow for boat access to and from the San Diego Bay. Approximately 5-foot-wide ADA accessible walkways with widened overlook areas will be located along the top of the bulkhead walls to provide pedestrian access and viewing of the bay similar to the path that exists on the top of the existing jetties. A total of approximately 65, 14-inch-wide, 54-foot-long concrete batter piles will be installed to support the permanent bulkhead walls. Approximately 850 cubic yards of existing rock revetment will be beneficially reused for rock slope protection adjacent to the launch ramp within the basin. Finally, minor re-grading of approximately 2,100 square feet of beach area will be required to reinstate the pre-construction beach profile after the western jetty has been removed and the new bulkhead wall has been installed.

Floating Docks and Gangways
The Project will remove and replace two existing floating docks and two existing gangways measuring approximately 2,100 square feet with two interior perimeter floating docks and three gangways measuring approximately 5,190 square feet. The three new prefabricated aluminum gangways will provide access from the shore to the floating docks and will include one 34-foot standard gangway, one 42-foot standard gangway, and one 80-foot ADA accessible gangway. The new floating docks will include 16 precast concrete guide pilings that will be approximately 18 inches in diameter and 46 feet long (13 piles will be new and 3 will be reused).

Other Improvements
The Project will also involve other minor improvements to the vehicle/trailer maneuvering area, kayak launching area, curb and sidewalk, signage, lighting, restrooms, and parking. The Project will regrade and repave the approximately 16,600-square-foot vehicle/trailer maneuvering area, install an approximately 160-foot-long concrete sidewalk, and install an approximately 720-foot-long concrete curb and gutter. Also, new pavement striping and signage will be installed to better delineate the existing 1,300-square-foot kayak drop-off area. A new DBW Project Sign will be installed that features the facility name and identifying the DBW as the Project funding agency and the District as the agency responsible for SIBLF operations and maintenance. Updated light-emitting diode (LED) technology lighting will replace the existing lighting, which will ensure electrical efficiency and longevity. Finally, two existing masonry screen walls located within the restrooms will be replaced, and two existing ADA accessible parking stalls will be restriped.

Project Construction
Construction of the Project, which is estimated to cost $9,350,000, is anticipated to be grant-funded, as further detailed below. Construction of the Project is anticipated to commence in early 2017 and take approximately 6 to 10 months to complete. For safety purposes, the SIBLF will be closed to the general public throughout the approximately 6- to 10-month construction period, during which time users of the SIBLF will be redirected to other public boat launching facilities in San Diego Bay and Mission Bay. The District will notify users of the SIBLF of the upcoming temporary closure several months prior to initiation of Project construction.

BPC Policy No. 752

For the Project, staff has conducted a consistency review related to the Integrated Port Master Plan Update as required by BPC Policy No. 752. The Project complies with BPC Policy No. 752 because it is consistent with the Integrated Planning Phase I Vision Statement and Guiding Principles accepted by the Board at their August 12, 2014 meeting. As such, the Board can consider the Project and associated PMPA as proposed.

Port Master Plan Amendment

Pursuant to Chapter 8 of the Coastal Act, a Draft PMPA has been prepared to facilitate implementation of the Project, which is located in the Bay Corridor planning subarea of Planning District 1, Shelter Island/La Playa of the certified Port Master Plan (PMP). The primary revisions to the PMP include adding a description of the Project to the Precise Plan text and adding the Project to the Table 7, Planning District 1, Shelter Island Project List (Attachment C). Specifically, Section 30711(a)(4) of the Coastal Act requires "appealable" projects, which include, without limitation, recreational small craft marina related facilities like the SIBLF, be listed in a PMP. The SIBLF was constructed prior to certification of the PMP and, therefore, is not listed or described in the PMP. Consequently, Coastal Commission staff has indicated that the redevelopment of the facility requires a PMPA to add the Project to the Project List and the Precise Plan text.

A public hearing on the Draft PMPA prior to approval is required by Section 30712 of the Coastal Act. In compliance with this section, the District published a Notice of Completion and Public Hearing of the Draft PMPA in the San Diego Union Tribune on December 11, 2015. This provided the required minimum 30-day notice to members of the public, organizations, and governmental agencies of the completion of the Draft PMPA and the public hearing for approval by the Board, and encouraged them to review the Draft PMPA and submit testimony for the Board to consider before approving the PMPA.

Since initiation of the Project's environmental review process in early 2013, staff has coordinated with Coastal Commission staff including an initial meeting on April 16, 2013, and several subsequent coordinating meetings. In early December, District staff informed Coastal Commission staff of its intention to bring the MND and PMPA before the Board for consideration at its January Board meeting. Staff will continue to coordinate with Coastal Commission staff on this Project throughout the PMPA and CDP processes.

Approval of the PMPA will allow staff to transmit the PMPA to the Coastal Commission for certification. Following PMPA certification by the Coastal Commission and subsequent acceptance by the Board, the PMP will be updated, and the District will then be able to process a coastal development permit (CDP) for the Project.

Grant Funding

The DBW Commission approved $6,100,000 in grant funding for the Project at their November 18, 2015 meeting. Additionally, the WCB has expressed interest in being added to the Project as a funding partner with available funding through their public access program. The WCB is planning to propose the Project to their board at their February 2016 meeting. Staff anticipates bringing the approval of the grant agreements to the Board in early 2016.

Next Steps and Recommendation

Following Board adoption of the Final MND and approval of the PMPA, staff will transmit the PMPA application to the Coastal Commission for consideration of certification at a future Coastal Commission meeting, anticipated to occur in summer 2016. If the Coastal Commission certifies the PMPA, further actions are required to make the PMPA effective. Pursuant to Section 30716 of the Coastal Act and Title 14, Section 13632(e) of the California Code of Regulations, those actions include the Board adopting the PMPA as certified by the Coastal Commission and giving notice of said adoption to the Coastal Commission, as well as the Coastal Commission accepting the Board's action as being consistent with its certification. Following PMPA certification, the Board will have CDP issuance authority for the Project, and staff will return to the Board to consider authorizing issuance of an appealable CDP for the Project.

For the reasons discussed above, staff recommends the Board conduct a public hearing and adopt the Final MND and MMRP and direct filing of the NOD. Staff also recommends the Board conduct a public hearing and approve the PMPA and direct filing with the Coastal Commission for certification.

General Counsel's Comments:

The General Counsel's Office has reviewed the agenda sheet and attachments as presented to it and approves them as to form and legality.

Environmental Review:

In December 2012, the Board authorized funding for the Project's environmental review process, and staff initiated preparation of the CEQA document shortly thereafter.[2] As lead agency under CEQA, the District prepared a Draft MND for the Project (State Clearinghouse No. 2015061029/UPD #MND-2015-38). The Draft MND was released for a 30-day public review period that began on June 12, 2015, and ended on July 14, 2015. Upon conclusion of the public review period, four comment letters were received on the Draft MND from: the U.S. Department of Homeland Security Federal Emergency Management Agency (FEMA), the State of California Governor's Office of Planning and Research, State Clearinghouse and Planning Unit (State Clearinghouse), the California State Lands Commission (State Lands), and the County of San Diego Department of Environmental Health Vector Control Program (County). FEMA commented that the Project should comply with the National Flood Insurance Program minimum floodplain management building requirements. The State Clearinghouse informed the District that the Draft MND was distributed to various state agencies for their review, and that the state agency review period ended on July 13, 2015. State Lands commented that the MND should provide additional information and/or analysis related to the project construction and maintenance, sea level rise, aesthetics, biological resources, invasive species, and public noticing regarding closure of the SIBLF during construction. The County provided general comments related to mosquito control.

As required by the District's *Guidelines for Compliance with CEQA*, staff prepared written responses to each of the comment letters received on the Draft MND during the public review period. Staff determined that the comments submitted did not raise any significant environmental issues not already included in the Draft MND. Copies of the comment letters and staff responses to the comments are provided as Attachment C to the Final MND. In addition, staff prepared Errata to the Final MND to clarify the demolition phasing proposed for the launch ramp and minor modifications proposed for the restrooms and parking facilities supporting the SIBLF, as well as to correct minor typographical errors and outdated information. The Final MND is available for review in the Office of the District Clerk, was distributed to the Board for its consideration via a Board memo dated December 30, 2015, and was also made available to the Board in the Commissioners' Office.

The MND finds that the Project would have no potentially significant adverse impacts to aesthetics, agriculture and forestry resources, air quality, cultural resources, geology and soils, greenhouse gas emissions, hydrology and water quality, land use and planning, mineral and energy resources, population and housing, and utilities and service systems. The MND also finds that, with incorporation of mitigation measures identified in the MMRP, potentially significant adverse impacts to biological resources, hazards and hazardous materials, noise, public services, recreation, and transportation/traffic would be reduced to less than significant. As concluded by the MND, construction of the Project would result in various potentially significant environmental impacts. All impacts can be mitigated to below a level of significance with implementation of the mitigation measures included in the Final MND. The MMRP, which has been prepared in accordance with CEQA Guidelines Section 15047(a), identifies the environmental issue area, all mitigation measures, timing and the party responsible for carrying them out, and procedure for documenting the mitigation implementation. Compliance with all the mitigation measures included in the Final MND will be required as a special provision of the CDP for the Project, if approved by the Board at a later date.

The Final MND has been prepared in accordance with CEQA and the CEQA Guidelines. Pursuant to CEQA Guidelines Section 15074, prior to approving the Project, the District shall: (1) consider the proposed MND together with any comments received during the public review process; (2) adopt the proposed MND only if it finds on the basis of the whole record before it that there is no substantial evidence that the Project will have a significant effect on the environment and that the MND reflects the lead agency's independent judgement and analysis; and (3) adopt a program for reporting on or monitoring the changes which it has either required in the Project or made a condition of approval to mitigate or avoid significant environmental effects.

Based on the information detailed above, and pursuant to CEQA Guidelines Sections 15074 and 15075, staff recommends the Board conduct a public hearing and adopt the Final MND, adopt the MMRP, and direct filing of the NOD. Staff also recommends the Board conduct a public hearing and approve the PMPA and direct filing with the Coastal Commission for certification.

Equal Opportunity Program:

Not applicable.

PREPARED BY:

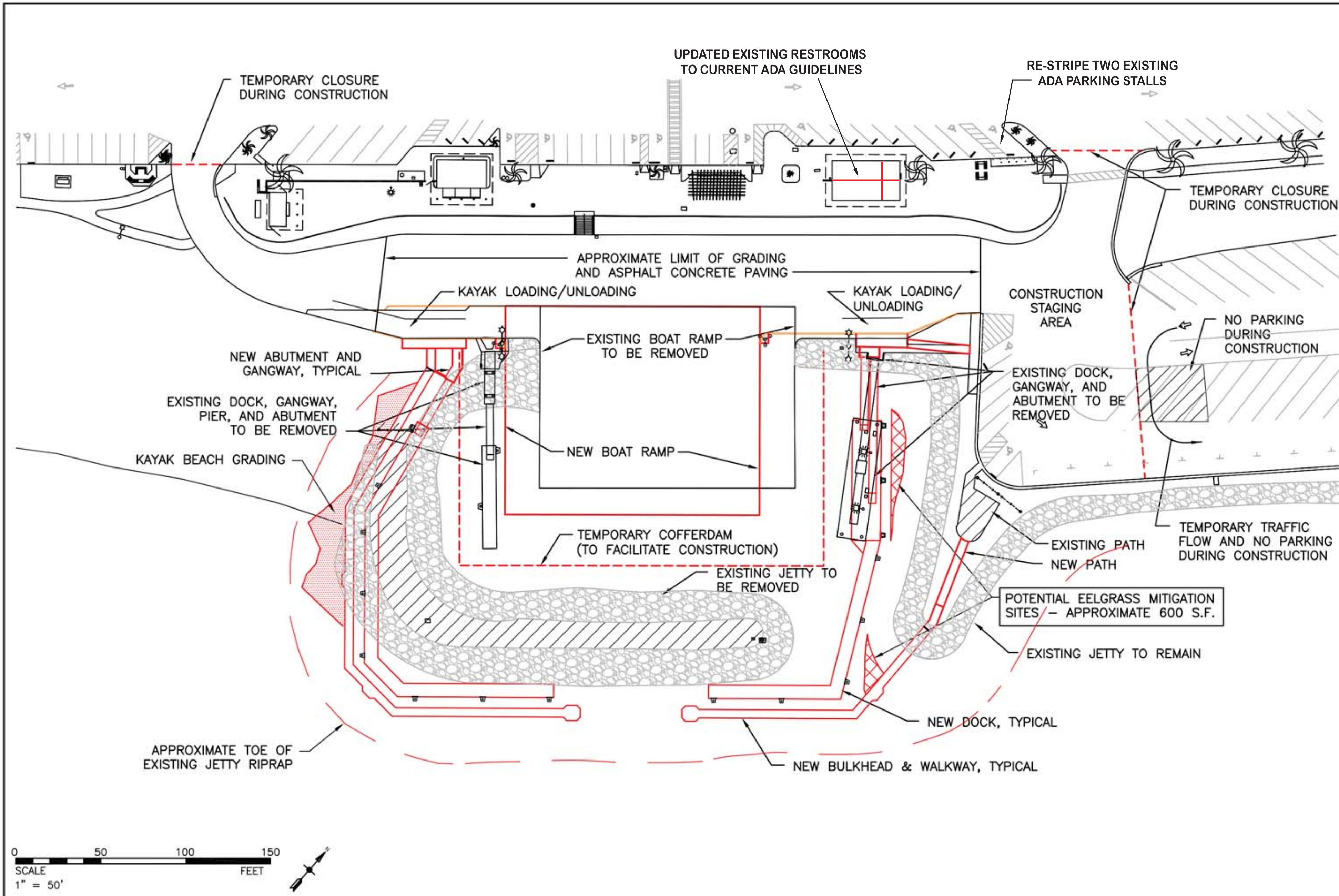
Mayra Medel
Senior Redevelopment Planner
Real Estate Development

Attachment(s):
Attachment A: SIBLF Location Map
Attachment B: SIBLF Improvements Project Site Plan
Attachment C: Draft PMPA for SIBLF Improvements Project

[1]Lease to Old Town Trolley Tours of San Diego, Inc. of Property Located at 1004-A North Harbor Drive, San Diego, California, dated December 3, 2014, on file in the Office of the District Clerk as Document No. 62638.
[2]SDUPD BPC Meeting dated December 11, 2012, Agenda Item No. 12: Resolution Amending the FY 2009-2013 CIP and Authorizing Budget Increase of $200,000 for the Shelter Island Boat Launching Facility Project, San Diego, California, to Complete the California Environmental Quality Act Requirements to Qualify for Disbursement of the $495,000 Department of Boating and Waterways Grant; BPC Resolution No. 2012-174.

Attachment A to Agenda File No. 2015-1711

LOCATION MAP - Shelter Island Boat Launch Facility



SITE PLAN - Shelter Island Boat Launch Facility Improvements Project

San Diego Unified Port District
Port Master Plan Amendment

DRAFT

SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS PROJECT AND PORT MASTER PLAN AMENDMENT

Existing/Proposed Plan
Text and Graphics

June 2015

Note: Text to be deleted shown ~~stricken~~ and text to be added shown underlined.

SHELTER ISLAND: Planning District 1

The Precise Plan Concept

Shelter Island has strong historic functional ties to the boating community of the San Diego region. Public discussions and evaluations made in the planning process have highlighted the following matters as being of paramount importance.

While there is general satisfaction with the present land use allocations, some improvement can be obtained by extensive renovation of older facilities as necessary or at the termination of leases. Additional people oriented spaces, providing vistas and accessibility to the water and waterside activities, are felt appropriate. In some subareas, the visual clutter of a proliferation of signs; disorganized automobile parking in side yards and setbacks; and a lack of continuity in architecture give evidence of deterioration in some portions of Shelter Island.

The basic concept of the Shelter Island Precise Plan is found in preserving and retaining flexibility in improving upon the best aspects of this man-made environment, which has been developed over the past 50 years.

The character of existing development is to be enhanced by a redevelopment program that emphasizes the continued provision of adequate public service, employment and investment opportunities.

Overall, the planned land and water uses for the Shelter Island area remain essentially unchanged from existing uses. The major emphasis of the development program is directed toward the renovation of obsolete structures, improvement in the quality of landscape, and visual and physical access to the bayfront.

Land and Water Use Allocations

Roughly 350 acres in the Shelter Island Planning District are tidelands under the jurisdiction of the Unified Port District. A summary, in tabular form, of the planned land and water use allocations is indicated in Table 6.

The following text explains and gives definition to the legend of the Land and Water Use Element Map of the Precise Plan. The map graphically portrays 20 different land or water use designations organized under four major headings—Commercial, Public Recreation, Public Facilities, and Military.

Shelter Island Planning Subareas

In the following narrative, the Planning District has been divided into seven subareas (Figure 5) to focus attention upon and give expression to the plan concepts that are suggested for the entire Planning District but with an emphasis on the relationship of precise planning proposals and specific sites.

Beach Corridor

This planning subarea includes a narrow band of shoreline extending from the Port District jurisdictional line bordering the US Navy facility on Point Loma to Canon Street. Two small beach areas, Kellogg and La Playa beaches, are illustrated as open space on the Land and Water Use Map, and are interspersed with two yacht clubs. Limited access to the beaches is to be maintained consistent with the existing isolated and low intensity~~ve~~ recreational use orientation, which is geared to serve the immediate neighborhood. Kellogg Beach, subject to erosion, is to be restored by State, Port and City action. The Kellogg Beach replenishment is intended to control excessive shoreline erosion and to preserve a public beach, street termination and adjacent private property. A quarry rock groin in conjunction with sand backfill will be on a replenishment basis at Kellogg Beach.

It is recommended that sometime in the future, the beach area be served by a pedestrian promenade and bike route to delineate the tideland/upland boundary and to provide access to the beach. Streets that stop at or on tidelands in the area provide excellent points of public access and vista. Whenever compatible with local community plan goals and traffic circulation and safety, appropriate street endings are to be enhanced by providing landscaped sitting and viewing areas, and rest stops for bicyclists and pedestrians using the trai~~a~~l system. The design of the street ending should be in conformance with any dominant architectural or natural theme of the surrounding area, and be preferably limited to accommodate passive public recreational activities.

More intensive modes of boating recreation and social activities occur at yacht clubs, shown on the Land and Water Use map under the category of Commercial Recreation, and the associated water use, Recreational Boat Berthing. The land-based activities of these quasi-public centers will continue to be confined to each parcel.

Anchorage A-1, Yacht Basin anchorage, is a special anchorage designated on Bay Charts. Single swing point anchoring will continue to be by vessel ground tackle. The water area allocated for the anchorage occupies approximately 9.4 acres and can accommodate up to about 20 vessels, depending upon their size. A-1 has a low intensity use orientation, and a landing site adjacent to an expanded park area at Anchorage Lane is proposed. Use is by permit of the Harbor Master. Control over the anchoring of vessels will continue to be exercised by the Port District pursuant to local ordinances. Anchorage A-1 is one of several small craft facilities discussed in Section III, Water Based Transportation System.

Shelter Island Point

The southwestern tip of Shelter Island is planned to continue as a center for maritime services and harbor regulatory activities including Harbor Police patrol and fire services, Customs inspection, pilot boat berthing, and limited Coast Guard functions. On the Land and Water Use Map, these public facilities that relate to the public's safety and general welfare are shown by symbol and by the Harbor Services designation.

The Harbor Police Station includes fire boat and patrol boat facilities. It occupies a strategic location on Shelter Island from which to monitor waterborne traffic and to render assistance as required in San Diego Bay. Activities and uses to be retained in the landscaped park and open space around the structures on the point include the Friendship Bell monument, public accessibility to the bay and access to the spectacular vista site overlooking the entrance to San Diego Bay.

Harbor Services is a category used on the Map to indicate the transient berthing space provided by the Port for coastal cruising. The transient berthing is used by vessels under permit of the Harbor Master (i.e., Senior Harbor Police Duty Officer).

The Pumpout Station is a public convenience provided for the drainage of wastes from holding tanks aboard vessels. The service, essential to water quality improvements, is expected to undergo increasing use and the upgrading of service is planned from time to time.

Customs services are provided to boaters, upon request, at the Harbor Master Pier. No expansion of this activity is anticipated.

Bay Corridor

This subarea deals with the land mass that separates the open bay from the protected yacht harbor, and is the largest developed subarea in the Planning District. The mixed use developments shown as Commercial Recreation and Recreational Boat Berthing on the Land and Water Use Map include hotels, marinas, restaurants and yacht clubs, balanced by public recreational facilities—park and beach, boat launching ramp, fishing pier, and people oriented spaces—set a standard to be emulated in other areas.

Suggested improvements in this subarea include street tree and landscape programs along Shelter Island Drive, in the Bayside Park, and the erection of impressive civic art features in the traffic circle. A low-cost food restaurant is proposed near the boat-launching ramp and a landing dock with pumpout facilities north of the traffic circle is under consideration in the long-term future.

A portion of the shoreline trailer-in-tow parking lot will be transformed into a waterfront park with children's playground and an open gathering area. The existing gazebo may be relocated. Redevelopment of the existing shoreline parking area will increase pedestrian access to and along the shoreline and provide passive shoreline recreational areas where none now exist. The parking lot area may be reconfigured to replace all of the existing trailer-in-tow parking spaces. All of the trailer-in-tow spaces will be retained if the parking area is reconfigured.

The Shelter Island Boat Launch Facility, constructed in 1956 and upgraded in 1975, is proposed to be renovated to improve launching efficiency and maneuverability, safety, public access to the water, and public recreation on the water. Renovation of the boat launch facility will include removal and replacement of the 10-lane boat launch ramp; partial removal of the rip rap mound jetties and replacement with vertical sheet pile bulkhead walls; installation of publicly accessible walking platforms with viewing areas atop the bulkhead walls; removal of the floating docks and replacement with interior perimeter floating docks; installation of new ramps to the floating docks; improvements to the kayak launching area; and minor re-grading of the beach area just west of the boat launch facility. A 10-lane launch ramp will continue to serve the boat launch facility after renovation. The renovated boat launch facility will address safety concerns related to boat maneuverability in the basin, reduce congestion and delays within the basin, reduce queuing outside of the basin, and continue to provide public access to the water. Continued heavy use of this public recreation area is anticipated for recreational boating and pedestrian access.

The Shelter Island Roadstead contains 46 swing moorings. The moorings occupy about 12.8 acres of water in three sites, identified as Special Anchorages A-1a, A-1b, and A-1c. The mooring area has been designated to resolve conflicts between anchored vessels and activities on the ship channel, public fishing pier, small craft launching ramp, and submerged pipeline. Although protected from the open areas, the moorings are exposed to the wakes of vessels using the ship channel. It is proposed that mooring users be the larger ocean-cruising and transient vessels for short periods of time. The boundaries of the mooring areas should be marked by lighted buoys. Shoreside facilities are limited to a beach dinghy landing and adjacent restroom and trash receptacles. Control over the mooring area will be exercised by the Port District.

TABLE 7: PROJECT LIST

SHELTER ISLAND: PLANNING DISTRICT 1

	SUBAREA	DEVELOPER	APPEALABLE	FISCAL YEAR
1. BEACH STABILIZATION AND REPLENISHMENT: (Kellogg Beach) Construct rock groin, backfill with sand	11	P	N	2003-20
2. SHORELINE PROTECTION: Channel side of peninsula; maintain revetment	13	P	N	2003-20
3. SHELTER ISLAND DRIVE: Modify street, curb and gutter; install landscaping, street trees, irrigation, street furnishings, sculpture	14	P	N	2003-05
4. PUBLIC SHORESIDE PARK: Shelter Island Drive at Anchorage Lane; remove paving; install landscaping, irrigation, promenade, park furnishings	14	P	N	2003-05
5. MARINE EQUIPMENT BUILDING: Remove, replace and relocate building and landscaping	14	T	N	2003-05
6. BOAT BUILDING AND REPAIR: Renovate and upgrade facilities	14	T	N	2003-05
7. BOAT SALES: Remove, replace and relocate structures and piers	14	T	N	2003-05
8. MARINE SERVICE CENTER: Remove existing building and construct new building for marine related services	14	T	N	2003-05
9. BOAT YARD: Renovate/replace building, piers and facilities	14	T	N	2003-05
10. SHORELINE PROTECTION: Break up and embed existing rubble; install filter blanket and rock revetment	16	P	N	2003-05
11. SHORELINE PARK: Reconfigure trailer-in-tow parking, construct park lawn area, relocate/renovate pavilion building	13	P	N	2005-07
12. KETTENBURG BOATYARD: Remove and replace obsolete structures and construct walk-up food plaza including through connecting pedestrian / bicycle access to Sportfish Landing promenade and Shelter Island Drive	15	P	N	2003-04
13. NO. HARBOR DRIVE: Partial street vacation, roadway realignment, landscaping, traffic calming, parking and pedestrian/bicycle access improvements	15	P	Y	2003-05
14. HOTEL EXPANSION: Add rooms, pedestrian/bicycle accessway and renovate structures, install landscaping and parking improvements	15	T	Y	2004-06
15. BAY CITY/SUN HARBOR REDEVELOPMENT: New restaurant, retail and marina services, public improvements including view corridors, pedestrian / bicycle access, open marina green park area with water taxi recreational boat access and new 50-slip marina.	15	T	Y	2004-06
16. SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS: Remove and replace 10-lane boat launch ramp, partially remove jetties and replace with vertical sheet pile bulkhead walls, install public walking platforms with viewing areas on bulkhead walls, remove floating docks and replace with interior perimeter floating docks, install new ramps to the floating docks, improve kayak launching area, and re-grade beach. Continue to maintain facility, as needed.	13	P	Y	2015-16

P- Port District N- No
T- Tenant Y- Yes

RESOLUTION 2016-07

RESOLUTION ADOPTING THE FINAL MITIGATED NEGATIVE DECLARATION, ADOPTING THE MITIGATION MONITORING AND REPORTING PROGRAM, AND DIRECTING FILING OF THE NOTICE OF DETERMINATION

WHEREAS, the San Diego Unified Port District (District) is a public corporation created by the Legislature in 1962 pursuant to Harbors and Navigation Code Appendix I (Port Act); and

WHEREAS, the Shelter Island Boat Launch Facility (SIBLF) is a free public boat launching facility located on Shelter Island in San Diego that provides waterfront access opportunities to the public; and

WHEREAS, the SIBLF, which was constructed in 1956 and last upgraded in 2005, is in need of renovation due to the corrosive and wearing actions of seawater, heavy use by boaters, increased congestion and delays when launching boats in the limited basin area, and limited boat access during low tide; and

WHEREAS, the District is proposing to implement the Shelter Island Boat Launch Facility Improvements Project (Project), which involves repair, maintenance, and replacement of the boat launch ramp, jetties (including public walkways), gangways, and floating docks, as well as minor improvements to the kayak launching area, restrooms, and parking; and

WHEREAS, pursuant to the California Environmental Quality Act (CEQA), the District, as Lead Agency, prepared a Draft Initial Study and Mitigated Negative Declaration (collectively, MND) for the Project, and circulated the Draft MND for a 30-day public review period that started on June 12, 2015, and ended on July 14, 2015; and

WHEREAS, in conformance with CEQA, a Mitigation Monitoring and Reporting Program (MMRP) has been prepared for the Project and circulated with the Draft MND and includes a program for reporting on and monitoring mitigation measures for the Project; and

WHEREAS, a complete copy of the MND and MMRP are on file with the District and can be viewed at:
https://www.portofsandiego.org/environment/environmental-downloads/cat_view/157-environment/608-land-use-planning.html; and

WHEREAS, the District received comment letters from four agencies on the Draft MND, and staff responded to those letters in writing; and

WHEREAS, after the public comment period and in response to public comments received, errata to the Final MND (Errata) has been prepared to clarify (1) the demolition phasing proposed for the launch ramp and (2) minor modifications proposed for the restrooms and parking facilities supporting the SIBLF, as well as to correct minor typographical errors and outdated information; and

WHEREAS, the comment letters and written responses, and Errata do not present a substantial revision to the Draft MND, as defined by State CEQA Guidelines Section 15073.5(b), but clarify the MND; and

WHEREAS, the comment letters and written responses, and Errata are included in and part of the Final MND; and

WHEREAS, the Final MND finds that the Project, with the incorporation of mitigation measures identified in the MMRP, would not result in significant adverse impacts to the environment; and

WHEREAS, the Final MND and MMRP have been prepared in accordance with CEQA, the State CEQA Guidelines, and the District's Guidelines for Compliance with CEQA (District Guidelines); and

WHEREAS, all materials with regard to the Project were made available to the Board of Port Commissioners for its independent review and consideration of the Project including, but not limited to, the following:

1. The Draft MND; and

2. The Final MND; and

3. Errata to the Final MND; and

4. The Staff Report and Agenda sheet dated January 12, 2016; and

5. The proposed MMRP; and

6. All documents and records filed in this proceeding by the District and all interested parties; and

WHEREAS, having reviewed and considered all the materials made available to the BPC, including, but not limited to, the Draft MND, the Final MND and Errata, the proposed MMRP, the staff reports and all the evidence in the record of the proceedings with respect to the Project, the BPC took the actions hereinafter set forth below; and

WHEREAS, the Final MND and the MMRP are, by this reference, incorporated into this Resolution as if fully set forth herein; and

WHEREAS, a duly noticed public hearing was held on January 12, 2016, before the BPC, at which the BPC received public testimony, reviewed and considered all testimony and materials made available to the BPC regarding the Project.

NOW, THEREFORE, BE IT RESOLVED by the Board of Port Commissioners of the San Diego Unified Port District (BPC), as follows:

1. The BPC finds the facts recited above are true and further finds that this BPC has jurisdiction to consider, approve and adopt the subject of this Resolution.

2. The BPC finds and determines that the applicable provisions of the CEQA, CEQA Guidelines, and District Guidelines have been duly observed in conjunction with said hearing and the considerations of this matter and all of the previous proceedings related thereto.

3. The BPC has independently reviewed, analyzed and considered the MND, Errata and MMRP and the whole record before it, including without limitation the initial study, comments received and responses to the same, and finds and determines, on the basis of the whole record before the BPC, that:

(a) No substantial revisions have been made to the MND requiring recirculation, meaning (1) there are no new, avoidable significant effects that have been identified requiring mitigation measures or project revisions to reduce such effects to a level of insignificance and (2) the District has not determined that the proposed mitigation measures or project revisions will not reduce potential effects to less than significance or that new mitigation measures or revisions are required;

(b) There is no substantial evidence supporting a fair argument that the Project will have a significant unmitigated effect on the environment;

(c) The Final MND is complete and adequate in scope and has been completed in compliance with CEQA, the CEQA Guidelines and District Guidelines for implementation thereof;

(d) Mitigation Measures identified in the Final MND and MMRP are applicable and mitigate all potentially significant impacts to below a level of significance and thus, no additional mitigation measures are required; and

(e) The Final MND reflect the District's independent judgment and analysis.

4. The BPC hereby adopts the Final MND and MMRP for the Project.

5. Pursuant to Public Resources Code Section 21152 and CEQA Guidelines Section 15075, the Clerk of the BPC shall cause a Notice of Determination to be filed with the Clerk of the County of San Diego and the State Office of Planning and Research.

6. Pursuant to Public Resources Code Section 21081.6(a)(2) and CEQA Guidelines Section 15074(c), the location and custodian of the documents and other materials which constitute the record of proceedings on which this Resolution is based is the Clerk, San Diego Unified Port District, 3165 Pacific Highway, San Diego, California 92101.

APPROVED AS TO ~~FORM AND~~ LEGALITY:
GENERAL COUNSEL

By: ~~Assistant~~/Deputy

PASSED AND ADOPTED by the Board of Port Commissioners of the San Diego Unified Port District, this 12th day of January, 2016, by the following vote:

AYES: Bonelli, Castellanos, Malcolm, Merrifield, Moore, Nelson, and Valderrama.
NAYS: None.
EXCUSED: None.
ABSENT: None.
ABSTAIN: None.

Marshall Merrifield, Chairman
Board of Port Commissioners

ATTEST:

Timothy A. Deuel
District Clerk

(Seal)

RESOLUTION 2016-08

RESOLUTION APPROVING AMENDMENT TO PORT MASTER PLAN FOR THE SHELTER ISLAND BOAT LAUNCH FACILITY IMPROVEMENTS PROJECT AND DIRECT FILING WITH THE CALIFORNIA COASTAL COMMISSION FOR CERTIFICATION

WHEREAS, the San Diego Unified Port District (District) is a public corporation created by the legislature in 1962 pursuant to Harbors and Navigation Code Appendix 1 (Port Act); and

WHEREAS, the District has a certified Port Master Plan (PMP), which was prepared, adopted and certified pursuant to the Port District Act, the California Coastal Act and other applicable laws; and

WHEREAS, the Shelter Island Boat Launch Facility (SIBLF) is a free public boat launching facility located on Shelter Island in San Diego that provides waterfront access opportunities to the public; and

WHEREAS, the SIBLF, which was constructed in 1956 and last upgraded in 2005, is in need of renovation due to the corrosive and wearing actions of seawater, heavy use by boaters, increased congestion and delays when launching boats in the limited basin area, and limited boat access during low tide; and

WHEREAS, the District, as the project proponent and applicant, is proposing to implement the Shelter Island Boat Launch Facility Improvements Project (Project), which is a redevelopment project, that involves repair, maintenance, and replacement of the boat launch ramp, jetties (including public walkways), gangways, and floating docks, as well as minor improvements to the kayak launching area, restrooms, and parking; and

WHEREAS, Section 30711(a)(4) of the Coastal Act requires "appealable" projects, which include, without limitation (pursuant to Section 30715(a)(4) of the Coastal Act), recreational small craft marina related facilities like the SIBLF, be listed in a PMP; and

WHEREAS, the SIBLF was constructed prior to certification of the PMP and, therefore, is not listed or described in the PMP and accordingly, a Port Master Plan Amendment (PMPA) is required; and

WHEREAS, pursuant to Chapter 8 of the Coastal Act, a Draft PMPA has been prepared to facilitate implementation of the Project, which is located in the Bay Corridor planning subarea of Planning District 1, Shelter Island/La Playa of the certified PMP; and

WHEREAS, the primary revisions to the PMP include adding a description of the Project to the Precise Plan text and adding the Project to the Table 7, Planning District 1, Shelter Island Project List; and

WHEREAS, as lead agency under the California Environmental Quality Act (CEQA), the District prepared, considered and adopted the Final Mitigated Negative Declaration (MND) for the Project (State Clearinghouse No. 2015061029/UPD #MND-2015-38), made the necessary findings and adopted a Mitigation Monitoring and Reporting Program pursuant to CEQA, State CEQA Guidelines, and District Procedures relative to said PMPA.

NOW, THEREFORE, BE IT RESOLVED by the Board of Port Commissioners of the San Diego Unified Port District, as follows:

That the Port Master Plan Amendment pertaining to the Shelter Island Boat Launch Facility Improvements Project, on file in the office of the District Clerk as Document No. 64467 is approved, that the Executive Director or her designated representative is hereby authorized and directed to transmit said Port Master Plan Amendment, together with all relevant factual information, the Final Mitigated Negative Declaration for the Shelter Island Boat Launch Facility Improvements Project (State Clearinghouse No. 2015061029/UPD #MND-2015-38) and the Coastal Act consistency analysis to the California Coastal Commission for its review, approval and certification pursuant to Public Resources Code Section 30714 and that the Executive Director or her designated representative is hereby authorized to amend the Port Master Plan application prior to the California Coastal Commission's certification; provided, however, that the Port Master Plan Amendment, as certified by the California Coastal Commission, shall be presented to the Board of Port Commissioner's for its final approval at a subsequent date.

BE IT FURTHER RESOLVED, consistent with Public Resources Code Sections 30714 and 30716, and California Code of Regulations Title 14, Section 13632(e), the Port Master Plan Amendment shall not be effective until: (a) the California Coastal Commission certifies the Port Master Plan Amendment; (b) the Board of Port Commissioners adopts the Port Master Plan Amendment as certified by the California Coastal Commission; and (c) the California Coastal Commission has received notice of such Board of Port Commissioners action and accepts the same as consistent with its certification.

2016-08

APPROVED AS TO FORM AND LEGALITY:
GENERAL COUNSEL

By: ~~Assistant~~/Deputy

PASSED AND ADOPTED by the Board of Port Commissioners of the San Diego Unified Port District, this 12th day of January, 2016, by the following vote:

AYES: Bonelli, Castellanos, Malcolm, Merrifield, Moore, Nelson, and Valderrama.
NAYS: None.
EXCUSED: None.
ABSENT: None.
ABSTAIN: None.

Marshall Merrifield, Chairman
Board of Port Commissioners

ATTEST:

Timothy A. Deuel
District Clerk

(Seal)