APPENDIX F1

Sediment Characterization
Sampling and Analysis Report

SEDIMENT CHARACTERIZATION SAMPLING AND ANALYSIS REPORT SOUTH SAN DIEGO SALT PONDS 12, 13, 14, AND 15

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LIST OF ACRONYMS AND ABBREVIATIONS

CalEPA	California Environmental Protection Agency
CCP	Comprehensive Conservation Plan
CHHSL	California Human Health Screening Level
COC	contaminant of concern
EIS	Environmental Impact Statement
ERL	effects range low
ERM	effects range median
kg	kilogram
MDL	method detection limit
mg	milligram
MS	matrix spike
MSD	matrix spike duplicate
NAVD88	North American Vertical Datum of 1988
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
QA	quality assurance
QC	quality control
RL	reporting limit
RPD	relative percent difference
RSL	Regional Screening Levels
SAP	Sampling and Analysis Plan
SAR	Sampling and Analysis Report
TOC	total organic carbon
USFW	U.S. Fish and Wildlife Service
USEPA	U.S. Environmental Protection Agency

1 INTRODUCTION

In 2006, the U.S. Fish and Wildlife Service (USFWS) completed and published the Comprehensive Conservation Plan (CCP) and Environmental Impact Statement (EIS) for management and restoration of the South San Diego Bay Unit of the San Diego Bay National Wildlife Refuge. The refuge consists of 2,324 acres, including portions of San Diego Bay, more than 1,000 acres of solar salt ponds, and upland and wetland habitats associated with the Otay River Floodplain. Completion of the CCP provided the basis for the USFWS and other partner agencies to implement the South San Diego Bay Salt Pond restoration project. The site is located on the South San Diego Bay Unit of the San Diego Bay National Wildlife Refuge at the south end of San Diego Bay (Figure 1).

The goals of the San Diego Bay National Wildlife Refuge include the following:

- Increase availability of coastal salt marsh habitat to support federally listed endangered and threatened species and various species of migratory birds.
- Enhance and restore other native habitats (such as riparian and upland habitats) in support of native wildlife and plant species diversity.

To attain these goals, several conceptual alternatives for site restoration were presented and evaluated in the CCP and EIS, and a preferred alternative was selected that includes a mix of intertidal and upland habitats.

Poseidon Water, LLC plans to implement part of the preferred alternative in coordination with the USFWS in order to obtain mitigation credits for the Carlsbad seawater desalination project. Restoration is proposed within Salt Ponds 12, 13, 14, and 15. An initial step in the restoration process required sediment sampling and analysis to be conducted within these ponds to characterize the nature and extent of potential contamination in pond sediments. This Sampling and Analysis Report (SAR) summarizes sampling activities and evaluates sediment chemistry results for Salt Ponds 12, 13, 14, and 15 (Figure 2).

AERIAL SOURCE: Bing maps.
HORIZONTAL DATUM: California State Plane, Zone 6, NAD83, U.S. Feet.

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Scale in Miles

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Figure 1
Vicinity Map
South San Diego Bay Salt Ponds 12, 13, 14, and 15

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AERIAL SOURCE: Bing maps.
HORIZONTAL DATUM: California State Plane, Zone 6, NAD83, U.S. Feet.

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Scale in Feet

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Figure 2
Study Area
South San Diego Bay Salt Ponds 12, 13, 14, and 15

1.1 Targeted Restoration Plan

The proposed restoration plan for the salt ponds was conceived to enhance opportunities for seabird nesting, restore native habitat in the Otay River Floodplain, and restore tidal circulation within the majority of the salt ponds. Levees holding Salt Ponds 12, 13, 14, and 15 will be breached to restore tidal influence to approximately 300 acres of salt ponds. Portions of levees not affected by the breach will be maintained to provide roosting and nesting habitat for various avian species.

As currently envisioned, restoration of Salt Ponds 12, 13, 14, and 15 will include dredging, excavating, recontouring, and/or filling of areas to create avifauna nesting, coastal salt marsh, intertidal mudflat, and shallow subtidal habitats. Sediment removal may be performed within all four ponds and may extend to a depth of -2 feet North American Vertical Datum of 1988 (NAVD88), plus 1 foot of allowable overdepth (Everest 2012). As such, this study was designed to characterize this layer.

After recontouring and/or filling are completed, Salt Ponds 12, 13, 14, and 15 will be opened to San Diego Bay by breaching the levee along the Otay River channel or the levee along San Diego Bay.

1.2 Purpose

The objective of this project was to fully characterize the nature and extent of potential contamination in pond sediments to ensure that: 1) restored habitat is high quality and poses no unacceptable contaminant risk to species for which the habitat is intended; and 2) opening the salt ponds to the San Diego Bay will not have an adverse effect on the bay and its inhabitants. The overall sampling approach considered the following:

- Impacts to sediments from on-site and off-site sources
- Risks to aquatic receptors for sediments left intact
- Risks to terrestrial receptors for sediments excavated and used to create upland habitats
- Physical (geotechnical) suitability of pond surface and subsurface sediments for meeting restoration objectives

1.3 Sampling Approach

A broad-based, stratified-random sampling approach was used to characterize the area, similar to the previous sediment characterization of Salt Ponds 10, 10a, and 11 (Everest and Anchor QEA 2009). As described in the Sampling and Analysis Plan (SAP; Anchor QEA 2013), water from the South Bay Power Plant was historically discharged into the northeast corner of Pond 15, indicating a potential source of contamination. Based on this potential point source, an additional station (Station 15-10) was intentionally placed in the northeast corner of Pond 15, as requested by the USFWS.

A total of 31 stations were identified to characterize Salt Ponds 12, 13, 14, and 15. Station density was based on the previous sediment characterization of Salt Ponds 10, 10a, and 11, with approximately one station per 10 acres (Everest and Anchor QEA 2009). As previously described, an additional station was placed within Pond 15, resulting in a slightly higher station density in this pond. Table 1 presents an overview of the sampling density of each pond. Stations were placed following a stratified-random sampling approach, with the exception of Station 15-10. Figure 3 shows the actual sampling locations within each pond.

Table 1
Sediment Sampling Strategy by Pond

Pond Number	Pond Acreage	Number of Sampling Locations	Sample Interval[1]
12	97	10	Sediment surface to -3 feet NAVD88
13	68	7	Sediment surface to -3 feet NAVD88
14	42	4	Sediment surface to -3 feet NAVD88
15	90	10	Sediment surface to -3 feet NAVD88
Total	**297**	**31**	**-**

Notes:
1 Excavation depth of -2 feet NAVD88, plus 1 foot of allowable overdepth.

Sediments in Salt Ponds 12, 13, 14, and 15 may be excavated to a depth of -2 feet NAVD88, plus 1 foot of allowable overdepth (i.e., -3 feet NAVD88). Sediment cores targeted this layer plus an additional 1 foot beyond this depth (i.e., -4 feet NAVD88) to allow for the evaluation of the newly exposed surface layer. For each core, sediment from the surface to -3 feet

NAVD88 was submitted for analysis to evaluate sediment that may be disturbed during restoration activities. Each 1-foot interval from the entire sediment core, including the new surface layer, was archived for potential future analysis.

L:\AutoCAD Project Files_Projects\0648-Poseidon\Otay River Estuary\SAP\0648-RP-004 ACTUAL SAMPLES.dwg FIG 3

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AERIAL SOURCE: Bing maps. Contours from U.S. Fish and Wildlife Service.
HORIZONTAL DATUM: California State Plane, Zone 6, NAD83, U.S. Feet.
VERTICAL DATUM: NAVD88.

LEGEND:

- ●#-# Actual Core Sampling Location
- ▲#-# Actual Grab Sampling Location
- Salt Pond Boundary
- —5— Existing Contour

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Figure 3
Actual Sediment Sampling Locations
South San Diego Bay Salt Ponds 12, 13, 14, and 15

2 METHODS

All methods and procedures for the characterization of sediment from Salt Ponds 12, 13, 14, and 15 were implemented in accordance with the SAP (Anchor QEA 2013).

2.1 Sediment Collection and Handling

Sediment cores were collected at 31 stations within Salt Ponds 12, 13, 14, and 15 using a small electrically powered vibracore fitted with a 3-inch polycarbonate tube. Sampling was performed from a small pontoon barge equipped with a tripod, moonpool, and hand winch for sample collection (Figure 4). The vibracore was deployed and recovered through the moonpool. Sediment cores were collected to a target depth of -4 feet NAVD88 (excavation depth, plus overdepth, plus new surface layer). If station depths were confirmed in the field to be at or below the proposed excavation depth of -2 feet NAVD88 (not including overdepth), surface sediment was collected using a petite Ponar grab sampler and archived for potential analysis. The station was then moved to an alternative randomly selected location above the proposed excavation depth, and a sediment core was collected.

Sediment core samples were processed at a mobile processing station positioned on top of the levees. The physical characteristics of each core were documented on the sediment core collection form and then photographed (Appendix A). For each core, a continuous vertical composite was created by collecting a proportionate volume of sediment from the sediment surface to -3 feet NAVD88. Each 1-foot interval of the entire length of the sediment core, including the new surface layer, was archived for potential analysis. Samples were temporarily stored in coolers with ice and picked up for analysis by Calscience Environmental Laboratories, Inc., located in Garden Grove, California. Appropriate chain-of-custody procedures were followed. All sample collection, handling, and processing procedures were implemented as described in the SAP (Anchor QEA 2013).

Figure 4
Photograph of Vibracore Sampling from Pontoon Barge
South San Diego Bay Salt Ponds 12, 13, 14 and 15

2.2 Physical and Chemical Analyses

Vertical composite samples from each station were submitted for analysis of total solids, total organic carbon (TOC), grain size, bulk density, trace metals, organochlorine pesticides, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs). Analytical methods and target method detection limits (MDLs) and reporting limits (RLs) for this evaluation are presented in Table 5 of the SAP (Anchor QEA 2013).

Results of chemical analyses were compared to effects range low (ERL) and effects range median (ERM) sediment quality guidelines and Zeeman risk-based screening levels. Effects range values are helpful in assessing the potential significance of elevated sediment-associated contaminants of concern (COCs) in conjunction with biological testing (Long et al. 1995).[1] Zeeman risk-based screening levels were used to evaluate potential risks to aquatic-dependent wildlife from bioaccumulative COCs. Zeeman risk-based screening levels have been developed for multiple ecological receptors, including benthic invertebrates, benthic vegetation, fish, bottom feeding birds (scoter), consumers of small fish (grebe, tern, and skimmer), consumers of medium size fish (pelican and sea lion), and herbivores (wigeon and turtle; Zeeman 2004). Results were also compared to soil screening criteria, including California Human Health Screening Levels (CHHSLs; CalEPA 2005, 2009) and Regional Screening Levels (RSLs; USEPA 2010) because of the potential for sediments to be beneficially used in the upland environment.

2.2.1 Quality Assurance/Quality Control

All quality assurance/quality control (QA/QC) procedures were implemented in accordance with the SAP (Anchor QEA 2013).

Laboratory QA/QC samples included duplicates, matrix spike (MS) and matrix spike duplicate (MSD) samples, method blanks, and laboratory control samples. Surrogates were

[1] Briefly, these values were developed from a large dataset where results of both benthic organism effects (e.g., toxicity tests and benthic assessments) and chemical concentrations were available for individual samples. To derive these guidelines, chemical values for paired data demonstrating benthic impairment were sorted by ascending chemical concentration. The 10th percentile of this rank order distribution was identified as the ERL and the 50th percentile as the ERM.

included for all organic methods. QC objectives and the frequency of analysis for QA/QC samples are provided in the SAP (Anchor QEA 2013). All laboratory data were reviewed and verified to determine whether QC objectives were met. A U.S. Environmental Protection Agency (USEPA) Stage 2A (2009) data completeness check was performed by Anchor QEA, in accordance with USEPA National Functional Guidelines (2004, 2008).

Field QA/QC samples included duplicates, split samples, and rinsate blanks. Field duplicates and split samples were collected from Stations 12-09 and 15-01. Field duplicates were collected to evaluate the natural variability within the sampling area, while split samples were collected from homogenized sediment to evaluate overall sampling precision. Rinsate blanks were collected from the sample processing equipment (stainless-steel spoon and bowl) and a polycarbonate core tube to assess potential contamination.

3 RESULTS

3.1 Sample Collection and Handling

Sediment cores and surface grabs were collected from January 29 to February 2, 2013. The weather was warm with predominantly clear skies and a light wind. Sediment cores were collected from 31 stations using a vibracore (Figure 3). One core was required from each station to obtain sufficient volume for the required analysis. At two stations (12-09 and 15-01), a duplicate core was collected for QA/QC samples. Sediment cores were collected to -4 feet NAVD88, or to refusal depth. If refusal was encountered prior to the target sampling depth, the station was moved slightly, and collection was attempted again. After multiple attempts, the longest core was retained for analysis. Refusal was encountered at the majority of stations due to stiff clay or dense sand, which was present in all ponds.

Within Pond 12, all cores were collected to the target depth, with the exception of Station 12-05. This station captured the full excavation depth and overdepth, and a portion (0.5 foot) of the new surface layer. Within Pond 13, refusal was encountered at all stations. After multiple sampling attempts, sediment cores were accepted at less than the target depth at four stations (13-02, 13-03, 13-04, and 13-5). Within Pond 14, all cores were collected to the target depth, with the exception of Station 14-01. Within Pond 15, refusal was encountered at all stations. Stations within the southern portion of Pond 15 (15-01 to 15-05) were collected to the target depth, while stations in the northern portion of Pond 15 (15-06 to 15-10) were accepted at less than the target depth after multiple sampling attempts. Station 15-08 captured the full excavation depth and overdepth as well as the majority (0.7 foot) of the new surface layer. Station coordinates, mudline elevation, estimated penetration, and retrieved core lengths for each sediment core are summarized in Table 2.

Mudline elevations of Stations 12-08, 14-03, and 14-04 were below the proposed excavation depth. Surface sediment grab samples were collected and archived, and the stations were moved to alternative randomly selected locations (Stations 12-08A, 14-03A, and 14-04A) above the proposed excavation depth. Station coordinates, mudline elevation, and recovery depths for each sediment grab are summarized in Table 3.

Field logs and sampling photographs are provided in Appendix A. A summary of composite, archive, and QA/QC samples collected from each sediment core and grab sample are presented in Table 4.

Table 2
Station Coordinates, Mudline Elevation, Estimated Penetration, and Retrieved Core Lengths for Each Sediment Core Sample

Station ID	Attempt	Latitude (NAD83) (Degrees, Dec. Minutes)	Longitude (NAD83) (Degrees, Dec. Minutes)	Mudline Elevation (feet NAVD88)	Estimated Penetration (feet)	Retrieved Core Length (feet)	Elevation Achieved (feet NAVD88)
SSDBSP-12-01	1 of 1	N32° 35.663'	W117° 06.833'	2.4	7.5	7.0	-4.6
SSDBSP-12-02	1 of 1	N32° 35.742'	W117° 06.767'	2.1	7.5	7.0	-4.9
SSDBSP-12-03	1 of 1	N32° 35.809'	W117° 06.638'	2.0	6.2	6.0	-4.0
SSDBSP-12-04	1 of 1	N32° 35.885'	W117° 06.504'	2.0	6.8	6.8	-4.8
SSDBSP-12-05	2 of 2	N32° 35.840'	W117° 06.849'	-0.1	5.3	3.5	-3.6
SSDBSP-12-06	1 of 1	N32° 35.908'	W117° 06.682'	1.4	6.0	6.0	-4.6
SSDBSP-12-07	1 of 1	N32° 35.969'	W117° 06.595'	1.2	6.0	6.0	-4.8
SSDBSP-12-08A	2 of 2	N32° 35.944'	W117° 06.798'	1.5	6.7	6.5	-5.0
SSDBSP-12-09	1 of 2	N32° 35.977'	W117° 06.713'	1.2	5.7	5.5	-4.3
SSDBSP-12-09[1]	2 of 2	N32° 35.977'	W117° 06.713'	1.2	5.9	5.8	-4.6
SSDBSP-12-10	1 of 1	N32° 36.082'	W117° 06.631'	0.2	5.4	5.2	-5.0
SSDBSP-13-01	1 of 1	N32° 35.662'	W117° 06.740'	2.8	7.0	7.0	-4.2
SSDBSP-13-02	1 of 1	N32° 35.744'	W117° 06.529'	3.7	6.6	6.3	-2.6
SSDBSP-13-03	4 of 4	N32° 35.821'	W117° 06.436'	3.2	5.6	5.2	-2.0
SSDBSP-13-04	2 of 2	N32° 35.880'	W117° 06.346'	3.4	4.3	4.0	-0.6
SSDBSP-13-05	2 of 2	N32° 35.984'	W117° 06.326'	3.3	4.9	4.6	-1.3
SSDBSP-13-06	1 of 1	N32° 36.140'	W117° 06.340'	-0.1	4.8	4.8	-4.9
SSDBSP-13-07	1 of 1	N32° 36.239'	W117° 06.117'	-0.5	4.8	4.5	-5.0
SSDBSP-14-01	2 of 2	N32° 36.010'	W117° 06.461'	1.6	4.6	4.5	-2.9
SSDBSP-14-02	1 of 1	N32° 36.111'	W117° 06.556'	1.9	7.0	6.8	-4.9
SSDBSP-14-03A	1 of 1	N32° 36.164'	W117° 06.404'	2.2	6.5	6.4	-4.2
SSDBSP-14-04A	1 of 1	N32° 36.262'	W117° 06.272'	-0.1	5.5	5.5	-5.6
SSDBSP-15-01	1 of 2	N32° 36.372'	W117° 06.231'	-1.8	3.2	3.0	-4.8
SSDBSP-15-01[1]	2 of 2	N32° 36.372'	W117° 06.231'	-1.8	3.5	3.0	-4.8
SSDBSP-15-02	1 of 1	N32° 36.305'	W117° 06.185'	2.3	7.5	7.0	-4.7
SSDBSP-15-03	1 of 1	N32° 36.430'	W117° 06.161'	1.6	6.8	6.0	-4.4

Station ID	Attempt	Latitude (NAD83) (Degrees, Dec. Minutes)	Longitude (NAD83) (Degrees, Dec. Minutes)	Mudline Elevation (feet NAVD88)	Estimated Penetration (feet)	Retrieved Core Length (feet)	Elevation Achieved (feet NAVD88)
SSDBSP-15-04	1 of 1	N32° 36.335'	W117° 06.048'	2.5	7.7	7.7	-5.2
SSDBSP-15-05	1 of 1	N32° 36.384'	W117° 05.981'	2.4	6.7	6.5	-4.1
SSDBSP-15-06	1 of 3	N32° 36.560'	W117° 06.071'	1.4	1.8	1.5	-0.1
SSDBSP-15-07	2 of 2	N32° 36.499'	W117° 05.979'	1.9	4.3	4.0	-2.1
SSDBSP-15-08	2 of 2	N32° 36.638'	W117° 06.059'	0.1	4.0	3.8	-3.7
SSDBSP-15-09	1 of 2	N32° 36.600'	W117° 05.964'	2.1	5.0	5.0	-2.9
SSDBSP-15-10	5 of 5	N32° 36.737'	W117° 05.939'	0.6	2.2	2.0	-1.4

Note:
NAD83 = North American Datum 1983
1 Duplicate core collected from station for QA/QC.

Table 3

Station Coordinates, Mudline Elevation, and Recovery Depth for Each Sediment Grab Sample

Station ID	Attempt	Latitude (NAD83) (Degrees, Dec. Minutes)	Longitude (NAD83) (Degrees, Dec. Minutes)	Mudline Elevation (feet NAVD88)	Recovery Depth (cm)
SSDBSP-12-08	2 of 2	N32° 35.960'	W117° 06.879'	-7.1	10.0
SSDBSP-14-03	2 of 2	N32° 36.240'	W117° 06.415'	-2.3	10.0
SSDBSP-14-04	1 of 1	N32° 36.288'	W117° 06.340'	-4.8	10.0

Note:
NAD83 = North American Datum 1983
cm = centimeters

Table 4
Summary of Samples Collected from Each Sediment Core and Grab Sample

Station ID	Sample Description	Sediment Sample ID	Sample Interval (feet)	Chemical and Physical Analyses	Archive	QA/QC Samples
SSDBSP-12-01	Vertical composite to -3 feet NAVD88	SSDBSP-12-01_0.0-5.4	0.0 to 5.4	X		
	1-foot interval	SSDBSP-12-01_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-01_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-01_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-01_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-01_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-12-01_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-12-01_6.0-7.0	6.0 to 7.0		X	
SSDBSP-12-02	Vertical composite to -3 feet NAVD88	SSDBSP-12-02_0.0-6.1	0.0 to 6.1	X		
	1-foot interval	SSDBSP-12-02_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-02_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-02_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-02_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-02_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-12-02_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-12-02_6.0-7.0	6.0 to 7.0		X	
SSDBSP-12-03	Vertical composite to -3 feet NAVD88	SSDBSP-12-03_0.0-5.0	0.0 to 5.0	X		
	1-foot interval	SSDBSP-12-03_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-03_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-03_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-03_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-03_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-12-03_5.0-6.0	5.0 to 6.0		X	

Station ID	Sample Description	Sediment Sample ID	Sample Interval (feet)	Chemical and Physical Analyses	Archive	QA/QC Samples
SSDBSP-12-04	Vertical composite to -3 feet NAVD88	SSDBSP-12-04_0.0-5.0	0.0 to 5.0	X		MS/MSD
	1-foot interval	SSDBSP-12-04_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-04_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-04_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-04_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-04_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-12-04_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-12-04_6.0-6.8	6.0 to 6.8		X	
SSDBSP-12-05	Vertical composite to -3 feet NAVD88	SSDBSP-12-05_0.0-2.9	0.0 to 2.9	X		
	1-foot interval	SSDBSP-12-05_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-05_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-05_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-05_3.0-3.5	3.0 to 3.5		X	
SSDBSP-12-06	Vertical composite to -3 feet NAVD88	SSDBSP-12-06_0.0-4.4	0.0 to 4.4	X		
	1-foot interval	SSDBSP-12-06_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-06_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-06_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-06_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-06_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-12-06_5.0-6.0	5.0 to 6.0		X	
SSDBSP-12-07	Vertical composite to -3 feet NAVD88	SSDBSP-12-07_0.0-4.2	0.0 to 4.2	X		
	1-foot interval	SSDBSP-12-07_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-07_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-07_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-07_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-07_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-12-07_5.0-6.0	5.0 to 6.0		X	
SSDBSP-12-08	Sediment grab	SSDBSP-12-08_SG	0 to 10 cm		X	

Station ID	Sample Description	Sediment Sample ID	Sample Interval (feet)	Chemical and Physical Analyses	Archive	QA/QC Samples
SSDBSP-12-08A	Vertical composite to -3 feet NAVD88	SSDBSP-12-08A_0.0-4.5	0.0 to 4.5	X		
	1-foot interval	SSDBSP-12-08A_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-08A_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-08A_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-08A_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-08A_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-12-08A_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-12-08A_6.0-6.5	6.0 to 6.5		X	
SSDBSP-12-09	Vertical composite to -3 feet NAVD88	SSDBSP-12-09_0.0-4.2	0.0 to 4.2	X		
	1-foot interval	SSDBSP-12-09_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-09_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-09_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-09_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-09_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-12-09_5.0-5.5	5.0 to 5.5		X	
SSDBSP-12-09	Vertical composite to -3 feet NAVD88	SSDBSP-12-109_0.0-4.2	0.0 to 4.2	X		FD/FS
	1-foot interval	SSDBSP-12-109_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-109_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-109_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-109_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-109_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-12-109_5.0-5.8	5.0 to 5.8		X	
SSDBSP-12-10	Vertical composite to -3 feet NAVD88	SSDBSP-12-0_0.0-3.2	0.0 to 3.2	X		
	1-foot interval	SSDBSP-12-10_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-12-10_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-12-10_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-12-10_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-12-10_4.0-5.0	4.0 to 5.0		X	

Station ID	Sample Description	Sediment Sample ID	Sample Interval (feet)	Chemical and Physical Analyses	Archive	QA/QC Samples
SSDBSP-13-01	Vertical composite to -3 feet NAVD88	SSDBSP-13-01_0.0-5.8	0.0 to 5.8	X		
	1-foot interval	SSDBSP-13-01_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-13-01_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-13-01_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-13-01_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-13-01_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-13-01_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-13-01_6.0-7.0	6.0 to 7.0		X	
SSDBSP-13-02	Vertical composite to -3 feet NAVD88	SSDBSP-13-02_0.0-6.3	0.0 to 6.3	X		MS/MSD
	1-foot interval	SSDBSP-13-02_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-13-02_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-13-02_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-13-02_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-13-02_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-13-02_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-13-02_6.0-6.3	6.0 to 6.3		X	
SSDBSP-13-03	Vertical composite to -3 feet NAVD88	SSDBSP-13-03_0.0-5.2	0.0 to 5.2	X		
	1-foot interval	SSDBSP-13-03_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-13-03_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-13-03_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-13-03_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-13-03_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-13-03_5.0-5.2	5.0 to 5.2		X	
SSDBSP-13-04	Vertical composite to -3 feet NAVD88	SSDBSP-13-04_0.0-4.0	0.0 to 4.0	X		
	1-foot interval	SSDBSP-13-04_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-13-04_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-13-04_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-13-04_3.0-4.0	3.0 to 4.0		X	

Station ID	Sample Description	Sediment Sample ID	Sample Interval (feet)	Chemical and Physical Analyses	Archive	QA/QC Samples
SSDBSP-13-05	Vertical composite to -3 feet NAVD88	SSDBSP-13-05_0.0-4.6	0.0 to 4.6	X		
	1-foot interval	SSDBSP-13-05_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-13-05_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-13-05_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-13-05_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-13-05_4.0-4.6	4.0 to 4.6		X	
SSDBSP-13-06	Vertical composite to -3 feet NAVD88	SSDBSP-13-06_0.0-2.9	0.0 to 2.9	X		
	1-foot interval	SSDBSP-13-06_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-13-06_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-13-06_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-13-06_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-13-06_4.0-4.8	4.0 to 4.8		X	
SSDBSP-13-07	Vertical composite to -3 feet NAVD88	SSDBSP-13-07_0.0-2.5	0.0 to 2.5	X		
	1-foot interval	SSDBSP-13-07_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-13-07_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-13-07_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-13-07_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-13-07_4.0-4.5	4.0 to 4.5		X	
SSDBSP-14-01	Vertical composite to -3 feet NAVD88	SSDBSP-14-01_0.0-4.5	0.0 to 4.5	X		
	1-foot interval	SSDBSP-14-01_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-14-01_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-14-01_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-14-01_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-14-01_4.0-4.5	4.0 to 4.5		X	

Station ID	Sample Description	Sediment Sample ID	Sample Interval (feet)	Chemical and Physical Analyses	Archive	QA/QC Samples
SSDBSP-14-02	Vertical composite to -3 feet NAVD88	SSDBSP-14-02_0.0-4.9	0.0 to 4.9	X		
	1-foot interval	SSDBSP-14-02_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-14-02_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-14-02_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-14-02_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-14-02_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-14-02_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-14-02_6.0-6.8	6.0 to 6.8		X	
SSDBSP-14-03	Sediment grab	SSDBSP-14-03_SG	0 to 10 cm		X	
SSDBSP-14-03A	Vertical composite to -3 feet NAVD88	SSDBSP-14-03A_0.0-5.2	0.0 to 5.2	X		
	1-foot interval	SSDBSP-14-03A_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-14-03A_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-14-03A_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-14-03A_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-14-03A_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-14-03A_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-14-03A_6.0-6.4	6.0 to 6.4		X	
SSDBSP-14-04	Sediment grab	SSDBSP-14-04_SG	0 to 10 cm		X	
SSDBSP-14-04A	Vertical composite to -3 feet NAVD88	SSDBSP-14-04A_0.0-2.9	0.0 to 2.9	X		
	1-foot interval	SSDBSP-14-04A_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-14-04A_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-14-04A_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-14-04A_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-14-04A_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-14-04A_5.0-5.5	5.0 to 5.5		X	
SSDBSP-15-01	Vertical composite to -3 feet NAVD88	SSDBSP-15-01_0.0-1.2	0.0 to 1.2	X		FD/FS
	1-foot interval	SSDBSP-15-01_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-01_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-15-01_2.0-3.0	2.0 to 3.0		X	

Station ID	Sample Description	Sediment Sample ID	Sample Interval (feet)	Chemical and Physical Analyses	Archive	QA/QC Samples
SSDBSP-15-02	Vertical composite to -3 feet NAVD88	SSDBSP-15-02_0.0-5.3	0.0 to 5.3	X		
	1-foot interval	SSDBSP-15-02_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-02_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-15-02_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-15-02_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-15-02_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-15-02_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-15-02_6.0-7.0	6.0 to 7.0		X	
SSDBSP-15-03	Vertical composite to -3 feet NAVD88	SSDBSP-15-03_0.0-4.6	0.0 to 4.6	X		
	1-foot interval	SSDBSP-15-03_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-03_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-15-03_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-15-03_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-15-03_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-15-03_5.0-6.0	5.0 to 6.0		X	
SSDBSP-15-04	Vertical composite to -3 feet NAVD88	SSDBSP-15-04_0.0-5.5	0.0 to 5.5	X		
	1-foot interval	SSDBSP-15-04_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-04_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-15-04_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-15-04_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-15-04_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-15-04_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-15-04_6.0-7.0	6.0 to 7.0		X	
		SSDBSP-15-04_7.0-7.7	7.0 to 7.7		X	

Station ID	Sample Description	Sediment Sample ID	Sample Interval (feet)	Chemical and Physical Analyses	Archive	QA/QC Samples
SSDBSP-15-05	Vertical composite to -3 feet NAVD88	SSDBSP-15-05_0.0-5.4	0.0 to 5.4	X		
	1-foot interval	SSDBSP-15-05_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-05_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-15-05_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-15-05_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-15-05_4.0-5.0	4.0 to 5.0		X	
		SSDBSP-15-05_5.0-6.0	5.0 to 6.0		X	
		SSDBSP-15-05_6.0-6.5	6.0 to 6.5		X	
SSDBSP-15-06	Vertical composite to -3 feet NAVD88	SSDBSP-15-06_0.0-1.5	0.0 to 1.5	X		
	1-foot interval	SSDBSP-15-06_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-06_1.0-1.5	1.0 to 1.5		X	
SSDBSP-15-07	Vertical composite to -3 feet NAVD88	SSDBSP-15-07_0.0-4.0	0.0 to 4.0	X		MS/MSD
	1-foot interval	SSDBSP-15-07_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-07_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-15-07_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-15-07_3.0-3.5	3.0 to 3.5		X	
		SSDBSP-15-07_3.5-4.0	3.5 to 4.0		X	
SSDBSP-15-08	Vertical composite to -3 feet NAVD88	SSDBSP-15-08_0.0-3.1	0.0 to 3.1	X		
	1-foot interval	SSDBSP-15-08_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-08_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-15-08_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-15-08_3.0-3.8	3.0 to 3.8		X	
SSDBSP-15-09	Vertical composite to -3 feet NAVD88	SSDBSP-15-09_0.0-5.0	0.0 to 5.0	X		
	1-foot interval	SSDBSP-15-09_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-09_1.0-2.0	1.0 to 2.0		X	
		SSDBSP-15-09_2.0-3.0	2.0 to 3.0		X	
		SSDBSP-15-09_3.0-4.0	3.0 to 4.0		X	
		SSDBSP-15-09_4.0-5.0	4.0 to 5.0		X	

Station ID	Sample Description	Sediment Sample ID	Sample Interval (feet)	Chemical and Physical Analyses	Archive	QA/QC Samples
SSDBSP-15-10	Vertical composite to -3 feet NAVD88	SSDBSP-15-10_0.0-2.0	0.0 to 2.0	X		
	1-foot interval	SSDBSP-15-10_0.0-1.0	0.0 to 1.0		X	
		SSDBSP-15-10_1.0-2.0	1.0 to 2.0		X	

Notes:
FD = Field duplicate
FS = Field split

3.2 Results of Physical and Chemical Analyses of Sediment

Results of physical and chemical analyses of sediment from Salt Ponds 12, 13, 14, and 15 are presented in Table 5. All results are expressed in dry weight unless otherwise indicated. Results were compared to ERL and ERM sediment quality guidelines (Long et al. 1995), the minimum Zeeman risk-based screening level (2004), and CHHSL (CalEPA 2005, 2009) and RSL (USEPA 2010) soil screening criteria. Samples exceeding the minimum Zeeman screening level were further compared to the other risk-based screening levels in subsequent figures. Target MDLs and RLs were provided in the SAP (Anchor QEA 2013). Actual MDLs and RLs, and raw data for the analyses, are provided in Appendix B.

3.2.1 Grain Size and Total Organic Carbon

Salt pond sediments were predominantly fine-grained materials, consisting of 78.9 to 100 percent fines (silt and clay). TOC concentrations ranged from 0.53 to 6.5 percent. The highest TOC concentration was measured at Station 15-01.

Table 5

Results of Physical and Chemical Analyses of Sediment from Salt Ponds 12, 13, 14, and 15

Parameter	ERL	ERM	Residential CHHSL	Commercial/ Industrial CHHSL	Residential RSL	Industrial RSL	Zeeman 2004 (minimum)	Salt Pond 12												Salt Pond 13				
								SSDBSP-12-01_0.0-5.4	SSDBSP-12-02_0.0-6.1	SSDBSP-12-03_0.0-5.0	SSDBSP-12-04_0.0-5.0	SSDBSP-12-05_0.0-2.9	SSDBSP-12-06_0.0-4.4	SSDBSP-12-07_0.0-4.2	SSDBSP-12-08A_0.0-4.5	SSDBSP-12-09_0.0-4.2	SSDBSP-12-109_0.0-4.2 (Field Duplicate)	SSDBSP-12-209_0.0-4.2 (Field Split)	SSDBSP-12-10_0.0-3.2	SSDBSP-13-01_0.0-5.8	SSDBSP-13-02_0.0-6.3	SSDBSP-13-03_0.0-5.2	SSDBSP-13-04_0.0-4.0	SSDBSP-13-05_0.0-4.6
								2/2/2013	2/2/2013	2/2/2013	2/2/2013	2/2/2013	2/2/2013	2/1/2013	2/2/2013	2/1/2013	2/1/2013	2/1/2013	2/2/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013
Conventional Parameters (%)																								
Total organic carbon								1.2	1.5	1.1	1	0.81	1.2	1.5	0.72	1.2	1.5	1.2	1.7	0.72	0.97	1.4	1.4	0.98
Total solids								65	55.6	63.3	66	65.8	62.5	65.4	65.2	55.4	61.4	56.7	49.8	64.3	64.7	54.9	57.3	66.6
Clay (less than 0.00391mm)								38.38	46.88	46.48	41.26	49.22	47.21	36.81	44.16	26.5	36.12	29.12	39.69	21.77	32.2	30.07	32.28	29.49
Coarse Sand (0.5 to 1mm)								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fine Sand (0.125 to 0.25mm)								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	3.6	< 0.01	0.79	0.01	8.8	< 0.01	4.42	< 0.01	0.51
Gravel (greater than 2mm)								0.4	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Medium Sand (0.25 to 0.5mm)								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	2.56	< 0.01	2.11	< 0.01	< 0.01
Silt (0.00391 to 0.0625mm)								60.95	53.12	53.48	55.93	50.77	52.79	56.52	55.83	61.61	60.92	62.55	54.72	57.12	64.67	59.02	64.53	65.51
Total Silt and Clay (0 to 0.0625mm)								99.33	100	99.96	97.19	100	100	93.34	100	88.11	97.04	91.67	94.41	78.89	96.87	89.1	96.81	95
Very Coarse Sand (1 to 2mm)								< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Very Fine Sand (0.0625 to 0.125mm)								0.27	< 0.01	0.04	2.81	< 0.01	< 0.01	6.66	< 0.01	8.28	2.96	7.54	5.58	9.74	3.13	4.37	3.19	4.49
Metals (mg/kg)																								
Arsenic	8.2	70	0.07	0.24	0.39	1.6	7.2	5.36	6.01	5.24	4.12	4.18	5.07	4.92	5.18	6.07	5.94	6.15	4.98	5.1	5.22	8.85	9.7	5.47
Cadmium	1.2	9.6	1.7	7.5	70	800	0.43	0.173	0.208	0.151 J	0.136 J	0.143 J	0.183	0.189	0.152 J	0.223	0.182	0.26	0.202	0.154 J	0.219	0.25	0.237	0.19
Chromium	81	370					52	19.3	19.4	16.9	12.9	13.2	17.9	17	15	20.7	19.4	20.9	17.5	17.3	21.5	30.7	25.9	18.3
Copper	34	270	3000	38000	3100	41000	19	13.2	20.1	14.3	11.8	12.4	15	13.7	12.5	18.5	15.8	18.2	17	11.8	16	20.6	19.4	12.8
Lead	46.7	218	80	320	400	800	1.03	4.8	7.75	6.09	4.37	6.21	5.64	4.54	4.72	6.65	5.71	6.99	8.37	4.28	5.23	7.56	7.51	4.75
Mercury	0.15	0.71	18	180	5.6	34	0.05	0.0223 J	0.0615	0.0342	0.0319	0.0558	0.05	0.0261 J	0.0324	0.0361 J	0.0543	0.0245 J	0.0536	< 0.0092	< 0.0091	< 0.0107	< 0.0103	< 0.0088
Nickel	20.9	51.6	1600	16000			16	7.41	9.31	7.64	5.52	6.33	7.52	7.12	6.55	8.86	8.14	9.25	8.95	6.27	8.69	11.8	10.6	6.77
Selenium			380	4800	390	5100	2.5	0.171	0.245	0.327	0.234	0.185	0.169	0.255	< 0.112	0.179 J	0.211	0.42	0.406	< 0.114	0.26	0.3	0.177	< 0.11
Silver	1	3.7	380	4800	390	5100	0.73	< 0.0482	< 0.0563	< 0.0494	< 0.0474	< 0.0476	< 0.0501	< 0.0479	< 0.048	0.0705 J	< 0.051	0.0824 J	< 0.0628	< 0.0487	0.0528 J	0.0755 J	0.0687 J	0.0608 J
Zinc	150	410	23000	100000	23000	310000	124	47.1	76.7	46	36.5	40.1	45.3	45.1	41.2	60	48.7	56.5	47.7	41.8	49	67.1	60.3	42.3
Pesticides (µg/kg)																								
2,4'-DDD			2300	9000	2000	7200		< 0.52	< 0.61	< 0.54	< 0.51	< 0.51	< 0.54	< 0.52	< 0.52	< 0.61	< 0.55	< 0.6	< 0.68	< 0.53	< 0.52	< 0.62	< 0.59	< 0.51
2,4'-DDE			1600	6300				< 0.47	< 0.55	< 0.48	< 0.46	< 0.46	< 0.49	< 0.47	< 0.47	< 0.55	< 0.5	< 0.54	< 0.61	< 0.47	< 0.47	< 0.56	< 0.53	< 0.46
2,4'-DDT			1600	6300	1700	7000		< 0.46	< 0.54	< 0.47	< 0.46	< 0.46	< 0.48	< 0.46	< 0.46	< 0.54	< 0.49	< 0.53	< 0.6	< 0.47	< 0.46	< 0.55	< 0.52	< 0.45
4,4'-DDD	2	20	2300	9000	2000	7200		< 0.49	< 0.57	< 0.5	< 0.48	< 0.48	< 0.51	< 0.48	< 0.48	< 0.57	< 0.51	< 0.56	< 0.63	< 0.49	< 0.49	< 0.58	< 0.55	< 0.47
4,4'-DDE	2.2	27	1600	6300	1400	5100		< 0.46	< 0.54	< 0.47	< 0.45	< 0.45	< 0.48	< 0.46	< 0.46	< 0.54	< 0.49	< 0.53	< 0.6	< 0.47	< 0.46	< 0.54	< 0.52	< 0.45
4,4'-DDT	1	7	1600	6300	1700	7000		< 0.51	< 0.6	< 0.53	< 0.51	< 0.51	< 0.54	< 0.51	< 0.51	< 0.6	< 0.54	< 0.59	< 0.67	< 0.52	< 0.52	< 0.61	< 0.58	< 0.5
Total DDTs (ND = 0) [1,4]	1.58	46.1						< 0.52	< 0.61	< 0.54	< 0.51	< 0.51	< 0.54	< 0.52	< 0.52	< 0.61	< 0.55	< 0.6	< 0.68	< 0.53	< 0.52	< 0.62	< 0.59	< 0.51
Aldrin			33	130	29	100		< 0.48	< 0.57	< 0.5	< 0.48	< 0.48	< 0.5	< 0.48	< 0.48	< 0.57	< 0.51	< 0.56	< 0.63	< 0.49	< 0.49	< 0.57	< 0.55	< 0.47
Alpha Chlordane								< 0.49	< 0.58	< 0.51	< 0.49	< 0.49	< 0.51	< 0.49	< 0.49	< 0.58	< 0.52	< 0.57	< 0.64	< 0.5	< 0.5	< 0.58	< 0.56	< 0.48
alpha-BHC								< 0.5	< 0.58	< 0.51	< 0.49	< 0.49	< 0.52	< 0.5	< 0.5	< 0.58	< 0.53	< 0.57	< 0.65	< 0.5	< 0.5	< 0.59	< 0.57	< 0.49
beta-BHC								< 0.41	< 0.48	< 0.42	< 0.4	< 0.4	< 0.42	< 0.4	< 0.41	< 0.48	< 0.43	< 0.47	< 0.53	< 0.41	< 0.41	< 0.48	< 0.46	< 0.4
Chlordane								< 5	< 5.9	< 5.2	< 4.9	< 5	< 5.2	< 5	< 5	< 5.9	< 5.3	< 5.8	< 6.6	< 5.1	< 5	< 6	< 5.7	< 4.9
Cis-nonachlor								< 0.45	< 0.53	< 0.46	< 0.44	< 0.45	< 0.47	< 0.45	< 0.45	< 0.53	< 0.48	< 0.52	< 0.59	< 0.46	< 0.45	< 0.53	< 0.51	< 0.44
delta-BHC								< 0.39	< 0.46	< 0.4	< 0.39	< 0.39	< 0.41	< 0.39	< 0.39	< 0.46	< 0.42	< 0.45	< 0.51	< 0.4	< 0.4	< 0.47	< 0.45	< 0.38
Dieldrin	0.02	8	35	130	30	110		< 0.51	< 0.59	< 0.52	< 0.5	< 0.5	< 0.53	< 0.5	< 0.51	< 0.6	< 0.54	< 0.58	0.72 J	< 0.51	0.79 J	< 0.6	< 0.58	< 0.5
Endosulfan sulfate					370000	3700000		< 0.52	< 0.61	< 0.53	< 0.51	< 0.51	< 0.54	< 0.52	< 0.52	< 0.61	< 0.55	< 0.6	< 0.68	< 0.53	< 0.52	< 0.62	< 0.59	< 0.51
Endosulfan-alpha (I)								< 0.4	< 0.47	< 0.41	< 0.4	< 0.4	< 0.42	< 0.4	< 0.4	< 0.47	< 0.43	< 0.46	< 0.53	< 0.41	< 0.41	< 0.48	< 0.46	< 0.39
Endosulfan-beta (II)								< 0.43	< 0.5	< 0.44	< 0.42	< 0.42	< 0.45	< 0.43	< 0.43	< 0.5	< 0.46	< 0.49	< 0.56	< 0.43	< 0.43	< 0.51	< 0.49	< 0.42
Endrin			21000	230000	18000	180000		< 0.55	< 0.64	< 0.57	< 0.54	< 0.54	< 0.57	< 0.55	< 0.55	< 0.65	< 0.58	< 0.63	< 0.72	< 0.56	< 0.55	< 0.65	< 0.63	< 0.54
Endrin aldehyde								< 0.38	< 0.44	< 0.39	< 0.37	< 0.37	< 0.39	< 0.37	< 0.37	< 0.44	< 0.4	< 0.43	< 0.49	< 0.38	< 0.38	< 0.44	< 0.43	< 0.37
Endrin ketone								< 0.53	< 0.62	< 0.55	< 0.53	< 0.53	< 0.56	< 0.53	< 0.53	< 0.63	< 0.57	< 0.61	< 0.7	< 0.54	< 0.54	< 0.63	< 0.61	< 0.52
Gamma Chlordane								< 0.49	< 0.57	< 0.5	< 0.48	< 0.48	< 0.51	< 0.49	< 0.49	< 0.57	< 0.52	< 0.56	< 0.64	< 0.49	< 0.49	< 0.58	< 0.55	< 0.48
gamma-BHC (Lindane)			500	2000				< 0.53	< 0.62	< 0.55	< 0.52	< 0.53	< 0.55	< 0.53	< 0.53	< 0.62	< 0.56	< 0.61	< 0.7	< 0.54	< 0.54	< 0.63	< 0.6	< 0.52
Heptachlor			130	520	110	380		< 0.49	< 0.58	< 0.51	< 0.49	< 0.49	< 0.51	< 0.49	< 0.49	< 0.58	< 0.52	< 0.57	< 0.65	< 0.5	< 0.5	< 0.59	< 0.56	< 0.48
Heptachlor epoxide					53	190		< 0.55	< 0.64	< 0.56	< 0.54	< 0.54	< 0.57	< 0.54	< 0.55	< 0.64	< 0.58	< 0.63	< 0.71	< 0.55	< 0.55	< 0.65	< 0.62	< 0.53
Methoxychlor			340000	3800000	310000	3100000		< 0.5	< 0.58	< 0.51	< 0.49	< 0.49	< 0.52	< 0.5	< 0.5	< 0.59	< 0.53	< 0.57	< 0.65	< 0.5	< 0.5	< 0.59	< 0.57	< 0.49
Oxychlordane								< 0.43	< 0.51	< 0.44	< 0.43	< 0.43	< 0.45	< 0.43	< 0.43	< 0.51	< 0.46	< 0.5	< 0.56	< 0.44	< 0.43	< 0.51	< 0.49	< 0.42
Total Chlordanes (ND = 0) [1,3]	0.5	6	430	1700	1600	6500		< 0.49	< 0.58	< 0.51	< 0.49	< 0.49	< 0.51	< 0.49	< 0.49	< 0.58	< 0.52	< 0.57	< 0.64	< 0.5	< 0.5	< 0.58	< 0.56	< 0.48
Toxaphene			460	1800	440	1600		< 9.7	< 11	< 10	< 9.6	< 9.6	< 10	< 9.7	< 9.7	< 11	< 10	< 11	< 13	< 9.9	< 9.8	< 12	< 11	< 9.5
Trans-nonachlor								< 0.44	< 0.52	< 0.45	< 0.44	< 0.44	< 0.46	< 0.44	< 0.44	< 0.52	< 0.47	< 0.51	< 0.58	< 0.45	< 0.45	< 0.52	< 0.5	< 0.43
PAH (µg/kg)																								
1-Methylnaphthalene					22000	99000		< 3.1	< 3.6	< 3.2	< 3	< 3	< 3.2	< 3.1	< 3.1	< 3.6	< 3.3	< 3.5	< 4	< 3.1	< 3.1	< 3.6	< 3.5	< 3
2-Methylnaphthalene	70	670			310000	4100000		< 2.8	< 3.2	< 2.9	< 2.7	< 2.7	< 2.9	< 2.8	< 2.8	< 3.3	< 2.9	< 3.2	< 3.6	< 2.8	< 2.8	< 3.3	< 3.1	< 2.7
Acenaphthene	16	500			3400000	33000000		< 2.8	< 3.2	< 2.8	< 2.7	< 2.7	< 2.9	< 2.8	< 2.8	< 3.2	< 2.9	< 3.2	< 3.6	< 2.8	< 2.8	< 3.3	< 3.1	< 2.7
Acenaphthylene	44	640						< 2.3	< 2.7	< 2.4	< 2.3	< 2.3	< 2.4	< 2.3	< 2.3	< 2.7	< 2.5	< 2.7	< 3	< 2.4	< 2.3	< 2.8	< 2.6	< 2.3
Anthracene	85.3	1100			17000000	1.70E+08		< 1.2	< 1.4	< 1.3	< 1.2	< 1.2	< 1.3	< 1.2	< 1.2	< 1.5	< 1.3	< 1.4	< 1.6	< 1.3	< 1.2	< 1.5	< 1.4	< 1.2
Benzo (a) Anthracene	261	1600			150	2100		< 2.4	< 2.8	< 2.5	< 2.4	< 2.4	< 2.5	< 2.4	< 2.4	10 J	< 2.5	< 2.7	< 3.1	< 2.4	< 2.4	< 2.8	< 2.7	< 2.3
Benzo (a) Pyrene	430	1600	38	130	15	210		< 1.6	< 1.8	< 1.6	< 1.5	1.7 J	< 1.6	< 1.6	< 1.6	19	< 1.7	< 1.8	< 2	< 1.6	< 1.6	< 1.9	< 1.8	< 1.5
Benzo (b) Fluoranthene					150	2100		< 1.6	< 1.8	< 1.6	< 1.5	< 1.5	< 1.6	< 1.6	< 1.6	11 J	< 1.7	< 1.8	< 2	< 1.6	< 1.6	< 1.9	< 1.8	< 1.5
Benzo (e) Pyrene								< 2.3	< 2.7	< 2.4	< 2.3	< 2.3	< 2.4	< 2.3	< 2.3	16 J	< 2.4	< 2.7	< 3	< 2.3	< 2.3	< 2.7	< 2.6	< 2.3
Benzo (g,h,i) Perylene								< 1.5	< 1.7	< 1.5	< 1.4	< 1.4	< 1.5	< 1.4	< 1.4	20	< 1.5	< 1.7	< 1.9	< 1.5	< 1.5	< 1.7	< 1.6	< 1.4
Benzo (k) Fluoranthene					1500	21000		< 2.1	< 2.5	< 2.2	< 2.1	< 2.1	< 2.2	< 2.1	< 2.1	9.1 J	< 2.3	< 2.5	< 2.8	< 2.2	< 2.2	< 2.5	< 2.4	< 2.1
Chrysene	384	2800			15000	210000		< 1.8	< 2.1	< 1.8	< 1.8	< 1.8	< 1.9	< 1.8	< 1.8	10 J	< 1.9	< 2.1	< 2.3	< 1.8	< 1.8	< 2.1	< 2	< 1.8
Dibenz (a,h) Anthracene	63.4	260			15	210		< 1.6	< 1.9	< 1.6	< 1.6	< 1.6	< 1.7	< 1.6	< 1.6	3.3 J	< 1.7	< 1.8	< 2.1	< 1.6	< 1.6	< 1.9	< 1.8	< 1.6
Fluoranthene	600	5100			2300000	22000000		< 1.5	< 1.8	< 1.6	< 1.5	1.9 J	< 1.6	< 1.5	< 1.5	9 J	< 1.6	2.1 J	< 2	< 1.5	< 1.5	< 1.8	< 1.7	< 1.5
Fluorene	19	540			2300000	22000000		< 2.3	< 2.6	< 2.3	< 2.2	< 2.2	< 2.3	< 2.2	< 2.2	< 2.6	< 2.4	< 2.6	< 2.9	< 2.3	< 2.3	< 2.7	< 2.6	< 2.2
Indeno (1,2,3-c,d) Pyrene					150	2100		< 1.6	< 1.9	< 1.7	< 1.6	< 1.6	< 1.7	< 1.6	< 1.6	13 J	< 1.7	< 1.9	< 2.1	< 1.7	< 1.6	< 1.9	< 1.9	< 1.6
Naphthalene	160	2100			3600	18000		< 4.6	< 5.4	< 4.7	< 4.6	< 4.6	< 4.8	< 4.6	< 4.6	< 5.4	< 4.9	16 J	< 6	12 J	< 4.6	< 5.5	< 5.2	< 4.5
Phenanthrene	240	1500						< 1.6	< 1.8	< 1.6	< 1.5	< 1.5	< 1.6	< 1.5	< 1.5	4.6 J	< 1.6	< 1.8	< 2	< 1.6	< 1.6	< 1.8	< 1.8	< 1.5
Pyrene	665	2600			1700000	17000000		< 1.5	3.1 J	< 1.6	3.1 J	3.2 J	< 1.6	< 1.5	< 1.5	15 J	< 1.6	3.6 J	3.9 J	< 1.5	< 1.5	< 1.8	< 1.7	< 1.5
Perylene								< 2.7	< 3.1	< 2.7	< 2.6	< 2.6	< 2.8	< 2.7	< 2.7	7.1 J	< 2.8	< 3.1	< 3.5	< 2.7	< 2.7	< 3.2	< 3	< 2.6
Biphenyl								< 2.1	< 2.5	< 2.2	< 2.1	< 2.1	< 2.2	< 2.1	< 2.1	< 2.5	< 2.3	< 2.4	< 2.8	< 2.2	< 2.1	< 2.5	< 2.4	< 2.1
1-Methylphenanthrene								< 2.5	< 2.9	< 2.6	< 2.5	< 2.5	< 2.6	< 2.5	< 2.5	< 2.9	< 2.6	< 2.9	< 3.3	< 2.5	< 2.5	< 3	< 2.8	< 2.4
2,6-Dimethylnaphthalene								< 2.6	< 3	< 2.6	< 2.5	< 2.5	< 2.7	< 2.5	< 2.5	6.6 J	< 2.7	< 2.9	7.6 J	< 2.6	< 2.6	< 3	< 2.9	< 2.5
1,6,7-Trimethylnaphthalene								< 2.2	< 2.5	< 2.2	< 2.1	< 2.1	< 2.3	< 2.2	< 2.2	< 2.5	< 2.3	< 2.5	< 2.8	< 2.2	< 2.2	< 2.6	< 2.5	< 2.1
Total HMW PAHs (ND = 0) [1,5]	1700	9600						< 2.7	3.1	< 2.7	3.1	6.8	< 2.8	< 2.7	< 2.7	142.5	< 2.8	5.7	3.9	< 2.7	< 2.7	< 3.2	< 3	< 2.6
Total LMW PAHs (ND = 0) [1,6]	552	3160						< 4.6	< 5.4	< 4.7	< 4.6	< 4.6	< 4.8	< 4.6	< 4.6	11.2	< 4.9	16	7.6	12	< 4.6	< 5.5	< 5.2	< 4.5
Total PAHs (ND = 0) [1,7]	4022	44792						< 4.6	3.1	< 4.7	3.1	6.8	< 4.8	< 4.6	< 4.6	153.7	< 4.9	21.7	11.5	12	< 4.6	< 5.5	< 5.2	< 4.5
Total PAHs (ND = 1/2 MDL) [2,7]							1000	< 4.6	32.55	< 4.7	27.95	30.15	< 4.8	< 4.6	< 4.6	168.8	< 4.9	47.3	42.7	36.1	< 4.6	< 5.5	< 5.2	< 4.5
PCB Congeners (µg/kg)																								
PCB018								< 0.24	< 0.28	< 0.25	< 0.24	< 0.24	< 0.25	< 0.24	< 0.24	< 0.28	< 0.26	< 0.28	< 0.32	< 0.24	< 0.24	< 0.29	< 0.27	< 0.24
PCB028								< 0.15	< 0.18	< 0.16	< 0.15	< 0.15	< 0.16	< 0.15	< 0.15	< 0.18	< 0.16	< 0.18	< 0.2	< 0.15	< 0.15	< 0.18	< 0.17	< 0.15
PCB037								< 0.2	< 0.24	< 0.21	< 0.2	< 0.2	< 0.21	< 0.2	< 0.2	< 0.24	< 0.21	< 0.23	< 0.26	< 0.2	< 0.2	< 0.24	< 0.23	< 0.2
PCB044								< 0.2	< 0.24	< 0.21	< 0.2	< 0.2	< 0.21	< 0.2	< 0.2	< 0.24	< 0.21	< 0.23	< 0.26	< 0.2	< 0.2	< 0.24	< 0.23	< 0.2
PCB049								< 0.18	< 0.21	< 0.19	< 0.18	< 0.18	< 0.19	< 0.18	< 0.18	< 0.21	< 0.19	< 0.21	< 0.24	< 0.18	< 0.18	< 0.21	< 0.21	< 0.18

Table 5

Results of Physical and Chemical Analyses of Sediment from Salt Ponds 12, 13, 14, and 15

								Salt Pond 12												Salt Pond 13				
Parameter	ERL	ERM	Residential CHHSL	Commercial/ Industrial CHHSL	Residential RSL	Industrial RSL	Zeeman 2004 (minimum)	SSDBSP-12-01_0.0-5.4	SSDBSP-12-02_0.0-6.1	SSDBSP-12-03_0.0-5.0	SSDBSP-12-04_0.0-5.0	SSDBSP-12-05_0.0-2.9	SSDBSP-12-06_0.0-4.4	SSDBSP-12-07_0.0-4.2	SSDBSP-12-08A_0.0-4.5	SSDBSP-12-09_0.0-4.2	SSDBSP-12-109_0.0-4.2 (Field Duplicate)	SSDBSP-12-209_0.0-4.2 (Field Split)	SSDBSP-12-10_0.0-3.2	SSDBSP-13-01_0.0-5.8	SSDBSP-13-02_0.0-6.3	SSDBSP-13-03_0.0-5.2	SSDBSP-13-04_0.0-4.0	SSDBSP-13-05_0.0-4.6
								2/2/2013	2/2/2013	2/2/2013	2/2/2013	2/2/2013	2/2/2013	2/1/2013	2/2/2013	2/1/2013	2/1/2013	2/1/2013	2/2/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013
PCB052								< 0.15	< 0.17	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.17	< 0.16	< 0.17	< 0.19	< 0.15	< 0.15	< 0.18	< 0.17	< 0.15
PCB066								< 0.14	< 0.16	< 0.14	< 0.14	< 0.14	< 0.15	< 0.14	< 0.14	< 0.16	< 0.15	< 0.16	< 0.18	< 0.14	< 0.14	< 0.17	< 0.16	< 0.14
PCB070								< 0.13	< 0.15	< 0.13	< 0.12	< 0.12	< 0.13	< 0.13	< 0.13	< 0.15	< 0.13	< 0.14	< 0.16	< 0.13	< 0.13	< 0.15	< 0.14	< 0.12
PCB074								< 0.15	< 0.17	< 0.15	< 0.14	< 0.14	< 0.15	< 0.14	< 0.14	< 0.17	< 0.15	< 0.17	< 0.19	< 0.15	< 0.15	< 0.17	< 0.16	< 0.14
PCB077								< 0.15	< 0.18	< 0.15	< 0.15	< 0.15	< 0.16	< 0.15	< 0.15	< 0.18	< 0.16	< 0.17	< 0.2	< 0.15	< 0.15	< 0.18	< 0.17	< 0.15
PCB081								< 0.19	< 0.22	< 0.19	< 0.19	< 0.19	< 0.2	< 0.19	< 0.19	< 0.22	< 0.2	< 0.22	< 0.25	< 0.19	< 0.19	< 0.22	< 0.21	< 0.18
PCB087								< 0.16	< 0.18	< 0.16	< 0.15	< 0.15	< 0.16	< 0.15	< 0.15	< 0.18	< 0.16	< 0.18	< 0.2	< 0.16	< 0.16	< 0.18	< 0.18	< 0.15
PCB099								< 0.13	< 0.15	< 0.13	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.15	< 0.14	< 0.15	< 0.17	< 0.13	< 0.13	< 0.16	< 0.15	< 0.13
PCB101								< 0.12	< 0.15	< 0.13	< 0.12	< 0.12	< 0.13	< 0.12	< 0.12	< 0.15	< 0.13	< 0.14	< 0.16	< 0.13	< 0.13	< 0.15	< 0.14	< 0.12
PCB105					34	110		< 0.16	< 0.19	< 0.17	< 0.16	< 0.16	< 0.17	< 0.16	< 0.16	< 0.19	< 0.17	< 0.18	< 0.21	< 0.16	< 0.16	< 0.19	< 0.18	< 0.16
PCB110								< 0.16	< 0.19	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.19	< 0.17	< 0.18	< 0.21	< 0.16	< 0.16	< 0.19	< 0.18	< 0.15
PCB114					0.68	2.3		< 0.15	< 0.18	< 0.16	< 0.15	< 0.15	< 0.16	< 0.15	< 0.15	< 0.18	< 0.16	< 0.18	< 0.2	< 0.16	< 0.15	< 0.18	< 0.17	< 0.15
PCB118					34	110		< 0.2	< 0.24	< 0.21	< 0.2	< 0.2	< 0.21	< 0.2	< 0.2	< 0.24	< 0.22	< 0.23	< 0.27	< 0.21	< 0.21	< 0.24	< 0.23	< 0.2
PCB119								< 0.13	< 0.16	< 0.14	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.16	< 0.14	< 0.15	< 0.17	< 0.13	< 0.13	< 0.16	< 0.15	< 0.13
PCB123					34	110		< 0.13	< 0.16	< 0.14	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.16	< 0.14	< 0.15	< 0.18	< 0.14	< 0.13	< 0.16	< 0.15	< 0.13
PCB126					0.034	0.11		< 0.21	< 0.25	< 0.22	< 0.21	< 0.21	< 0.22	< 0.21	< 0.21	< 0.25	< 0.22	< 0.24	< 0.28	< 0.21	< 0.21	< 0.25	< 0.24	< 0.21
PCB128								< 0.16	< 0.18	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.16	< 0.19	< 0.17	< 0.18	< 0.21	< 0.16	< 0.16	< 0.19	< 0.18	< 0.15
PCB138/158								< 0.31	< 0.37	< 0.32	< 0.31	< 0.31	< 0.32	< 0.31	< 0.31	< 0.37	< 0.33	< 0.36	< 0.41	< 0.32	< 0.31	< 0.37	< 0.35	< 0.3
PCB149								< 0.14	< 0.16	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.16	< 0.15	< 0.16	< 0.18	< 0.14	< 0.14	< 0.16	< 0.16	< 0.13
PCB151								< 0.16	< 0.19	< 0.16	< 0.16	< 0.16	< 0.17	< 0.16	< 0.16	< 0.19	< 0.17	< 0.18	< 0.21	< 0.16	< 0.16	< 0.19	< 0.18	< 0.16
PCB153								< 0.16	< 0.19	< 0.16	< 0.16	< 0.16	< 0.17	< 0.16	< 0.16	< 0.19	< 0.17	< 0.18	< 0.21	< 0.16	< 0.16	< 0.19	< 0.18	< 0.16
PCB156					6.8	23		< 0.15	< 0.18	< 0.15	< 0.15	< 0.15	< 0.16	< 0.15	< 0.15	< 0.18	< 0.16	< 0.17	< 0.2	< 0.15	< 0.15	< 0.18	< 0.17	< 0.15
PCB157					6.8	23		< 0.15	< 0.17	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.15	< 0.17	< 0.16	< 0.17	< 0.19	< 0.15	< 0.15	< 0.17	< 0.17	< 0.14
PCB167					340	1100		< 0.15	< 0.18	< 0.16	< 0.15	< 0.15	< 0.16	< 0.15	< 0.15	< 0.18	< 0.16	< 0.18	< 0.2	< 0.16	< 0.15	< 0.18	< 0.17	< 0.15
PCB168								< 0.13	< 0.15	< 0.14	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.16	< 0.14	< 0.15	< 0.17	< 0.13	< 0.13	< 0.16	< 0.15	< 0.13
PCB169								< 0.13	< 0.15	< 0.13	< 0.12	< 0.12	< 0.13	< 0.12	< 0.13	< 0.15	< 0.13	< 0.14	< 0.16	< 0.13	< 0.13	< 0.15	< 0.14	< 0.12
PCB170								< 0.14	< 0.17	< 0.15	< 0.14	< 0.14	< 0.15	< 0.14	< 0.14	< 0.17	< 0.15	< 0.16	< 0.19	< 0.14	< 0.14	< 0.17	< 0.16	< 0.14
PCB177								< 0.19	< 0.22	< 0.19	< 0.19	< 0.19	< 0.2	< 0.19	< 0.19	< 0.22	< 0.2	< 0.22	< 0.25	< 0.19	< 0.19	< 0.22	< 0.22	< 0.19
PCB180								< 0.094	< 0.11	< 0.097	< 0.093	< 0.093	< 0.098	< 0.094	< 0.094	< 0.11	< 0.1	< 0.11	< 0.12	< 0.095	< 0.095	< 0.11	< 0.11	< 0.092
PCB183								< 0.17	< 0.2	< 0.18	< 0.17	< 0.17	< 0.18	< 0.17	< 0.17	< 0.2	< 0.18	< 0.2	< 0.22	< 0.17	< 0.17	< 0.2	< 0.19	< 0.17
PCB187								< 0.16	< 0.19	< 0.17	< 0.16	< 0.16	< 0.17	< 0.16	< 0.16	< 0.19	< 0.17	< 0.18	< 0.21	< 0.16	< 0.16	< 0.19	< 0.18	< 0.16
PCB189					34	110		< 0.13	< 0.15	< 0.14	< 0.13	< 0.13	< 0.14	< 0.13	< 0.13	< 0.15	< 0.14	< 0.15	< 0.17	< 0.13	< 0.13	< 0.16	< 0.15	< 0.13
PCB194								< 0.15	< 0.17	< 0.15	< 0.14	< 0.15	< 0.15	< 0.15	< 0.15	< 0.17	< 0.16	< 0.17	< 0.19	< 0.15	< 0.15	< 0.17	< 0.17	< 0.14
PCB201								< 0.088	< 0.1	< 0.09	< 0.086	< 0.087	< 0.091	< 0.087	< 0.087	< 0.1	< 0.093	< 0.1	< 0.11	< 0.089	< 0.088	< 0.1	< 0.099	< 0.086
PCB206								< 0.13	< 0.15	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.13	< 0.15	< 0.13	< 0.15	< 0.17	< 0.13	< 0.13	< 0.15	< 0.14	< 0.12
Total PCB Congeners (ND = 0) [1,8]	22.7	180	89	300	220	740		< 0.31	< 0.37	< 0.32	< 0.31	< 0.31	< 0.32	< 0.31	< 0.31	< 0.37	< 0.33	< 0.36	< 0.41	< 0.32	< 0.31	< 0.37	< 0.35	< 0.3
Total PCB Congeners (ND = 1/2 MDL) [2,8]							6	< 0.31	< 0.37	< 0.32	< 0.31	< 0.31	< 0.32	< 0.31	< 0.31	< 0.37	< 0.33	< 0.36	< 0.41	< 0.32	< 0.31	< 0.37	< 0.35	< 0.3

Table 5

Results of Physical and Chemical Analyses of Sediment from Salt Ponds 12, 13, 14, and 15

	Pond 13		Salt Pond 14				Salt Pond 15											
Parameter	SSDBSP-13-06_0.0-2.9	SSDBSP-13-07_0.0-2.5	SSDBSP-14-01_0.0-4.5	SSDBSP-14-02_0.0-4.9	SSDBSP-14-03A_0.0-5.2	SSDBSP-14-04A_0.0-2.9	SSDBSP-15-01_0.0-1.2	SSDBSP-15-101_0.0-1.2 (Field Duplicate)	SSDBSP-15-201_0.0-1.2 (Field Split)	SSDBSP-15-02_0.0-5.3	SSDBSP-15-03_0.0-4.6	SSDBSP-15-04_0.0-5.5	SSDBSP-15-05_0.0-5.4	SSDBSP-15-06_0.0-1.5	SSDBSP-15-07_0.0-4.0	SSDBSP-15-08_0.0-3.1	SSDBSP-15-09_0.0-5.0	SSDBSP-15-10_0.0-2.0
	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/30/2013	1/30/2013	1/30/2013	1/30/2013	1/30/2013	1/31/2013	1/31/2013	1/30/2013	1/29/2013	1/29/2013	1/29/2013	1/29/2013
Conventional Parameters (%)																		
Total organic carbon	1.9	1.8	0.54	0.53	0.55	3.3	6.5	5.2	6	0.76	0.73	0.58	1.2	1.2	2	3.5	1.8	2.7
Total solids	41.9	46.1	70	72.3	70.8	40.2	31.4	39.2	32.2	68.5	67.2	67.6	53.8	58.1	57.6	64.6	62.5	49.8
Clay (less than 0.00391mm)	27.24	26.36	26.85	23.43	25.91	19.68	21.02	10.2	18.38	22.84	29.29	23.17	32.65	39.47	36.91	33.04	35.77	28.38
Coarse Sand (0.5 to 1mm)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	3.95	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fine Sand (0.125 to 0.25mm)	6.9	4.1	0.06	4.79	2.44	2.79	7.03	13.01	7.79	3.1	< 0.01	1.28	< 0.01	2.8	0.03	0.06	0.02	2.59
Gravel (greater than 2mm)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Medium Sand (0.25 to 0.5mm)	5.12	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	1.71	9.49	0.26	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Silt (0.00391 to 0.0625mm)	54.28	63.44	66.74	59.18	63.96	68.5	62.29	49.54	63.82	62.77	66.92	63.65	64.99	55.92	61.56	62	61.42	65.19
Total Silt and Clay (0 to 0.0625mm)	81.53	89.8	93.59	82.62	89.87	88.18	83.31	59.74	82.19	85.61	96.21	86.83	97.64	95.39	98.47	95.05	97.19	93.57
Very Coarse Sand (1 to 2mm)	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Very Fine Sand (0.0625 to 0.125mm)	6.46	6.09	6.35	12.6	7.69	9.03	7.95	13.81	9.75	11.29	3.79	11.89	2.36	1.81	1.5	4.89	2.78	3.84
Metals (mg/kg)																		
Arsenic	5.21	5.42	3.99	4.2	3.32	4.2	3.14	2.83	3.19	4.39	4.71	3.89	6.05	7.09	5.99	3.77	5.5	4.55
Cadmium	0.313	0.313	0.156	0.13 J	0.128 J	0.394	0.474	0.233 J	0.312	0.198	0.175	0.148	0.378	0.311	0.251	0.192	0.205	0.365
Chromium	22.7	23.2	13.1	11.6	11.8	17.1	17.9	13.1	14.9	16.2	15.1	12.9	25.2	24.2	29.9	18.4	17.7	24
Copper	19.7	20.3	9.94	9.89	8.08	25.2	133	23.5	119	12.8	11.9	9.96	25.6	22.7	23	19.1	18.7	179
Lead	13.2	13.4	3.7	3.66	3.69	12.2	22.7	128	17.4	4.26	4.35	3.43	8.78	9.36	8.53	5.24	5.88	22.1
Mercury	0.0239 J	0.0215 J	< 0.0084	< 0.0081	< 0.0083	0.0458 J	0.0503 J	< 0.015	0.048 J	< 0.0086	0.0103 J	< 0.0087	0.0363 J	0.0416	0.0473	0.0306 J	0.0279 J	0.117
Nickel	11.4	10.7	5.11	4.83	4.29	9.9	34.4	10.2	28.9	6.54	6.07	5.33	11	12.4	13.3	8.71	8.83	26.5
Selenium	0.266	< 0.158	0.141 J	0.155	< 0.103	0.304	0.387	0.207 J	0.342	0.115 J	0.169	0.118 J	0.333	0.253	0.347	0.238	0.324	0.239
Silver	< 0.0747	0.0825 J	< 0.0447	< 0.0433	< 0.0442	0.177 J	0.14 J	< 0.0798	< 0.0972	< 0.0457	< 0.0466	< 0.0463	0.172 J	0.0937 J	0.076 J	0.056 J	0.064 J	0.121 J
Zinc	66.5	62.1	32.7	32.7	29.2	59.3	65.1	53.9	59	40.6	38	32.4	77.2	60.2	66.1	40.5	41.3	68.3
Pesticides (µg/kg)																		
2,4'-DDD	< 0.81	< 0.73	< 0.48	< 0.47	< 0.48	< 0.84	< 1.1	< 0.86	< 1.1	< 0.49	< 0.5	< 0.5	< 0.63	< 0.58	< 0.59	< 0.52	< 0.54	< 0.68
2,4'-DDE	< 0.73	< 0.66	< 0.44	< 0.42	< 0.43	< 0.76	< 0.97	< 0.78	< 0.95	< 0.45	< 0.45	< 0.45	< 0.57	< 0.53	< 0.53	< 0.47	< 0.49	< 0.61
2,4'-DDT	< 0.72	< 0.65	< 0.43	< 0.42	< 0.42	< 0.75	5.2	5.1	5.7	< 0.44	< 0.45	< 0.44	< 0.56	< 0.52	< 0.52	< 0.47	< 0.48	< 0.6
4,4'-DDD	< 0.75	< 0.69	< 0.45	< 0.44	< 0.45	< 0.79	< 1	< 0.81	< 0.98	< 0.46	< 0.47	< 0.47	< 0.59	< 0.54	< 0.55	< 0.49	< 0.51	< 0.63
4,4'-DDE	< 0.71	0.95 J	< 0.43	< 0.41	< 0.42	1 J	5.1	3.9	5.8	< 0.44	< 0.45	< 0.44	< 0.56	< 0.51	< 0.52	< 0.46	< 0.48	0.77 J
4,4'-DDT	< 0.8	< 0.73	< 0.48	< 0.46	< 0.47	< 0.83	< 1.1	< 0.85	< 1	< 0.49	< 0.5	< 0.5	< 0.62	< 0.58	< 0.58	< 0.52	< 0.54	< 0.67
Total DDTs (ND = 0) [1,4]	< 0.81	0.95	< 0.48	< 0.47	< 0.48	1	10.3	9	11.5	< 0.49	< 0.5	< 0.5	< 0.63	< 0.58	< 0.59	< 0.52	< 0.54	0.77
Aldrin	< 0.75	< 0.68	< 0.45	< 0.44	< 0.44	< 0.78	< 1	< 0.8	< 0.98	< 0.46	< 0.47	< 0.47	< 0.58	< 0.54	< 0.55	< 0.49	< 0.5	< 0.63
Alpha Chlordane	< 0.77	< 0.7	< 0.46	< 0.44	< 0.45	< 0.8	< 1	< 0.82	< 1	< 0.47	< 0.48	< 0.47	< 0.6	< 0.55	< 0.56	< 0.5	< 0.51	< 0.64
alpha-BHC	< 0.77	< 0.7	< 0.46	< 0.45	< 0.46	< 0.81	< 1	< 0.83	< 1	< 0.47	< 0.48	< 0.48	< 0.6	< 0.56	< 0.56	< 0.5	< 0.52	< 0.65
beta-BHC	< 0.63	< 0.57	< 0.38	< 0.37	< 0.37	< 0.66	< 0.84	< 0.67	< 0.82	< 0.39	< 0.39	< 0.39	< 0.49	< 0.45	< 0.46	< 0.41	< 0.42	< 0.53
Chlordane	< 7.8	< 7.1	< 4.7	< 4.5	< 4.6	< 8.1	< 10	< 8.3	< 10	< 4.8	< 4.9	< 4.8	< 6.1	< 5.6	< 5.7	< 5.1	< 5.2	< 6.6
Cis-nonachlor	< 0.7	< 0.64	< 0.42	< 0.41	< 0.41	< 0.73	< 0.94	< 0.75	< 0.91	< 0.43	< 0.44	< 0.43	< 0.55	< 0.51	< 0.51	< 0.45	< 0.47	< 0.59
delta-BHC	< 0.61	< 0.56	< 0.37	< 0.35	< 0.36	< 0.64	< 0.81	< 0.65	< 0.79	< 0.37	< 0.38	< 0.38	< 0.48	< 0.44	< 0.44	< 0.4	< 0.41	< 0.51
Dieldrin	< 0.79	1.9 J	< 0.47	< 0.46	< 0.47	2.6	< 1	< 0.84	< 1	< 0.48	< 0.49	< 0.49	< 0.61	< 0.57	< 0.57	< 0.51	< 0.53	< 0.66
Endosulfan sulfate	< 0.81	< 0.73	< 0.48	< 0.47	< 0.48	< 0.84	< 1.1	3.3	< 1	< 0.49	< 0.5	< 0.5	< 0.63	< 0.58	< 0.59	< 0.52	< 0.54	< 0.68
Endosulfan-alpha (I)	< 0.63	< 0.57	< 0.37	< 0.36	< 0.37	< 0.65	< 0.83	< 0.67	< 0.81	< 0.38	< 0.39	< 0.39	< 0.49	< 0.45	< 0.45	< 0.41	< 0.42	< 0.53
Endosulfan-beta (II)	< 0.67	< 0.61	< 0.4	< 0.39	< 0.39	< 0.7	< 0.89	< 0.71	< 0.87	< 0.41	< 0.42	< 0.41	< 0.52	< 0.48	< 0.49	< 0.43	< 0.45	< 0.56
Endrin	< 0.86	< 0.78	< 0.51	< 0.5	< 0.51	< 0.89	< 1.1	< 0.91	< 1.1	< 0.52	< 0.53	< 0.53	< 0.67	< 0.62	< 0.62	< 0.55	< 0.57	< 0.72
Endrin aldehyde	< 0.58	< 0.53	< 0.35	< 0.34	< 0.34	< 0.61	< 0.78	< 0.62	< 0.76	< 0.36	< 0.36	< 0.36	< 0.45	< 0.42	< 0.42	< 0.38	< 0.39	< 0.49
Endrin ketone	< 0.83	< 0.75	< 0.5	< 0.48	< 0.49	< 0.86	< 1.1	< 0.89	< 1.1	< 0.51	< 0.52	< 0.51	< 0.65	< 0.6	< 0.6	< 0.54	< 0.56	< 0.7
Gamma Chlordane	< 0.76	< 0.69	< 0.45	< 0.44	< 0.45	< 0.79	< 1	< 0.81	< 0.99	< 0.46	< 0.47	< 0.47	< 0.59	< 0.55	< 0.55	< 0.49	< 0.51	< 0.64
gamma-BHC (Lindane)	< 0.83	< 0.75	< 0.49	< 0.48	< 0.49	< 0.86	< 1.1	< 0.88	< 1.1	< 0.51	< 0.52	< 0.51	< 0.64	< 0.6	< 0.6	< 0.54	< 0.55	< 0.7
Heptachlor	< 0.77	< 0.7	< 0.46	< 0.44	< 0.45	< 0.8	< 1	< 0.82	< 1	< 0.47	< 0.48	< 0.48	< 0.6	< 0.55	< 0.56	< 0.5	< 0.51	< 0.65
Heptachlor epoxide	< 0.85	< 0.77	< 0.51	< 0.49	< 0.5	< 0.88	< 1.1	< 0.91	< 1.1	< 0.52	< 0.53	< 0.53	< 0.66	< 0.61	< 0.62	< 0.55	< 0.57	< 0.71
Methoxychlor	< 0.77	< 0.7	< 0.46	< 0.45	< 0.46	< 0.81	< 1	< 0.83	< 1	< 0.47	< 0.48	< 0.48	< 0.6	< 0.56	< 0.56	< 0.5	< 0.52	< 0.65
Oxychlordane	< 0.67	< 0.61	< 0.4	< 0.39	< 0.4	< 0.7	< 0.9	< 0.72	< 0.87	< 0.41	< 0.42	< 0.42	< 0.52	< 0.48	< 0.49	< 0.44	< 0.45	< 0.56
Total Chlordanes (ND = 0) [1,3]	< 0.77	< 0.7	< 0.46	< 0.44	< 0.45	< 0.8	< 1	< 0.82	< 1	< 0.47	< 0.48	< 0.47	< 0.6	< 0.55	< 0.56	< 0.5	< 0.51	< 0.64
Toxaphene	< 15	< 14	< 9.1	< 8.8	< 8.9	< 16	< 20	< 16	< 20	< 9.3	< 9.4	< 9.4	< 12	< 11	< 11	< 9.8	< 10	< 13
Trans-nonachlor	< 0.69	< 0.62	< 0.41	< 0.4	< 0.41	< 0.72	< 0.92	< 0.73	< 0.89	< 0.42	< 0.43	< 0.43	< 0.54	< 0.5	< 0.5	< 0.45	< 0.46	< 0.58
PAH (µg/kg)																		
1-Methylnaphthalene	< 4.8	< 4.3	< 2.9	< 2.8	< 2.8	< 5	< 6.4	< 5.1	< 6.2	< 2.9	< 3	< 3	< 3.7	< 3.4	< 3.5	< 3.1	< 3.2	21
2-Methylnaphthalene	< 4.3	< 3.9	< 2.6	< 2.5	< 2.5	< 4.5	7.3 J	< 4.6	< 5.6	< 2.6	< 2.7	< 2.7	< 3.4	< 3.1	< 3.1	< 2.8	< 2.9	34
Acenaphthene	< 4.3	< 3.9	< 2.6	< 2.5	2.7 J	6.3 J	< 5.7	< 4.6	< 5.6	< 2.6	< 2.7	< 2.7	< 3.3	< 3.1	< 3.1	< 2.8	< 2.9	< 3.6
Acenaphthylene	< 3.6	< 3.3	< 2.2	< 2.1	2.4 J	5.9 J	< 4.8	< 3.9	< 4.7	< 2.2	< 2.3	< 2.2	< 2.8	< 2.6	< 2.6	< 2.3	< 2.4	< 3
Anthracene	< 1.9	< 1.7	< 1.2	< 1.1	< 1.1	< 2	< 2.6	< 2.1	< 2.5	< 1.2	< 1.2	< 1.2	< 1.5	< 1.4	< 1.4	< 1.2	< 1.3	< 1.6
Benzo (a) Anthracene	< 3.7	11 J	< 2.2	< 2.2	< 2.2	< 3.9	< 5	< 4	< 4.8	< 2.3	< 2.3	< 2.3	< 2.9	11 J	< 2.7	< 2.4	4 J	3.7 J
Benzo (a) Pyrene	< 2.4	11 J	< 1.5	2.1 J	< 1.4	3.6 J	6.2 J	3 J	4.8 J	1.7 J	2.3 J	< 1.5	4.4 J	11 J	3.5 J	< 1.6	5.1 J	6.1 J
Benzo (b) Fluoranthene	< 2.4	8.5 J	< 1.5	2.6 J	< 1.4	< 2.5	< 3.2	< 2.6	< 3.2	< 1.5	2.1 J	< 1.5	3.6 J	6.6 J	2.9 J	< 1.6	3.9 J	4.5 J
Benzo (e) Pyrene	< 3.6	< 3.3	< 2.1	< 2.1	< 2.1	< 3.7	5.7 J	< 3.8	5.5 J	< 2.2	< 2.2	< 2.2	3.9 J	6.9 J	3.7 J	< 2.3	3.8 J	5.7 J
Benzo (g,h,i) Perylene	< 2.3	8.2 J	< 1.3	2.6 J	< 1.3	4 J	< 3	< 2.4	< 2.9	2.1 J	2.7 J	< 1.4	4.9 J	7.1 J	4.9 J	< 1.5	4.6 J	5.4 J
Benzo (k) Fluoranthene	< 3.3	8.3 J	< 2	< 1.9	< 2	< 3.5	< 4.4	< 3.6	< 4.3	< 2	< 2.1	< 2.1	3.2 J	9.4 J	< 2.4	< 2.2	4.4 J	5.6 J
Chrysene	< 2.8	9.7 J	< 1.7	1.6 J	< 1.6	< 2.9	6.8 J	3.2 J	4.5 J	< 1.7	< 1.7	< 1.7	2.7 J	9.5 J	2.7 J	< 1.8	3.7 J	6.9 J
Dibenz (a,h) Anthracene	< 2.5	< 2.2	< 1.5	< 1.4	< 1.5	< 2.6	< 3.3	< 2.6	< 3.2	< 1.5	< 1.5	< 1.5	< 1.9	< 1.8	< 1.8	< 1.6	< 1.7	< 2.1
Fluoranthene	< 2.3	11 J	< 1.4	2.5 J	< 1.4	4.3 J	7.8 J	4.1 J	7.3 J	2.4 J	2.5 J	1.6 J	5.3 J	13 J	4.1 J	1.7 J	4.4 J	8.6 J
Fluorene	< 3.5	< 3.2	< 2.1	< 2	3 J	8.1 J	5.6 J	< 3.7	4.8 J	< 2.1	< 2.2	< 2.2	3 J	< 2.5	< 2.5	< 2.3	< 2.3	5.7 J
Indeno (1,2,3-c,d) Pyrene	< 2.5	6.8 J	< 1.5	1.6 J	< 1.5	< 2.6	< 3.4	< 2.7	< 3.3	< 1.6	1.6 J	< 1.6	3.3 J	5.2 J	2.8 J	< 1.6	3.3 J	5.1 J
Naphthalene	< 7.2	< 6.5	< 4.3	< 4.2	4.7 J	< 7.5	< 9.6	< 7.7	20 J	< 4.4	< 4.5	< 4.4	< 5.6	9.2 J	< 5.2	< 4.7	7.3 J	22
Phenanthrene	< 2.4	5.2 J	< 1.4	< 1.4	< 1.4	< 2.5	8.8 J	6.1 J	10 J	1.5 J	< 1.5	< 1.5	2.2 J	4.8 J	2.5 J	< 1.6	3.3 J	7.5 J
Pyrene	2.6 J	14 J	1.5 J	4.6 J	6.5 J	16 J	12 J	6.9 J	12 J	3.5 J	4.1 J	2.6 J	16 J	21	6.8 J	2.8 J	7.7 J	14 J
Perylene	< 4.2	< 3.8	< 2.5	3.1 J	< 2.5	< 4.3	< 5.5	< 4.4	< 5.4	4.1 J	< 2.6	< 2.6	< 3.2	3.5 J	< 3	< 2.7	< 2.8	4.1 J
Biphenyl	< 3.3	< 3	< 2	< 1.9	< 2	< 3.4	9.8 J	6.4 J	6.6 J	< 2	< 2.1	< 2.1	< 2.6	< 2.4	< 2.4	< 2.1	< 2.2	13 J
1-Methylphenanthrene	< 3.9	< 3.5	< 2.3	< 2.2	< 2.3	< 4	< 5.2	< 4.1	< 5	< 2.4	< 2.4	< 2.4	< 3	< 2.8	< 2.8	< 2.5	< 2.6	< 3.3
2,6-Dimethylnaphthalene	8.1 J	49	3.7 J	4.6 J	5.4 J	130	540	420	440	11 J	2.5 J	2.9 J	< 3.1	11 J	7.1 J	19	< 2.7	120
1,6,7-Trimethylnaphthalene	< 3.4	< 3.1	< 2	< 1.9	< 2	< 3.5	11 J	< 3.6	5.6 J	< 2.1	< 2.1	< 2.1	< 2.6	< 2.4	< 2.4	< 2.2	< 2.3	9.6 J
Total HMW PAHs (ND = 0) [1,5]	2.6	88.5	1.5	20.7	6.5	27.9	38.5	17.2	34.1	13.8	15.3	4.2	47.3	104.2	31.4	4.5	44.9	69.7
Total LMW PAHs (ND = 0) [1,6]	8.1	54.2	3.7	4.6	18.2	150.3	582.5	432.5	487	12.5	2.5	2.9	5.2	25	9.6	19	10.6	232.8
Total PAHs (ND = 0) [1,7]	10.7	142.7	5.2	25.3	24.7	178.2	621	449.7	521.1	26.3	17.8	7.1	52.5	129.2	41	23.5	55.5	302.5
Total PAHs (ND = 1/2 MDL) [2,7]	48	165.55	27.6	41.4	41.2	207.4	652.05	482.45	549.45	44.95	37.35	29.55	72.3	141.95	60.45	46.95	70.15	309.3
PCB Congeners (µg/kg)																		
PCB018	< 0.38	< 0.34	< 0.22	< 0.22	< 0.22	< 0.39	< 0.5	< 0.4	< 0.49	< 0.23	< 0.23	< 0.23	< 0.29	< 0.27	< 0.27	< 0.24	< 0.25	< 0.32
PCB028	< 0.24	< 0.22	< 0.14	< 0.14	< 0.14	< 0.25	< 0.32	< 0.25	< 0.31	< 0.15	< 0.15	< 0.15	< 0.18	< 0.17	< 0.17	< 0.15	< 0.16	< 0.2
PCB037	< 0.31	< 0.28	< 0.19	< 0.18	< 0.18	< 0.33	< 0.42	< 0.33	< 0.41	< 0.19	< 0.19	< 0.19	< 0.24	< 0.23	< 0.23	< 0.2	< 0.21	< 0.26
PCB044	< 0.31	< 0.29	< 0.19	< 0.18	< 0.19	< 0.33	< 0.42	< 0.34	< 0.41	< 0.19	< 0.2	< 0.19	< 0.24	< 0.23	< 0.23	< 0.2	< 0.21	< 0.26
PCB049	< 0.28	< 0.26	< 0.17	< 0.16	< 0.17	< 0.29	< 0.38	< 0.3	< 0.37	< 0.17	< 0.18	< 0.17	< 0.22	< 0.2	< 0.2	< 0.18	< 0.19	< 0.24

Table 5

Results of Physical and Chemical Analyses of Sediment from Salt Ponds 12, 13, 14, and 15

	Pond 13		Salt Pond 14				Salt Pond 15											
Parameter	SSDBSP-13-06_0.0-2.9	SSDBSP-13-07_0.0-2.5	SSDBSP-14-01_0.0-4.5	SSDBSP-14-02_0.0-4.9	SSDBSP-14-03A_0.0-5.2	SSDBSP-14-04A_0.0-2.9	SSDBSP-15-01_0.0-1.2	SSDBSP-15-101_0.0-1.2 (Field Duplicate)	SSDBSP-15-201_0.0-1.2 (Field Split)	SSDBSP-15-02_0.0-5.3	SSDBSP-15-03_0.0-4.6	SSDBSP-15-04_0.0-5.5	SSDBSP-15-05_0.0-5.4	SSDBSP-15-06_0.0-1.5	SSDBSP-15-07_0.0-4.0	SSDBSP-15-08_0.0-3.1	SSDBSP-15-09_0.0-5.0	SSDBSP-15-10_0.0-2.0
	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/30/2013	1/30/2013	1/30/2013	1/30/2013	1/30/2013	1/31/2013	1/31/2013	1/30/2013	1/29/2013	1/29/2013	1/29/2013	1/29/2013
PCB052	< 0.23	< 0.21	< 0.14	< 0.13	< 0.14	< 0.24	< 0.31	< 0.25	< 0.3	< 0.14	< 0.14	< 0.14	< 0.18	< 0.17	< 0.17	< 0.15	< 0.15	< 0.19
PCB066	< 0.22	< 0.2	< 0.13	< 0.13	< 0.13	< 0.23	< 0.29	< 0.23	< 0.28	< 0.13	< 0.14	< 0.14	< 0.17	< 0.16	< 0.16	< 0.14	< 0.15	< 0.18
PCB070	< 0.2	< 0.18	< 0.12	< 0.11	< 0.12	< 0.2	< 0.26	< 0.21	< 0.25	< 0.12	< 0.12	< 0.12	< 0.15	< 0.14	< 0.14	< 0.13	< 0.13	< 0.16
PCB074	< 0.23	< 0.2	< 0.13	< 0.13	< 0.13	< 0.24	< 0.3	< 0.24	< 0.29	< 0.14	< 0.14	< 0.14	< 0.18	< 0.16	< 0.16	< 0.15	< 0.15	< 0.19
PCB077	< 0.23	< 0.21	< 0.14	< 0.13	< 0.14	< 0.24	< 0.31	< 0.25	< 0.3	< 0.14	< 0.15	< 0.14	< 0.18	< 0.17	< 0.17	< 0.15	< 0.16	< 0.2
PCB081	< 0.29	< 0.27	< 0.17	< 0.17	< 0.17	< 0.3	< 0.39	< 0.31	< 0.38	< 0.18	< 0.18	< 0.18	< 0.23	< 0.21	< 0.21	< 0.19	< 0.2	< 0.25
PCB087	< 0.24	< 0.22	< 0.14	< 0.14	< 0.14	< 0.25	< 0.32	< 0.26	< 0.31	< 0.15	< 0.15	< 0.15	< 0.19	< 0.17	< 0.18	< 0.16	< 0.16	< 0.2
PCB099	< 0.2	< 0.18	< 0.12	< 0.12	< 0.12	< 0.21	< 0.27	< 0.22	< 0.26	< 0.12	< 0.13	< 0.13	< 0.16	< 0.15	< 0.15	< 0.13	< 0.14	< 0.17
PCB101	< 0.19	< 0.18	< 0.12	< 0.11	< 0.11	< 0.2	< 0.26	< 0.21	< 0.25	< 0.12	< 0.12	< 0.12	< 0.15	< 0.14	< 0.14	< 0.13	< 0.13	< 0.16
PCB105	< 0.25	< 0.23	< 0.15	< 0.15	< 0.15	< 0.26	< 0.33	< 0.27	< 0.33	< 0.15	< 0.16	< 0.16	< 0.19	< 0.18	< 0.18	< 0.16	< 0.17	< 0.21
PCB110	< 0.25	< 0.22	< 0.15	< 0.14	< 0.15	< 0.26	< 0.33	< 0.26	< 0.32	< 0.15	< 0.15	< 0.15	< 0.19	< 0.18	< 0.18	< 0.16	< 0.16	< 0.21
PCB114	< 0.24	< 0.22	< 0.14	< 0.14	< 0.14	< 0.25	< 0.32	< 0.25	< 0.31	< 0.15	< 0.15	< 0.15	< 0.19	< 0.17	< 0.17	< 0.15	< 0.16	< 0.2
PCB118	< 0.32	< 0.29	< 0.19	< 0.18	< 0.19	< 0.33	< 0.42	< 0.34	< 0.41	< 0.19	< 0.2	< 0.2	< 0.25	< 0.23	< 0.23	< 0.21	< 0.21	< 0.27
PCB119	< 0.21	< 0.19	< 0.12	< 0.12	< 0.12	< 0.22	< 0.28	< 0.22	< 0.27	< 0.13	< 0.13	< 0.13	< 0.16	< 0.15	< 0.15	< 0.13	< 0.14	< 0.17
PCB123	< 0.21	< 0.19	< 0.12	< 0.12	< 0.12	< 0.22	< 0.28	< 0.22	< 0.27	< 0.13	< 0.13	< 0.13	< 0.16	< 0.15	< 0.15	< 0.14	< 0.14	< 0.18
PCB126	< 0.33	< 0.3	< 0.2	< 0.19	< 0.2	< 0.34	< 0.44	< 0.35	< 0.43	< 0.2	< 0.21	< 0.2	< 0.26	< 0.24	< 0.24	< 0.21	< 0.22	< 0.28
PCB128	< 0.24	< 0.22	< 0.15	< 0.14	< 0.14	< 0.26	< 0.33	< 0.26	< 0.32	< 0.15	< 0.15	< 0.15	< 0.19	< 0.18	< 0.18	< 0.16	< 0.16	< 0.21
PCB138/158	< 0.48	< 0.44	< 0.29	< 0.28	< 0.29	< 0.5	< 0.65	< 0.52	< 0.63	< 0.3	< 0.3	< 0.3	< 0.38	< 0.35	< 0.35	< 0.31	< 0.32	< 0.41
PCB149	< 0.21	< 0.19	< 0.13	< 0.12	< 0.13	< 0.22	< 0.28	< 0.23	< 0.28	< 0.13	< 0.13	< 0.13	< 0.17	< 0.15	< 0.16	< 0.14	< 0.14	< 0.18
PCB151	< 0.25	< 0.22	< 0.15	< 0.14	< 0.15	< 0.26	< 0.33	< 0.26	< 0.32	< 0.15	< 0.15	< 0.15	< 0.19	< 0.18	< 0.18	< 0.16	< 0.17	< 0.21
PCB153	< 0.25	< 0.23	< 0.15	< 0.14	< 0.15	< 0.26	< 0.33	< 0.27	< 0.32	< 0.15	< 0.15	< 0.15	< 0.19	< 0.18	< 0.18	< 0.16	< 0.17	< 0.21
PCB156	< 0.23	< 0.21	< 0.14	< 0.14	< 0.14	< 0.24	< 0.31	< 0.25	< 0.3	< 0.14	< 0.15	< 0.14	< 0.18	< 0.17	< 0.17	< 0.15	< 0.16	< 0.2
PCB157	< 0.23	< 0.21	< 0.14	< 0.13	< 0.14	< 0.24	< 0.31	< 0.24	< 0.3	< 0.14	< 0.14	< 0.14	< 0.18	< 0.16	< 0.17	< 0.15	< 0.15	< 0.19
PCB167	< 0.24	< 0.22	< 0.14	< 0.14	< 0.14	< 0.25	< 0.32	< 0.25	< 0.31	< 0.15	< 0.15	< 0.15	< 0.19	< 0.17	< 0.17	< 0.15	< 0.16	< 0.2
PCB168	< 0.21	< 0.19	< 0.12	< 0.12	< 0.12	< 0.21	< 0.27	< 0.22	< 0.27	< 0.13	< 0.13	< 0.13	< 0.16	< 0.15	< 0.15	< 0.13	< 0.14	< 0.17
PCB169	< 0.19	< 0.18	< 0.12	< 0.11	< 0.12	< 0.2	< 0.26	< 0.21	< 0.25	< 0.12	< 0.12	< 0.12	< 0.15	< 0.14	< 0.14	< 0.13	< 0.13	< 0.16
PCB170	< 0.22	< 0.2	< 0.13	< 0.13	< 0.13	< 0.23	< 0.29	< 0.24	< 0.29	< 0.14	< 0.14	< 0.14	< 0.17	< 0.16	< 0.16	< 0.14	< 0.15	< 0.19
PCB177	< 0.29	< 0.27	< 0.18	< 0.17	< 0.17	< 0.31	< 0.39	< 0.31	< 0.38	< 0.18	< 0.18	< 0.18	< 0.23	< 0.21	< 0.21	< 0.19	< 0.2	< 0.25
PCB180	< 0.15	< 0.13	< 0.087	< 0.085	< 0.086	< 0.15	< 0.19	< 0.16	< 0.19	< 0.089	< 0.091	< 0.09	< 0.11	< 0.11	< 0.11	< 0.095	< 0.098	< 0.12
PCB183	< 0.27	< 0.24	< 0.16	< 0.15	< 0.16	< 0.28	< 0.36	< 0.28	< 0.35	< 0.16	< 0.17	< 0.16	< 0.21	< 0.19	< 0.19	< 0.17	< 0.18	< 0.22
PCB187	< 0.25	< 0.23	< 0.15	< 0.14	< 0.15	< 0.26	< 0.33	< 0.27	< 0.33	< 0.15	< 0.16	< 0.15	< 0.19	< 0.18	< 0.18	< 0.16	< 0.17	< 0.21
PCB189	< 0.2	< 0.19	< 0.12	< 0.12	< 0.12	< 0.21	< 0.27	< 0.22	< 0.27	< 0.12	< 0.13	< 0.13	< 0.16	< 0.15	< 0.15	< 0.13	< 0.14	< 0.17
PCB194	< 0.23	< 0.21	< 0.14	< 0.13	< 0.13	< 0.24	< 0.3	< 0.24	< 0.3	< 0.14	< 0.14	< 0.14	< 0.18	< 0.16	< 0.17	< 0.15	< 0.15	< 0.19
PCB201	< 0.14	< 0.12	< 0.081	< 0.079	< 0.08	< 0.14	< 0.18	< 0.15	< 0.18	< 0.083	< 0.085	< 0.084	< 0.11	< 0.098	< 0.099	< 0.088	< 0.091	< 0.11
PCB206	< 0.2	< 0.18	< 0.12	< 0.11	< 0.12	< 0.21	< 0.26	< 0.21	< 0.26	< 0.12	< 0.12	< 0.12	< 0.15	< 0.14	< 0.14	< 0.13	< 0.13	< 0.17
Total PCB Congeners (ND = 0) [1,8]	< 0.48	< 0.44	< 0.29	< 0.28	< 0.29	< 0.5	< 0.65	< 0.52	< 0.63	< 0.3	< 0.3	< 0.3	< 0.38	< 0.35	< 0.35	< 0.31	< 0.32	< 0.41
Total PCB Congeners (ND = 1/2 MDL) [2,8]	< 0.48	< 0.44	< 0.29	< 0.28	< 0.29	< 0.5	< 0.65	< 0.52	< 0.63	< 0.3	< 0.3	< 0.3	< 0.38	< 0.35	< 0.35	< 0.31	< 0.32	< 0.41

Notes:

Detected result exceeds ERL but is less than ERM.
Detected result exceeds the minimum Zeeman 2004 level.
Detected result exceeds ERL and the minimum Zeeman 2004 level.
Detected result exceeds Residential CHHSL but is less than Commercial/Industrial CHHSL.
Detected result exceeds Commercial/Industrial CHHSL and Residential CHHSL.
Underline = Detected result exceeds Residential RSL but is less than Industrial RSL.
Underline = Detected result exceeds Industrial RSL and Residential RSL.
Bold = Detected result
J = Estimated value
µg/kg = micrograms per kilogram
CHHSL = California Human Health Screening Level (CalEPA 2005 and 2009)
ERL = effects range low (Long et al. 1995)
ERM = effects range median (Long et al. 1995)
MDL = method detection limit
mg/kg = milligrams per kilogram
mm = millimeters
ND = non-detect
RSL = Regional Screening Level (USEPA 2010). The lesser (more protective) of the cancerous and noncancerous screening levels were used.
PAHs = polycyclic aromatic hydrocarbons
PCBs = polycyclic biphenyls
Non-detects were reported as < MDL.
1 For comparison to ERL, ERM, CHHSLs, and RSLs, zeros were used for non-detect samples for summing. If all samples were non-detect, the total is reported as < the highest MDL of all samples.
2 For comparison to Zeeman 2004 screening levels, 1/2 MDLs were used for non-detect samples for summing. If all samples were non-detect, the total is reported as < the highest MDL of all samples.
3 Total Chlordanes calculated as the sum of alpha Chlordane, gamma Chlordane, cis-Nonachlor, Oxychlordane, and trans-Nonachlor.
4 Total DDTs calculated as the sum of 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT.
5 Total HMW PAHs calculated as the sum of Benzo (a) anthracene, Benzo (a) pyrene, Benzo (b) fluoranthene, Benzo (e) pyrene, Benzo (g,h,i) perylene, Benzo (k) fluoranthene, Chrysene, Dibenz (a,h) anthracene, Fluoranthene, Indeno (1,2,3-c,d) pyrene, Perylene, and Pyrene.
6 Total LMW PAHs calculated as the sum of 1-Methylnaphthalene, 1-Methylphenanthrene, 1,6,7-Trimethylnaphthalene, 2,6-Dimethylnaphthalene, 2-Methylnaphthalene, Acenaphthene, Acenaphthylene, Anthracene, Biphenyl, Fluorene, Naphthalene, and Phenanthrene.
7 Total PAHs calculated as the sum of HMW and LMW PAHs.
8 Total PCB Congeners calculated as the sum of all PCB congeners.

3.2.2 Metals

All metals were detected in salt pond sediments. Chromium, selenium, silver, and zinc concentrations were less than screening levels in all samples. Arsenic, cadmium, copper, lead, mercury, and nickel were measured at concentrations greater than screening levels in at least one sample (Table 5). A summary of results is provided below.

- Arsenic concentrations were greater than both Residential and Commercial/Industrial CHHSLs and RSLs at all stations. Stations 13-03 and 13-04 also exceeded the ERL value and Zeeman risk-based screening level for benthic invertebrates (Figure 5). However, all concentrations of arsenic were less than the southern California regional background level of 12 milligrams per kilogram (mg/kg; Chernoff et al. 2008).
- Cadmium concentrations were relatively low, with the exception of Station 15-01. This station exceeded the Zeeman screening levels for fish and tern (Figure 6).
- Copper concentrations were greater than Zeeman screening levels at 12 stations (Figure 7), which included one station in each of Ponds 12 and 14 and approximately 60 percent of stations in Ponds 13 and 15. All stations exceeded the Zeeman screening level for benthic invertebrates, five stations exceeded the screening level for benthic vegetation, and two stations (15-01 and 15-10) exceeded the screening level for wigeon, scooter, and tern. Stations 15-01 and 15-10 also exceeded the ERL value.
- Lead concentrations were greater than Zeeman screening levels at all stations (Figure 8). All stations exceeded the screening level for wigeon, scooter, tern, grebe, and skimmer. Nineteen stations exceeded the screening level for pelican. Stations 15-01 and 15-10 exceeded the screening level for turtle.
- Mercury concentrations were greater than Zeeman screening levels at six stations (Figure 9), which included four stations within Pond 12 and two stations within Pond 15. All stations exceeded the screening level for tern. Station 15-10 exceeded the screening level for skimmer.
- Nickel concentrations were relatively low, with the exception of Stations 15-01 and 15-10. Both stations exceeded the ERL value and Zeeman screening level for benthic invertebrates (Figure 10). Station 15-01 also exceeded Zeeman screening levels for sea lion and tern.

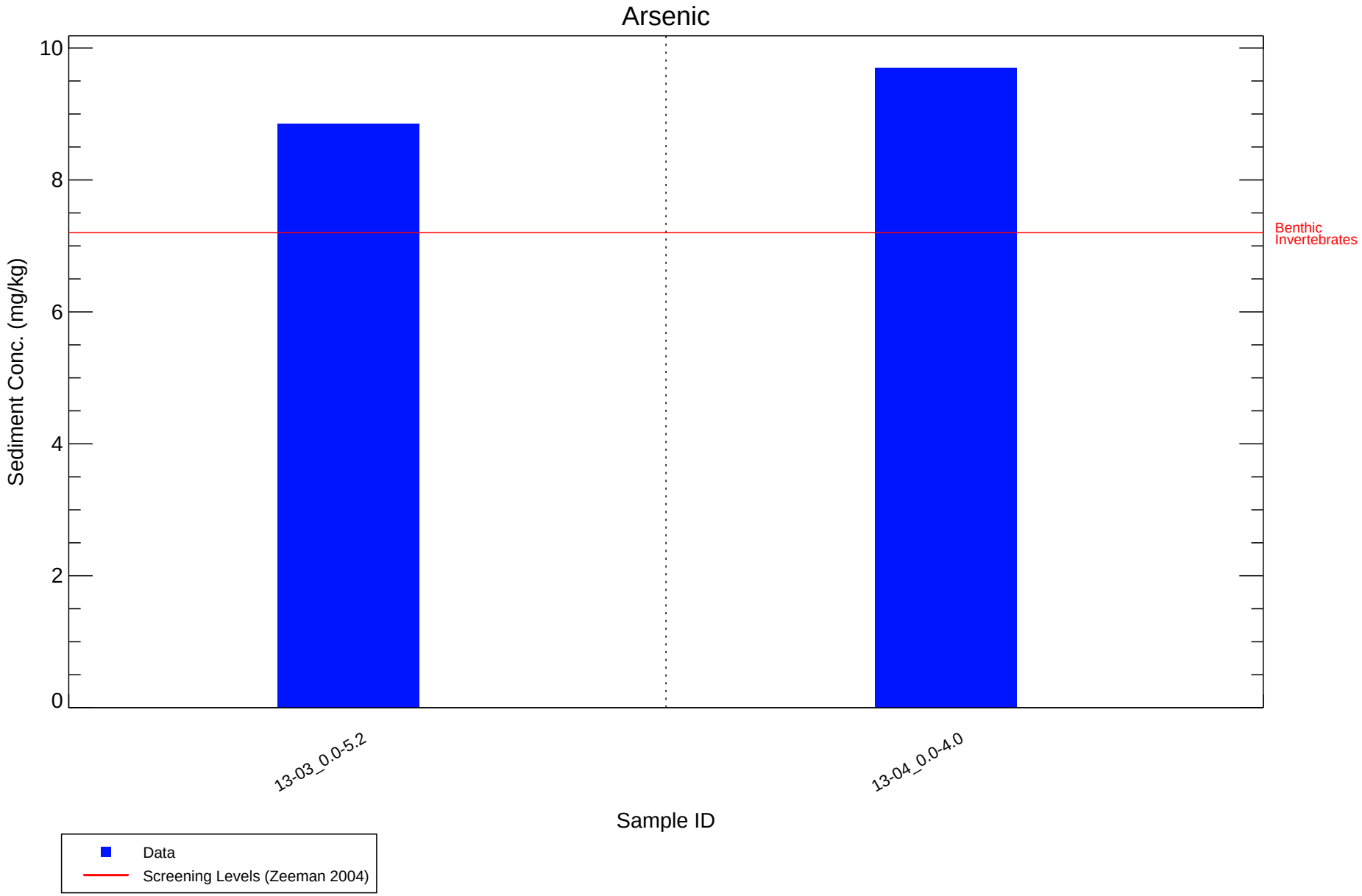

Figure 5

Sediment Samples Exceeding Zeeman 2004 Screening Levels - Arsenic
South San Diego Bay Salt Ponds 12, 13, 14, and 15

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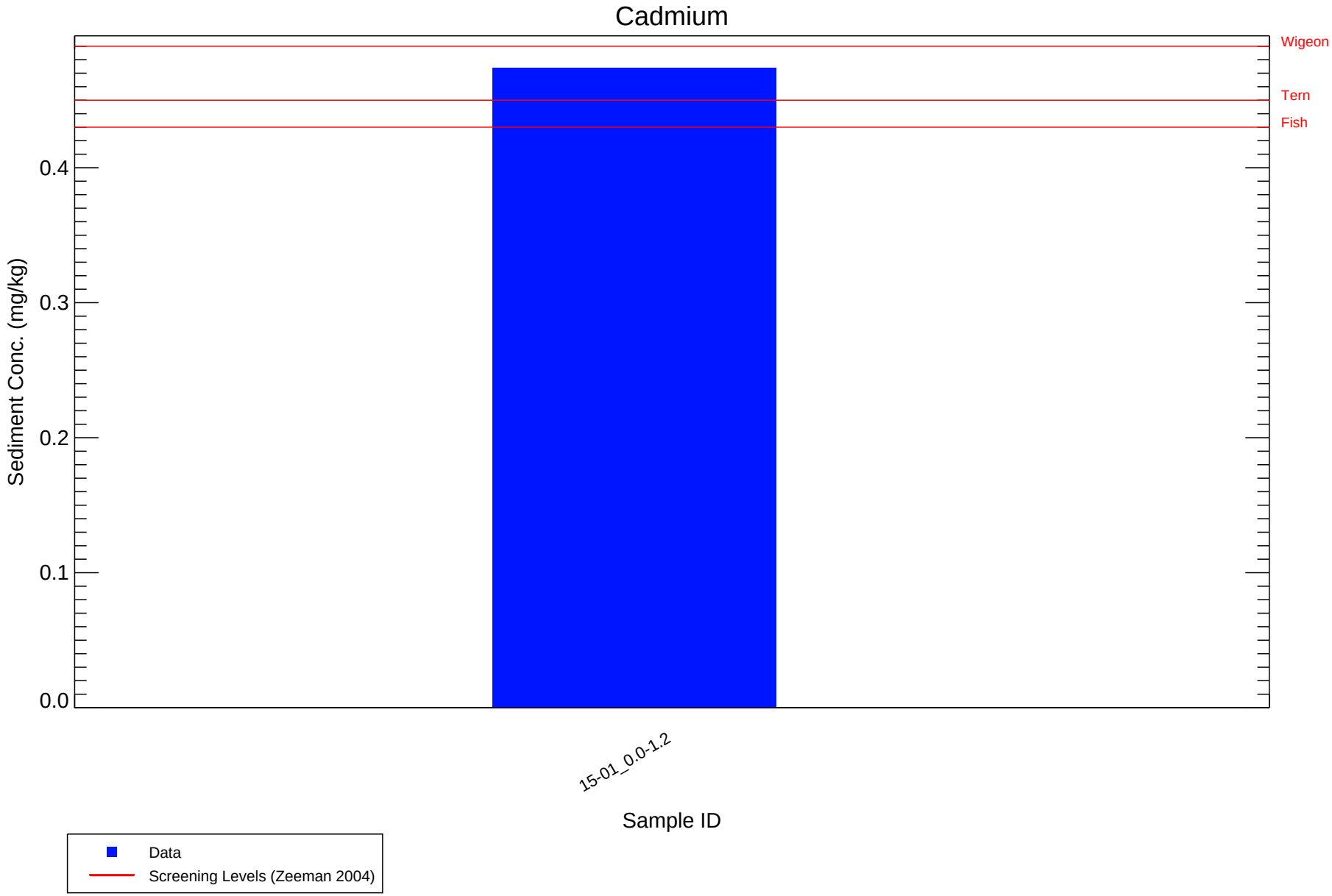

Figure 6

Sediment Samples Exceeding Zeeman 2004 Screening Levels - Cadmium
South San Diego Bay Salt Ponds 12, 13, 14, and 15

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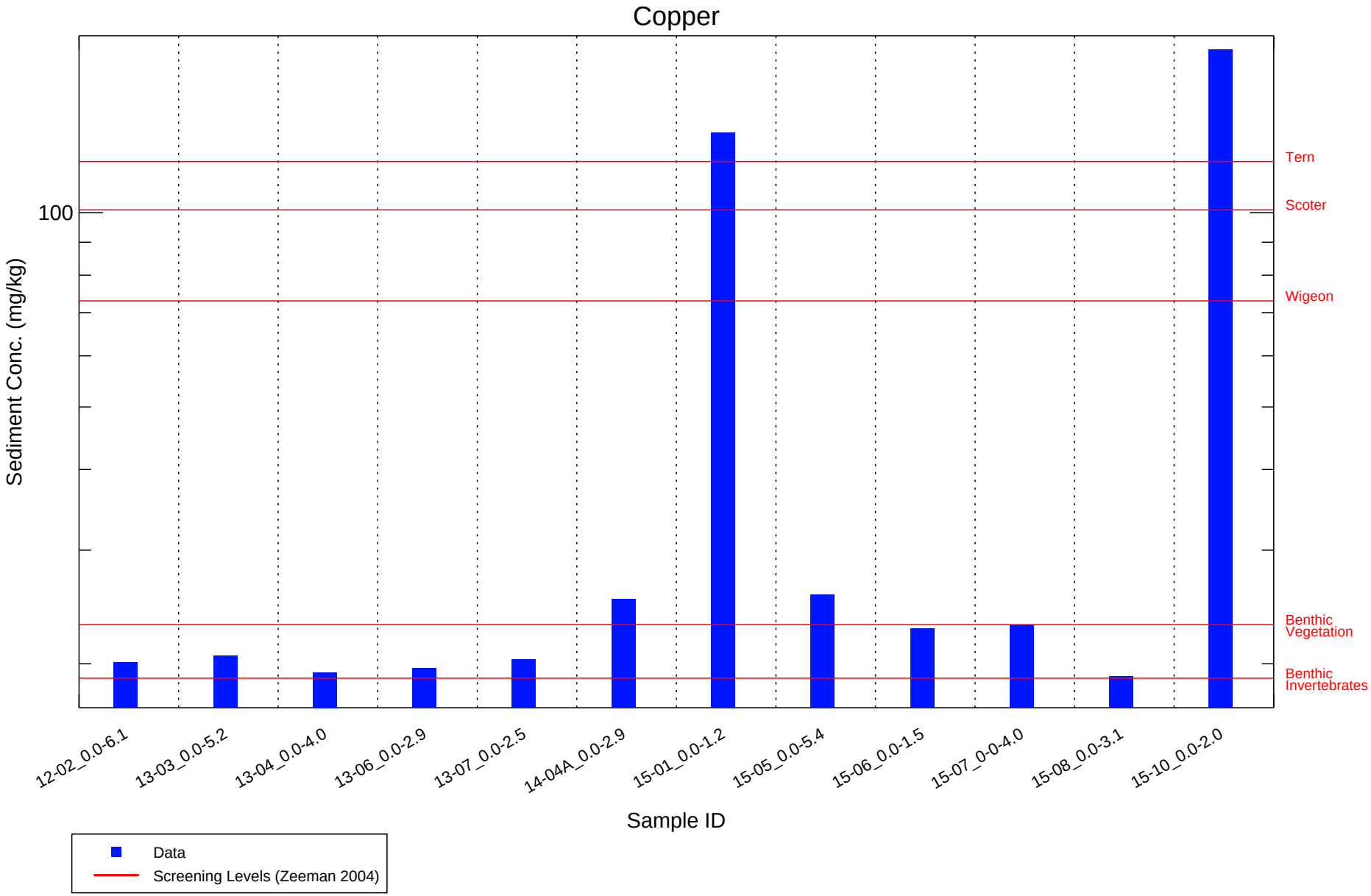

Figure 7

Sediment Samples Exceeding Zeeman 2004 Screening Levels - Copper
South San Diego Bay Salt Ponds 12, 13, 14, and 15

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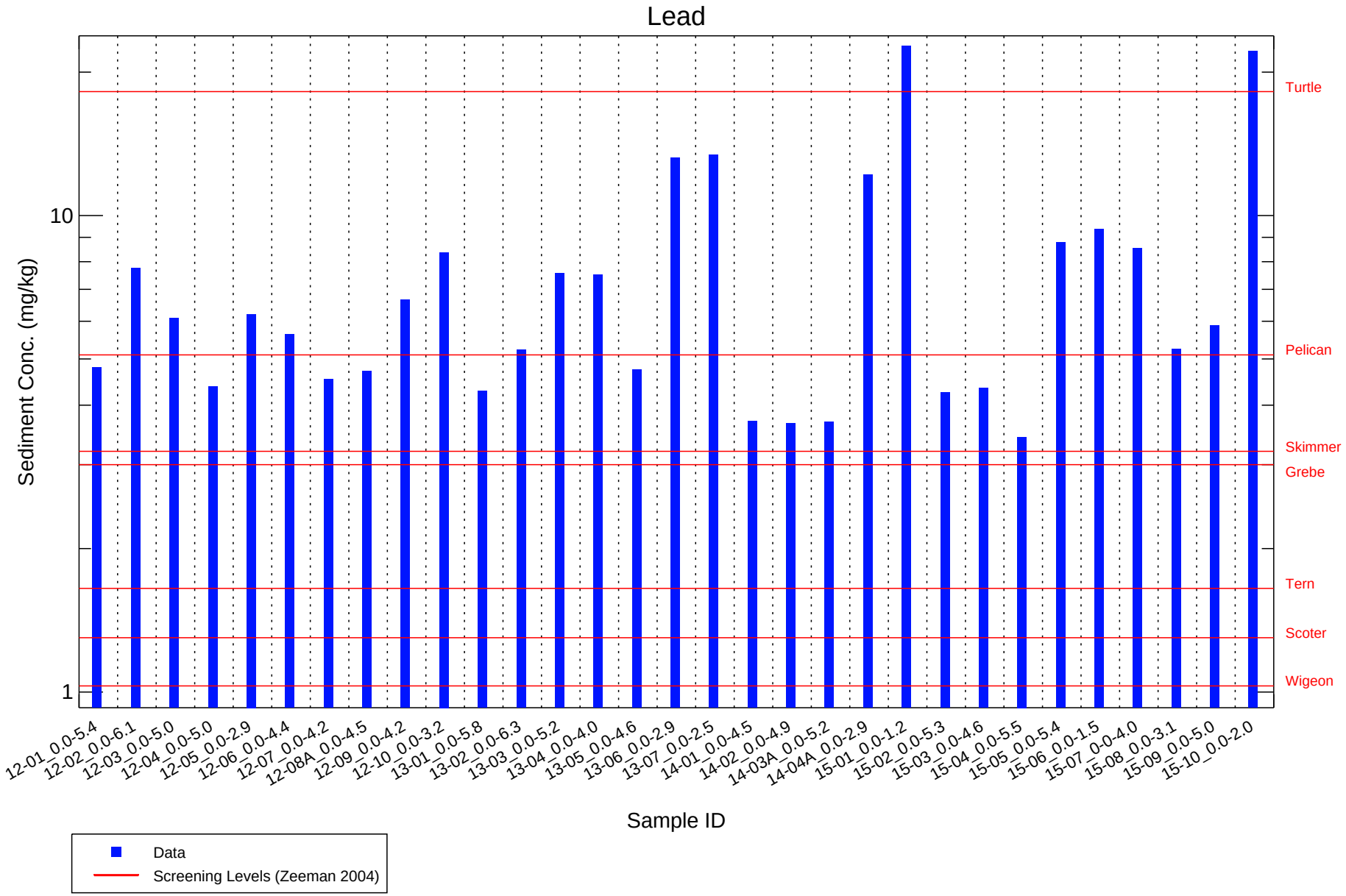

Figure 8

Sediment Samples Exceeding Zeeman 2004 Screening Levels - Lead
South San Diego Bay Salt Ponds 12, 13, 14, and 15

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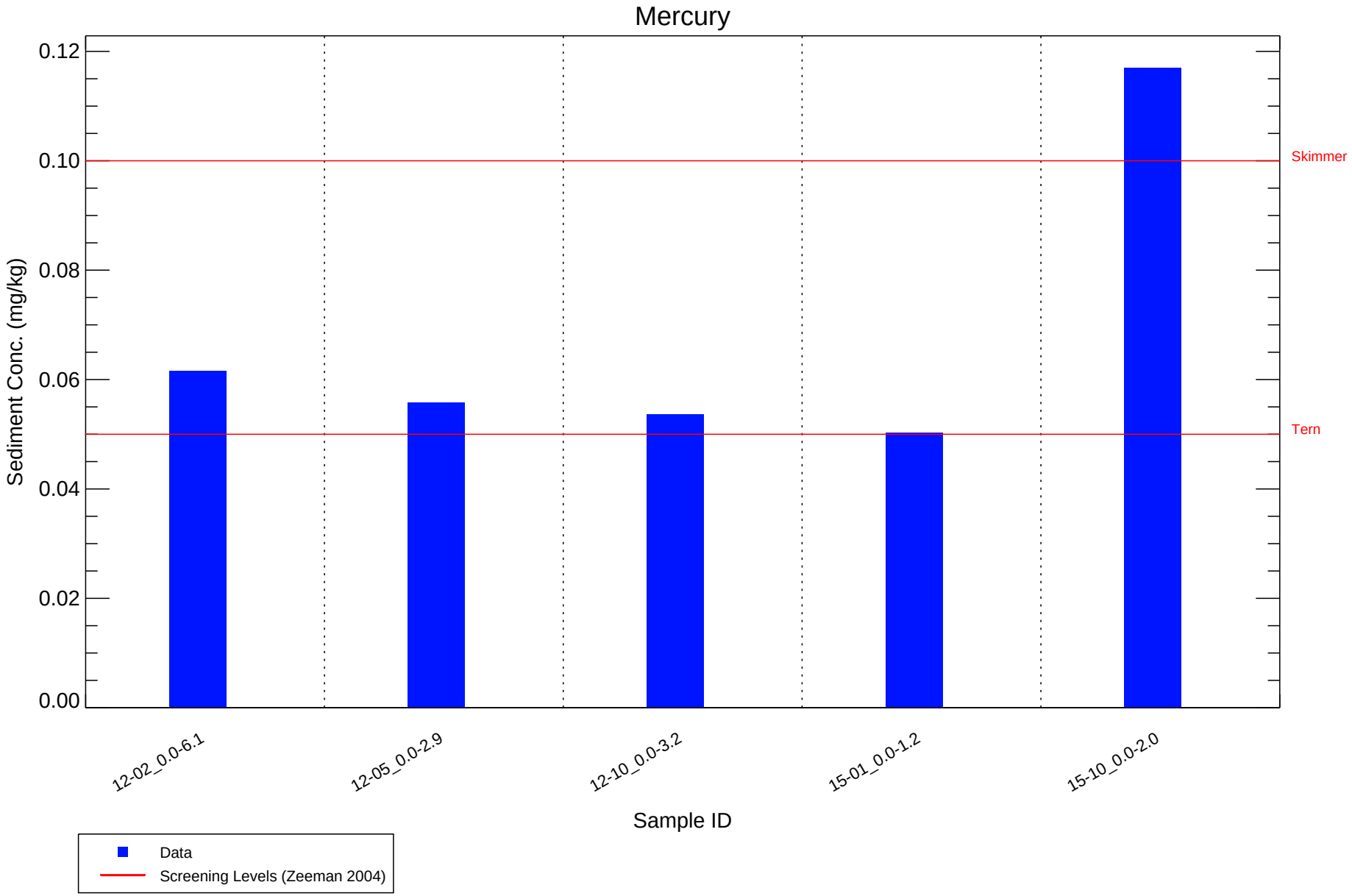

Figure 9

Sediment Samples Exceeding Zeeman 2004 Screening Levels - Mercury
South San Diego Bay Salt Ponds 12, 13, 14, and 15

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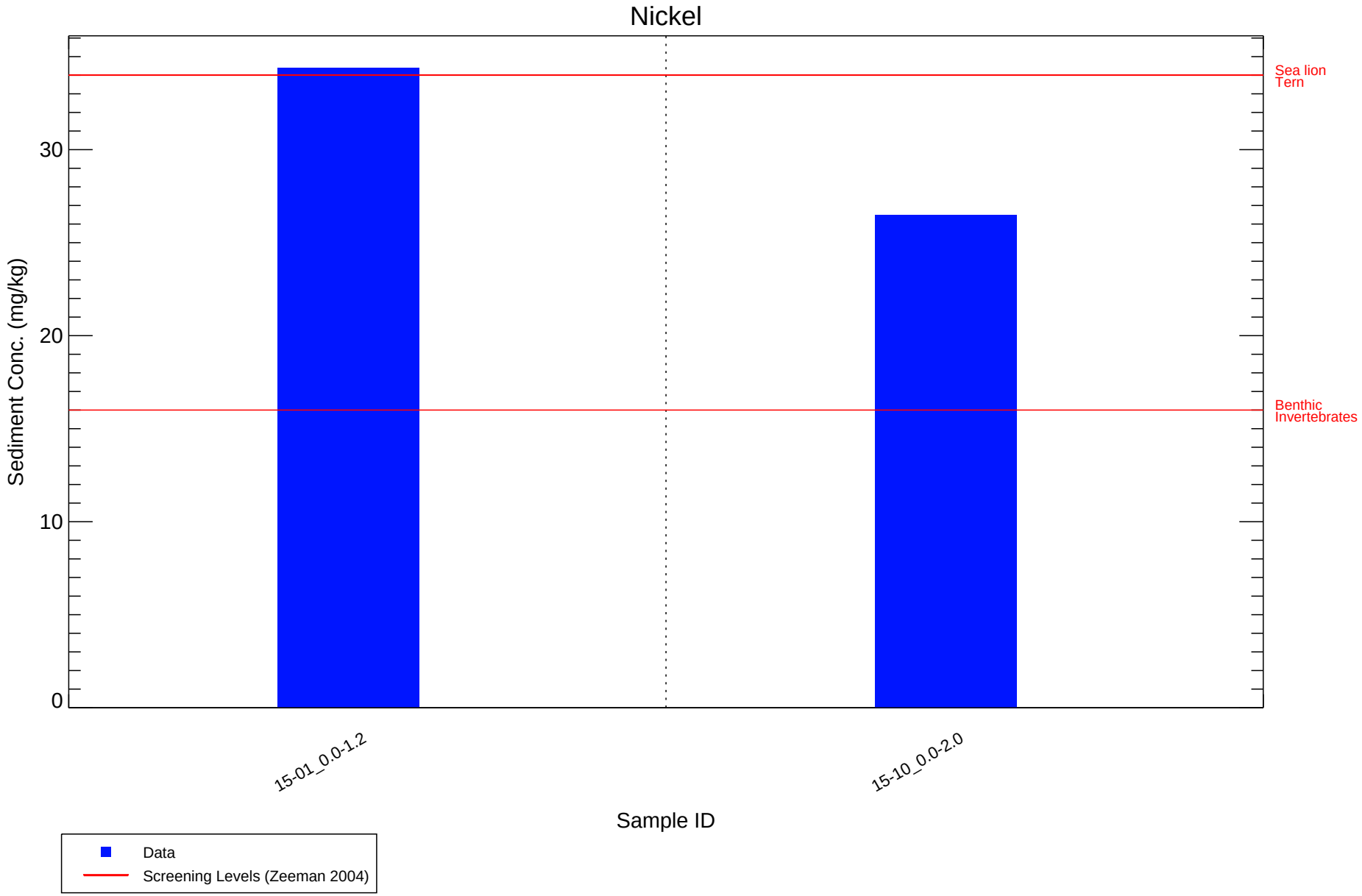

Figure 10

Sediment Samples Exceeding Zeeman 2004 Screening Levels - Nickel
South San Diego Bay Salt Ponds 12, 13, 14, and 15

ANCHOR QEA

3.2.3 Organics

PAHs and pesticides were detected in salt pond sediments. PAHs were measured at low concentrations in approximately half of the samples from Ponds 12 and 13 and all of the samples from Ponds 14 and 15. Station 15-01 exceeded the ERL value for total low molecular weight PAHs, while Station 12-09 exceeded the Residential RSL for benzo(a)pyrene.

DDTs and dieldrin were the only pesticides detected in salt pond sediments. DDTs were measured at four stations (13-07, 14-04A, 15-01, and 15-10). Station 15-01 exceeded the ERL values for 4,4'-DDE and total DDTs. Dieldrin was measured at four stations (12-10, 13-02, 13-07, and 14-04A). All concentrations were greater than the ERL value.

PCB congeners were not detected in salt pond sediment.

3.2.4 Quality Assurance/Quality Control

A review of analytical results for sediment was conducted to evaluate the laboratory's performance in meeting QA/QC guidelines outlined in the SAP (Anchor QEA 2013). The data validation report prepared by Anchor QEA is presented in Appendix C. All samples were analyzed within the appropriate holding times. Generally, QA/QC sample results were within the project-specified and/or laboratory control limits, with the following exceptions:

- Mercury was detected in the method blank at a concentration between the MDL and RL; however, this compound was not detected in the associated samples. Data are not expected to be affected.
- The surrogate 2-fluorobiphenyl recovered at a concentration greater than control limits in samples SSDBSP-15-08_0.0-3.1, SSDBSP-12-07_0.0-4.2, and SSDBSP-12-03_0.0-5.0. All PCB results were non-detect in these samples; therefore, data are not expected to be affected.
- The surrogate 2,4,5,6-tetrachloro-m-xylene recovered at a concentration greater than control limits for SSDBSP-15-01_0.0-1.2, SSDBSP-15-201_0.0-1.2, and SSDBSP-15-101_0.0-1.2. Pesticide results in these samples may be biased high.
- Acenaphthene, acenaphthylene, fluorene, and phenanthrene recovered at concentrations less than control limits in the MS/MSD in SSDBSP-12-04_0.0-5.0. Associated sample results may be biased low.

Field QA/QC samples included duplicates, splits, and rinsate blanks. Field duplicate results were similar to the original samples, with two exceptions. At Station 15-01, lead was approximately six times greater than the original sample, and copper was approximately five times less than the original sample. These results indicate some natural variability at the site. Split sample relative percent difference (RPD) values were within 50 percent, with only minor exceptions. RPD values for selenium, fluoranthene, pyrene, and 1,6,7-trimethylnaphthalene were greater than 50 percent in at least one split sample. All concentrations were within five times the RL, and the difference between the split sample and original sample was less than two times the RL; therefore, data are not expected to be affected. Variability is expected to be higher at concentrations near the RL. Within field rinsate blanks, all concentrations were less than the RL.

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APPENDIX B LABORATORY REPORTS

APPENDIX C DATA VALIDATION REPORT

APPENDIX F2

Soil Characterization Program
Sampling and Analysis Report

FINAL

SAMPLING AND ANALYSIS REPORT
OTAY RIVER ESTUARY RESTORATION
SOIL CHARACTERIZATION PROGRAM

Prepared for

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March 2013

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LIST OF ACRONYMS AND ABBREVIATIONS

%R	percent recovery
µg	microgram
bgs	below ground surface
Calscience	Calscience Environmental Laboratories, Inc.
kg	kilogram
MLLW	mean low lower water
MOU	Memorandum of Understanding
MS	matrix spike
MSD	matrix spike duplicate
NAVD88	North American Vertical Datum of 1988
ORERP	Otay River Estuary Restoration Project
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
QA	quality assurance
QC	quality control
Red Tail	Red Tail Monitoring and Research, Inc.
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SAR	Sampling and Analysis Report
SVOC	semi-volatile organic compound
TOC	total organic carbon
TPH	total petroleum hydrocarbon
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

This Sampling and Analysis Report (SAR) provides an overview of data collection and sampling analysis activities that occurred during the May 2012 field effort in support of the Otay River Estuary restoration soil characterization program. Activities were completed in accordance with the equipment, procedures, and methods documented in the Sampling and Analysis Plan (SAP; Anchor QEA 2012).

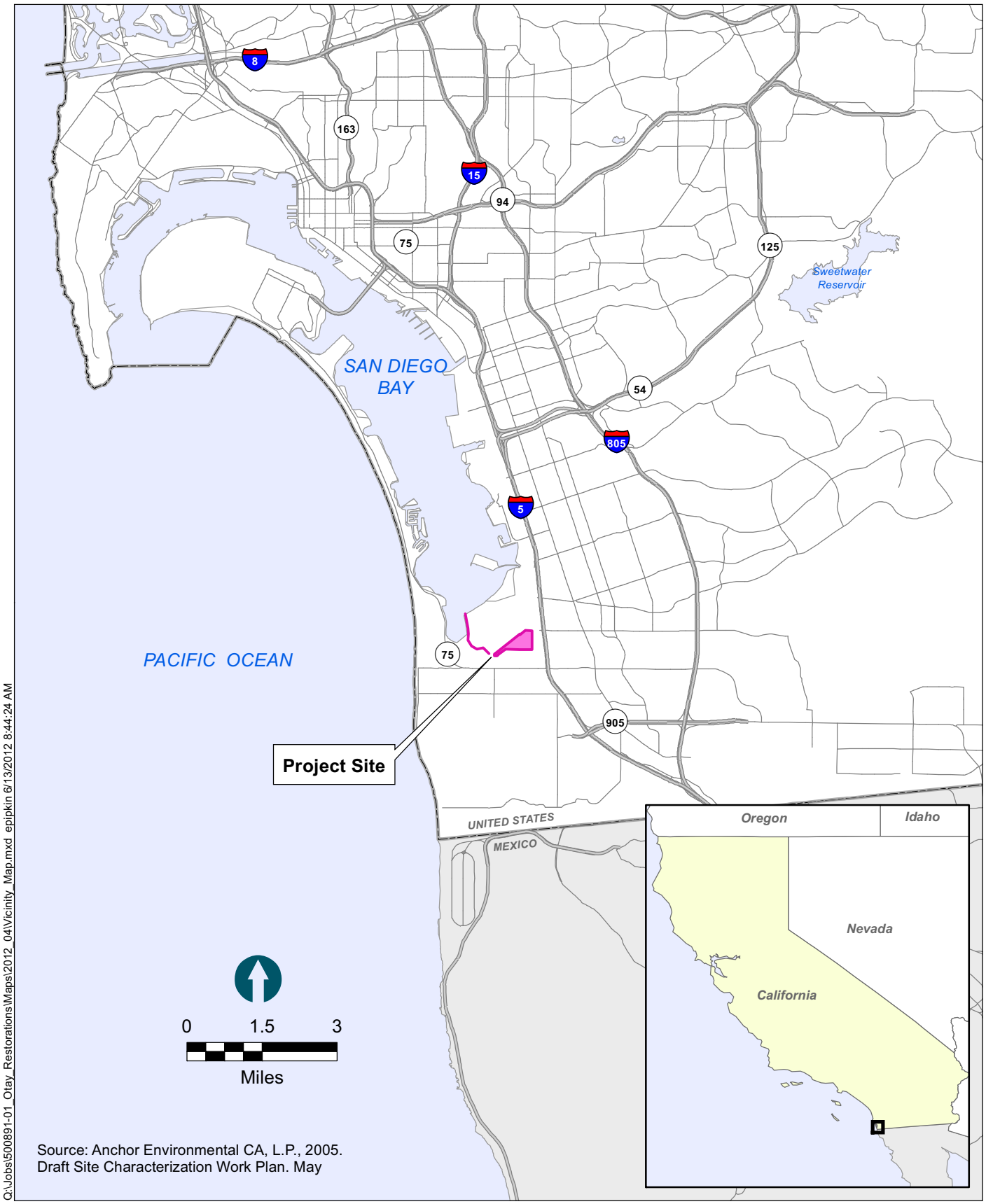
1.1 Study Objective

Poseidon Water, LLC is developing plans in coordination with the U.S. Fish and Wildlife Service (USFWS) to restore approximately 67 acres of disturbed wetlands and upland habitat within the Otay River Floodplain to functional estuarine and salt marsh habitats. The larger Otay River Estuary Restoration Project (ORERP) will involve the excavation of approximately 750,000 to 1 million cubic yards of material from this area to create an intertidal estuarine and salt marsh habitat system. The purpose of the May 2012 soil characterization program was to evaluate the magnitude, extent, and variability of physical and chemical soil and sediment properties throughout the area proposed for restoration.

1.2 Site Description

The Otay River Floodplain is located at the western terminus of the Otay River. The project site is included within the management boundaries of the South San Diego Bay Unit of the San Diego Bay National Wildlife Refuge. The property is located along Saturn Boulevard (19th Street) and is bounded by Interstate 5 to the east, Main Street and the Otay River to the north, and residential structures and the Imperial Sands Mobile Park (1810 Palm Avenue) to the south. San Diego Bay is northwest of the site (Figure 1).

The project site originally consisted of wetlands that were diked and drained decades ago. Fill material was imported to the site, and the area was converted to upland. The site is currently vacant and relatively flat.



ANCHOR QEA

Figure 1
Vicinity Map
Otay River Estuary Restoration Soil Characterization Program

The project site is depicted on Figure 2 and includes the following areas[1]:

- The northern portion of former evaporative Salt Pond 20A (Subarea 1)
- Former agricultural land (Subareas 2 and 5)
- A former agricultural equipment storage and supply area (Subarea 3)
- Former wastewater treatment ponds (Subareas 6A and 6B)
- Nestor Creek, which runs north-to-south approximately midway through the project site
- The final reaches of the Otay River, which run between raised levees immediately north of the project site then westward and northward into San Diego Bay

1.3 Project Team and Responsibilities

The soil characterization program was performed and managed by Anchor QEA, L.P., who worked with a team of subcontractors. Vironex provided drilling services for upland borings taken from the Otay River Floodplain Area and Subarea 3. Biologists from Dudek provided biological resource monitoring throughout the sampling program. During upland excavations (Otay River Floodplain and Subarea 3) and Nestor Creek sampling; ASM Affiliates provided archeological monitoring services; and Red Tail Monitoring and Research, Inc. (Red Tail), provided Native American monitoring services. All analytical testing was performed by Calscience Environmental Laboratories, Inc. (Calscience).

1 Subareas for the Otay River Floodplain Area are referenced in parentheses and provided on Figure 2 for reference; these subareas were originally developed based on historic uses of the site and a 2005 restoration conceptual plan.

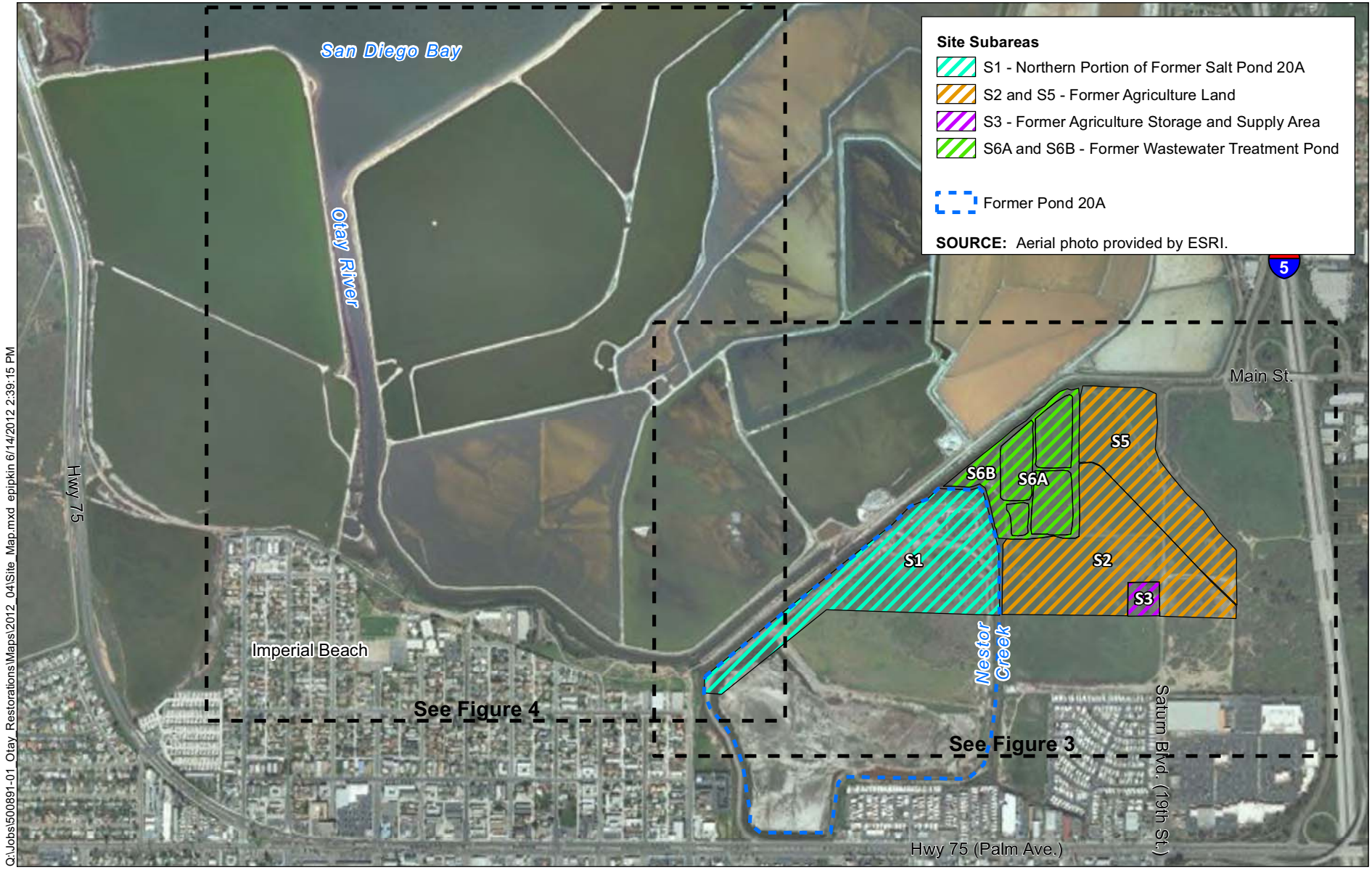


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Figure 2
Site Plan
Otay River Estuary Restoration Soil Characterization Program

2 SAMPLING METHODS

2.1 Sediment Collection and Sample Processing

Sampling locations were pre-selected based on the current conceptual plan for ORERP (Figure 3). The sampling program was subdivided into four areas: the Otay River Floodplain Area (the majority of the ORERP site), Subarea 3 (the former agricultural equipment storage and supply area [subjected to a higher density of sampling]), Nestor Creek, and the Otay River. Sampling areas are presented on Figures 3 and 4.

All sampling points were located and advanced in compliance with the SAP (Anchor QEA 2012), with a few exceptions and deviations needed to avoid biological and Native American resources (see Section 2.3). To proceed with the soil characterization effort in May 2012, site access and regulatory approvals were obtained from the USFWS, the Port of San Diego, and the County of San Diego. Table 1 provides a summary of the four sampling areas and associated number of cores, the approximate surface elevations, sample depths, and elevations achieved. Vertical datum is presented in North American Vertical Datum of 1988 (NAVD88).

Table 1
Sampling Location Coordinates, Elevations, and Depths Achieved

Sample ID	Longitude	Latitude	Ground Surface Elevation (feet NAVD88)	Depth Achieved (feet bgs)	Elevation Achieved (feet NAVD88)
Otay River Floodplain Area					
ORFP-1	-117.10448	32.58796	+8	16	-8
ORFP-2	-117.10220	32.58949	+12	20	-8
ORFP-3	-117.09933	32.59031	+12	20	-8
ORFP-4	-117.09960	32.59117	+10	18	-8
ORFP-5	-117.09785	32.59017	+12	20	-8
ORFP-6	-117.09801	32.59100	+12	20	-8
ORFP-7	-117.09682	32.59266	+9	17	-8
ORFP-8	-117.09625	32.59032	+11	19	-8
ORFP-9	-117.09553	32.59135	+11	19	-8
ORFP-10	-117.09621	32.59200	+11	19	-8

Sample ID	Longitude	Latitude	Ground Surface Elevation (feet NAVD88)	Depth Achieved (feet bgs)	Elevation Achieved (feet NAVD88)
ORFP-11	-117.09525	32.59221	+12	20	-8
ORFP-12	-117.09604	32.59266	+8	16	-8
ORFP-13	-117.09682	32.59266	+11	19	-8
ORFP-14	-117.09379	32.59039	+14	22	-8
ORFP-15	-117.09426	32.59146	+14	22	-8
ORFP-16	-117.09425	32.59327	+12	20	-8
Subarea 3					
S3-1	-117.09345	32.59012	+16	22	-6
S3-2	-117.09317	32.59011	+16	22	-6
S3-3	-117.09302	32.59012	+16	22	-6
S3-4	-117.09349	32.59001	+16	22	-6
S3-5	-117.09337	32.59003	+16	22	-6
S3-6	-117.09309	32.58997	+16	22	-6
S3-7	-117.09346	32.58996	+16	22	-6
Nestor Creek					
NC-1	-117.09755	32.59242	+5	13	-8
NC-2A	-117.09702	32.58973	+4	7	-3
NC-2B	-117.09696	32.58973	+10	18	-8
Otay River					
OR-1	-117.11551	32.59948	-2	6	-8
OR-2	-117.11520	32.59766	-1	4.2	-5.2
OR-3	-117.11462	32.59586	0	5.8	-5.8
OR-4	-117.11444	32.59394	0	5.2	-5.2
OR-5	-117.11452	32.59189	0	5.2	-5.2
OR-6	-117.11353	32.5908	0	5.5	-5.5
OR-7	-117.11173	32.58970	0	4	-4
OR-8	-117.10950	32.58956	0	4.4	-4.4
OR-9	-117.10758	32.58842	+1	2	-1

Note:
bgs = below ground surface

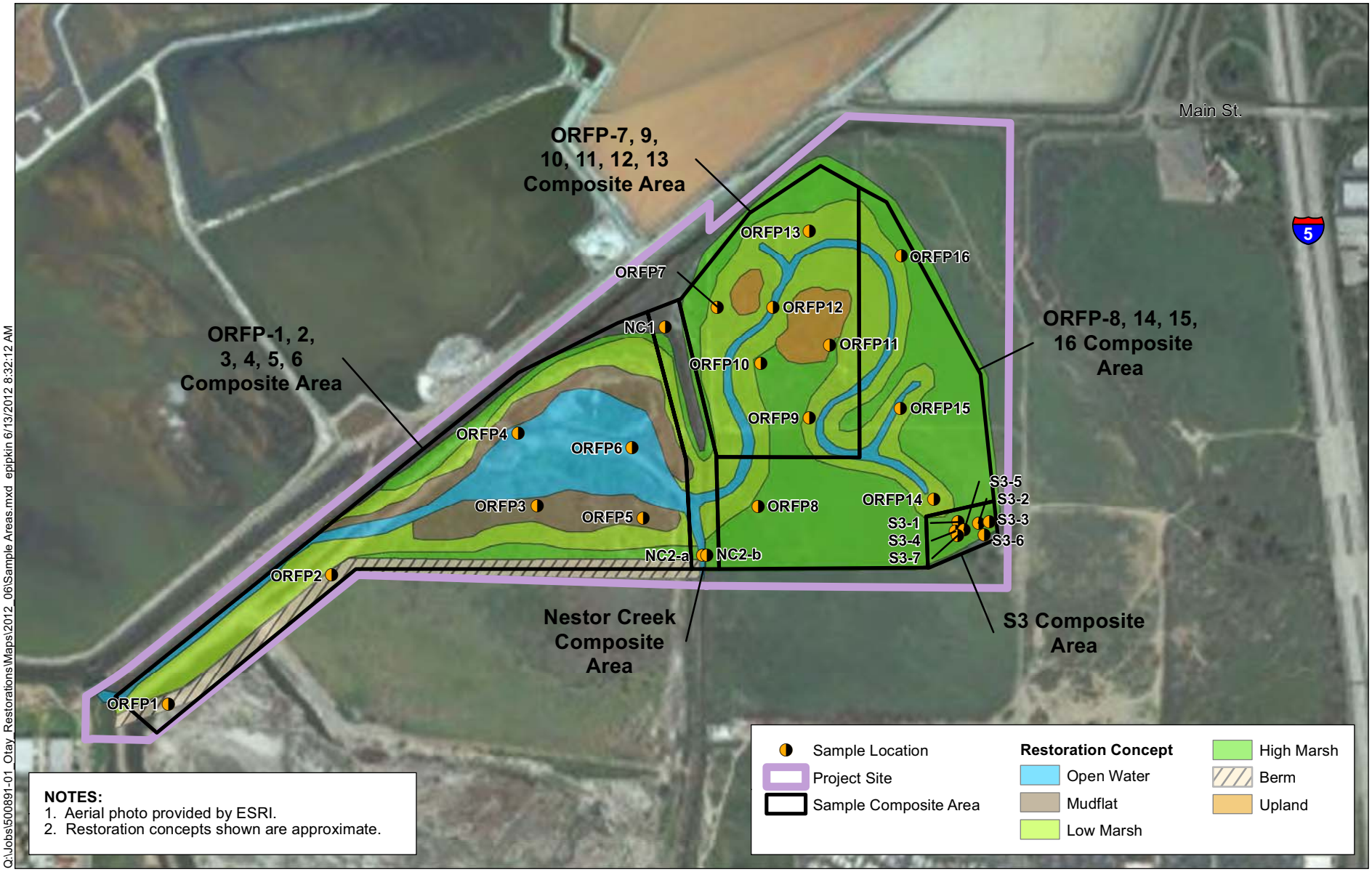

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Figure 3
Otay River Floodplain Sample Locations and Composite Areas
Otay River Estuary Restoration Soil Characterization Program

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Figure 4
Otay River Sample Locations
Otay River Estuary Restoration Soil Characterization Program

2.2 Summary of Sediment Collection Activities

2.2.1 Sample Collection Procedures

Soil and sediment sampling was conducted between May 1 and 11, 2012. The weather was warm and sunny through the duration of the field program.

Upland soil borings in the Otay River Floodplain and Subarea 3 were collected using a truck-mounted, direct-push Geoprobe rig (operated by Vironex). The rig advanced 2.3-inch-diameter core tubes using a Macro Core Sampler and Direct Push Technology to obtain soil cores to the full desired depth. To ensure each vertical profile was sampled, the Geoprobe rig was advanced and samples were extracted every 2 to 3 feet.

Sampling locations within Nestor Creek were accessed by foot only, and sediment samples were collected by hand auger. While attempting to collect the bottom soil/sediment intervals from NC-2, refusal was encountered at a depth of 7 feet or an approximate elevation of -3 feet NAVD88. The NC-2 sampling location was completed by advancing the direct-push Geoprobe rig adjacent to the creek to the desired elevation.

Sampling locations within the Otay River were accessed by foot and two small, inflatable Zodiac boats. Sediment cores were collected with hand-pushed fixed-piston cores. Refusal conditions were encountered at OR-7, OR-8, and OR-9 prior to reaching target sample depths.

Each soil core was characterized and documented on a boring log. Core samples were evaluated for evidence of stratigraphic subsurface differences, which was logged and physically described as separate vertical subsurface layers. Each soil sample was photographed, homogenized, and placed in appropriately labeled jars and bags for analysis. Field core logs, core photographs, and other associated documentation for the sampling effort are provided as Appendix A.

2.2.2 Biological, Archeological, and Native American Monitoring

Biologists from Dudek conducted pre-construction nesting bird surveys and biological monitoring during the sampling effort. Additional pre-construction surveys for nesting birds

were conducted by a qualified biologist in the early morning, immediately prior to geotechnical activities at each location scheduled for work during that day. Following completion of the daily, early morning nest surveys, geotechnical activities were monitored by a qualified biologist to ensure that any potential impacts to biological resources were avoided and minimized to the maximum extent feasible. Equipment was re-routed and testing activities were altered to avoid impacting vegetation, sensitive plants, and breeding birds.

Prior to initiating sampling activities at the site, archeologists from ASM Affiliates performed a review of site records on file at the South Coastal Information Center (at San Diego State University) to identify any known archeological sites in the project area. Once construction began, a qualified archaeologist was present on site to observe exploration activities within the Otay River Floodplain, Subarea 3, and Nestor Creek. Previous consultations with the USFWS determined that archeological monitoring would not be required for Otay River sampling. No cultural materials were identified in the spoils from any boring.

The Viejas Band of Kumeyaay Indians, a federally recognized Indian Tribe, has a Memorandum of Understanding (MOU) with the County and City of San Diego that a Native American monitor be present during all ground disturbing activities on lands within the County and City of San Diego's jurisdiction. A Native American monitor from Red Tail was on site during all ground disturbance activities.

2.2.3 Sample Processing

When penetration at a station was complete, the core length was recovered from the borehole and transported to the staging area. The core was then placed in a horizontal position and subdivided into 2-foot sample intervals and labeled. Photographs were taken of each core length and are included in Appendix A. Soil from each 2-foot interval was then homogenized in a mixing bowl with a sample collected for archive.

The remaining material was retained for additional compositing with the other subsamples from other areas within the specified composite depth interval. A sufficient volume of composited material was placed in one or more appropriately sized sample jars, as needed for

physical and chemical analyses planned for that composite sample. The sediment sample processing and testing strategy is presented in Table 2.

Table 2
Sediment Sample Processing and Testing Strategy

Sample Area	Composite Sample ID (each corresponds to defined depth interval)	Boring IDs used to Create Composites	Sample from Each 2-Foot Interval Archived	Composite Sample Analyzed for Grain Size, TOC, Pesticides, Metals, and TPHs	Composite Sample Analyzed for PCBs and SVOCs
Otay River Floodplain	A B C D	ORFP-1 ORFP-2 ORFP-3 ORFP-4 ORFP-5 ORFP-6	Yes	Yes	Yes
	A B C D	ORFP-7 ORFP-9 ORFP-10 ORFP-11 ORFP-12 ORFP-13	Yes	Yes	Yes
	A B C D	ORFP-08 ORFP-14 ORFP-15 ORFP-16	Yes	Yes	No
Subarea 3	A B C D	S3-1 S3-2 S3-3 S3-4 S3-5 S3-6 S3-7	Yes	Yes	Yes
Nestor Creek	A B	NC-1 NC-2	Yes	Yes	No

Sample Area	Composite Sample ID (each corresponds to defined depth interval)	Boring IDs used to Create Composites	Sample from Each 2-Foot Interval Archived	Composite Sample Analyzed for Grain Size, TOC, Pesticides, Metals, and TPHs	Composite Sample Analyzed for PCBs and SVOCs
Otay River	A B C	OR-1 OR-2 OR-3	Yes	Yes	No
	A B C	OR-4 OR-5 OR-6	Yes	Yes	No
	A B C	OR-7 OR-8 OR-9	Yes	Yes	No

Notes:
PCBs = polychlorinated biphenyls
SVOCs = semi-volatile organic carbons
TOC = total organic carbon
TPHs = total petroleum hydrocarbons

Each core section was logged through the full penetration depth. All logs are provided in Appendix A. A soil description of each core sample was recorded on the core log for the following parameters as appropriate and present:

- Sample recovery (depth in feet of penetration and sample compaction)
- Physical soil description (soil type, density/consistency of soil, and color)
- Odor (e.g., hydrogen sulfide and petroleum)
- Presence of vegetation or organic content
- Debris
- Any other distinguishing characteristics or features

2.2.4 Sample Compositing

The sample compositing scheme differed slightly for the various exploration subareas. Soil for each representative composite was homogenized until it appeared uniform in color and texture. Each composite sample consisted of an appropriate representative proportion of material from each individual sample. Sediment samples were placed into labeled, pre-cleaned sample jars and stored on ice until delivered to laboratory personnel. Soil samples

were delivered to the laboratory within 24 hours of sampling. Signed and dated chain-of-custody forms are provided with the laboratory reports in Appendix B.

2.2.4.1 Otay River Floodplain

Composite samples were prepared for four vertical layers from samples collected in three subareas of the site:

1. Sampling locations ORFP-1,2,3,4,5,6
2. Sampling locations ORFP-7,9,10,11,12,13
3. Sampling locations ORFP-8,14,15,16

Physical and chemical testing for the first two listed composite samples included grain size, total organic carbon (TOC), metals, pesticides, total petroleum hydrocarbons (TPHs), polychlorinated biphenyls (PCBs), and semi-volatile organic carbons (SVOCs). The third listed composite was analyzed for grain size, TOC, heavy metals, pesticides, and TPHs. Table 3 summarizes the composite samples created from different elevation intervals within the three subareas of the site.

Table 3
Otay River Floodplain Area Sampling and Compositing Scheme

Component Sampling Locations	Composite Sample ID	Elevation Interval Represented
ORFP-1,2,3,4,5,6	A	Surface to 1 foot bgs
	B	1 foot bgs to 0 feet NAVD88
	C	0 to -6 feet NAVD88
	D	-6 to -8 feet NAVD88
ORFP-7,9,10,11,12,13	A	Surface to 1 foot bgs
	B	1 foot bgs to 0 feet NAVD88
	C	0 to -6 feet NAVD88
	D	-6 to -8 feet NAVD88

Component Sampling Locations	Composite Sample ID	Elevation Interval Represented
ORFP-8,14,15,16	A	Surface to 1 foot bgs
	B	1 foot bgs to 0 feet NAVD88
	C	0 to -6 feet NAVD88
	D	-6 to -8 feet NAVD88
Total number of composite samples		**12**

Note:
bgs = below ground surface

Although the SAP (Anchor QEA 2012) called for a separate compositing of ORFP-3 and ORFP-11 for the purposes of testing for PCBs and SVOCs, a field decision was made to analyze for these constituents within the larger composite group based on some heterogeneity of soils encountered on site. This modification from the SAP provided better representation of PCB and SVOC concentrations within these portions of the site.

2.2.4.2 Subarea 3

Samples were collected throughout Subarea 3 and composited by elevation interval as presented in Table 4. Physical and chemical testing for each of the four composite samples included grain size, TOC, heavy metals, pesticides, TPHs, PCBs, and SVOCs. Table 4 summarizes the composite samples created from different elevation intervals within Subarea 3.

Table 4
Subarea 3 Compositing Scheme

Component Sampling Locations	Composite Sample ID	Elevation Interval Represented
S3-1 S3-2 S3-3 S3-4 S3-5 S3-6 S3-7	A	Surface to 1 foot bgs
	B	1 foot bgs to +6 feet NAVD88
	C	+6 to -4 feet NAVD88
	D	-4 to -6 feet NAVD88
Total number of composite samples		**4**

Note:
bgs = below ground surface

2.2.4.3 Nestor Creek

Samples were collected from the Nestor Creek locations and composited by elevation interval as presented in Table 5. Physical and chemical testing for each of the three composite samples included grain size, TOC, heavy metals, pesticides, and TPHs. Table 5 summarizes the composite samples created from different elevation intervals within Nestor Creek.

Table 5
Nestor Creek Compositing Scheme

Component Sampling Locations	Composite Sample ID	Elevation Interval Represented
NC-1 NC-2	A	Surface to 1 foot bgs
	B	1 foot below mudline to -6 feet NAVD88
	C	-6 to -8 feet NAVD88
Total number of composite samples		**3**

Note:
bgs = below ground surface

2.2.4.4 Otay River

Samples were composited in three groups based relative location within the river (as presented in Table 6). Physical and chemical testing for each of the six composite samples

included grain size, TOC, heavy metals, pesticides, and TPHs. Table 6 summarizes the composite samples created from the Otay River cores.

Table 6
Otay River Compositing Scheme

Component Sampling Locations	Composite Sample ID	Elevation Interval Represented
OR-1 OR-2 OR-3	A	Mudline to -4 feet MLLW
	B	-4 to -6 feet MLLW
OR-4 OR-5 OR-6	A	Mudline to -4 feet MLLW
	B	-4 to -6 feet MLLW
OR-7 OR-8 OR-9	A	Mudline to -4 feet MLLW
	B	-4 to -6 feet MLLW
Total number of composite samples		**6**

Note:
MLLW = mean lower low water

2.3 Deviations from the SAP

Sampling locations and site access routes were determined in the field based on consultation with on-site biological monitors to avoid sensitive habitat or vegetation. Similarly, adjustments to operations during sampling activities were made as needed due to the potential presence of archeological or Native American artifacts in coordination with on-site resource monitors.

Other than minor deviations to avoid sensitive habitat or significant brush, samples were collected in accordance with the SAP (Anchor QEA 2012). However, S3-3 failed to obtain good soil recovery, potentially because of its location in proximity to a large tree trunk and root system. This boring was relocated to a new position approximately 10 feet away and redone, with successful recovery.

3 RESULTS OF PHYSICAL AND CHEMICAL ANALYSES

3.1 Soil and Sediment Composite Samples

Soil and sediment composite samples were analyzed for grain size, total solids, TOC, pesticides, metals, TPHs, PCBs, and SVOCs in accordance with test methods provided in the SAP (Anchor QEA 2012). Results of physical and chemical analyses on composite samples are presented in Table 7. Laboratory reports are provided in Appendix B.

3.1.1 Physical Results

Grain size, total solids, and TOC analyses were performed on all composite samples. Physical testing results and distribution plots of grain size are provided in Appendix B. Soil and sediment were predominately found to consist of silts and clays, with pockets of fine to medium sand.

3.1.2 Chemical Results

Chemical analysis was performed on the composite samples as indicated in Table 2. Results are presented in Table 7, and the laboratory reports from Calscience are provided in Appendix B. All results are expressed in dry weight unless otherwise indicated. Target detection limits were provided in the SAP (Anchor QEA 2012). Actual detection limits and raw data for analyses are provided in Appendix B.

3.1.2.1 Metals

Metals were detected in all surface and subsurface composite samples. Metal concentrations in surface and subsurface soils are similar across all areas sampled, with the exception of composite samples from ORFP-7,9,10,11,12,13. Samples from this area contained elevated concentrations of metals, including copper, lead, and zinc.

3.1.2.2 Pesticides

Pesticides—DDT compounds, toxaphene, and dieldrin—were detected in the surface and/or subsurface samples of composites from the majority of samples.

Table 7
Results of Physical and Chemical Analyses of Soil and Sediment Composite Samples

Area	Otay River						Otay River Flood Plain													Nestor Creek				Subarea 3				
Subarea Name	OR-1,2,3		OR-4,5,6		OR-7,8,9		ORFP-1,2,3,4,5,6				ORFP-7,9,10,11,12,13				ORFP-8,14,15,16					NC-1 and NC-2				S3				
Composite Sample ID	OR-1,2,3-A	OR-1,2,3-B	OR-4,5,6-A	OR-4,5,6-B	OR-7,8,9-A	OR-7,8,9-B	A-12	B-12	C-12	D-12	A-12	B-12	C-12	D-12	A-12	B-12	C-12	D-12	D-12-DUP	A-12	B-12	B-12-DUP	C-12	A-12	B-12	B-12-DUP	C-12	D-12
Depth Interval/Elevation Range	Mudline to -4 feet MLLW	-4 to -6 feet MLLW	Mudline to -4 feet MLLW	-4 to -6 feet MLLW	Mudline -4 feet MLLW	-4 to -6 feet MLLW	Ground surface to 1 foot bgs	1 foot bgs to 0 feet NAVD88	0 to - 6 feet NAVD88	-6 to -8 feet NAVD88	Ground surface to 1 foot bgs	1 foot bgs to 0 feet NAVD88	0 to - 6 feet NAVD88	-6 to -8 feet NAVD88	Ground surface to 1 foot bgs	1 foot bgs to 0 feet NAVD88	0 to - 6 feet NAVD88	-6 to -8 feet NAVD88	-6 to -8 feet NAVD88	Ground surface to 1 foot bgs	1 foot bgs to -6 feet NAVD88	1 foot bgs to -6 feet NAVD88	-6 to -8 feet NAVD88	Ground surface to 1 foot bgs	1 foot bgs to +6 feet NAVD88	1 foot bgs to +6 feet NAVD88	+6 to -4 feet NAVD88	-4 to -6 feet NAVD88
Sample Date	5/11/2012	5/11/2012	5/10/2012	5/10/2012	5/9/2012	5/9/2012	5/8/2012	5/8/2012	5/8/2012	5/8/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012
Conventional Parameters (percent)																												
Total organic carbon	0.81	0.49	0.71	1.1	1.5	3.6	0.37	0.65	0.66	0.84	0.53	0.46	0.31	0.23	0.60	0.56	0.18	0.20	0.26	0.97	0.47	0.46	0.23	0.58	0.39	0.5	0.15	0.04 J
Total solids	64.0	71.1	66.4	65.8	57.6	50.4	94.4	82.1	79.8	83.0	93.1	84.3	81.7	79.6	97.3	77.1	81.8	83.4	83.2	59	73.8	74.7	79.5	96.4	86.5	85.5	85.2	84.1
Clay (less than 0.00391mm)	14.84	11.88	13.77	23.34	23.51	13.98	7.61	14.73	19.76	21.27	5.24	12.92	15.29	16.49	1.45	8.63	16.88	13.36	NA	12.73	17.28	NA	12.19	6.36	19.15	NA	8.83	2.53
Silt (0.00391 to 0.0625mm)	37.72	37.37	35.79	59.76	52.36	51.49	24.95	51.58	60.17	60.38	27.39	38.47	40.94	49.99	7.28	20.14	51.19	49.24	NA	40.78	53.54	NA	43.26	17.23	55.25	NA	28.46	6.44
Total Silt and Clay (0 to 0.0625mm)	54.56	49.25	49.56	83.10	75.86	65.47	32.57	66.32	79.92	81.66	32.62	51.39	56.23	66.48	8.73	28.77	68.07	62.60	NA	53.51	70.82	NA	55.45	23.59	74.39	NA	37.29	8.96
Very Fine Sand (0.0625 to 0.125mm)	9.04	15.17	14.26	13.37	10.25	16.3	10.48	17.43	13.79	12.2	14.03	16.67	15.84	18.70	5.13	8.73	14.84	25.42	NA	14.84	16.63	NA	20.78	9.16	15.95	NA	13.11	4.04
Fine Sand (0.125 to 0.25mm)	7.21	11.30	15.55	3.23	6.60	9.89	12.77	6.78	4.38	4.95	15.78	10.95	10.16	11.00	10.28	14.22	7.84	10.27	NA	8.93	6.14	NA	12.79	14.54	7.41	NA	12.53	9.41
Medium Sand (0.25 to 0.5mm)	19.91	16.65	13.26	0.01	5.89	6.96	21.86	5.60	1.81	1.20	20.13	10.26	8.34	2.30	35.24	27.15	5.08	1.44	NA	9.10	3.68	NA	7.56	30.38	0.77	NA	16.22	25.03
Coarse Sand (0.5 to 1mm)	8.40	6.83	7.04	< 0.01	< 0.01	1.38	21.46	2.91	< 0.01	< 0.01	12.29	9.31	9.05	1.53	35.24	18.46	2.41	< 0.00	NA	11.79	1.66	NA	3.32	21.71	< 0.01	NA	15.65	32.13
Very Coarse Sand (1 to 2mm)	< 0.01	0.02	0.04	< 0.01	< 0.01	< 0.01	0.58	< 0.01	< 0.01	< 0.01	2.05	0.07	< 0.01	< 0.01	3.15	1.47	< 0.00	< 0.00	NA	0.10	< 0.01	NA	< 0.01	0.23	< 0.01	NA	2.32	9.32
Gravel (greater than 2mm)	0.87	0.78	0.30	0.29	1.40	< 0.01	0.29	0.96	0.10	< 0.01	3.09	1.35	0.39	< 0.01	2.13	1.21	1.77	0.28	NA	1.73	1.08	NA	0.10	0.38	1.48	NA	2.88	11.11
Metals (mg/kg)																												
Arsenic	5.04	3.51	4.79	5.69	6.71 B	7.96 B	1.88	2.87	2.83	2.51	4.16	4.19	3.94	4.77	1.80	2.62	2.28	2.69	2.27	4.510 B	3.25 B	3.50 B	2.45 B	2.34 B	2.71 B	2.33 B	2.19 B	1.57 B
Cadmium	0.207	0.091 J	0.16	0.105 J	0.385	0.144 J	0.024 J	0.021 J	0.029 J	0.026 J	0.488	0.405	0.451	0.521	0.665	0.107 J	0.063 J	0.035 J	0.036 J	0.178	0.066 J	0.068 J	0.038 J	0.337	0.098 J	0.061 J	0.035 J	< 0.015
Chromium	18.3	10.6	14.8	17.0	24.7	23.2	5.27	10.5	9.65	7.72	15.7	15.0	17.9	16.7	9.78	7.49	7.89	8.6	8.05	12.0	9.93	9.09	6.76	4.27	6.20	6.11	5.03	2.68
Copper	19.2	9.73	13.1	15.8	28.2	16.9	6.31	10.0	11.4	7.95	61.3	55.5	67.3	55.5	16.7	10.0	9.14	8.51	8.19	20.4	13.7	12.2	8.98	10.7	8.67	8.32	5.24	1.91
Lead	10.6	5.51	6.58	5.58	35.0	6.28	7.93	4.17	4.54	3.11	78.8	43.2	50.3	53.1	8.24	3.95	5.04	3.61	3.28	19.8	4.89	4.77	3.34	9.81	3.67	3.51	2.48	1.86
Mercury	0.038	0.018 J	0.024 J	0.019 J	0.064	< 0.012	< 0.006	< 0.007	< 0.007	< 0.007	< 0.006	0.009 J	< 0.007	< 0.007	0.038	< 0.008	< 0.007	< 0.007	< 0.007	0.024 J	< 0.008	< 0.008	< 0.007	0.009 J	< 0.007	< 0.007	< 0.007	< 0.007
Nickel	7.71	4.51	6.17	7.39	10.6	10.5	8.130 B	4.360 B	4.480 B	3.320 B	5.35	6.35	6.80	7.04	3.45	3.45	3.55	4.78	3.70	6.04	4.95	4.62	3.28	2.58	3.63	3.21	2.41	1.68
Selenium	< 0.086	< 0.077	< 0.082	< 0.083	< 0.088	< 0.100	< 0.054	< 0.062	< 0.063	< 0.061	< 0.054	< 0.060	< 0.062	< 0.064	< 0.052	< 0.066	< 0.062	< 0.061	< 0.061	< 0.086	< 0.069	< 0.068	< 0.064	< 0.052	< 0.059	< 0.059	< 0.059	< 0.06
Silver	0.115 J	0.045 J	0.087 J	0.065 J	0.187	0.062 J	0.015 J	0.016 J	0.043 J	0.047 J	0.289	0.247	0.308	0.253	0.579	0.084 J	0.037 J	0.025 J	0.024 J	0.147 J	0.036 J	0.037 J	0.024 J	0.090 J	0.048 J	0.037 J	0.019 J	< 0.012
Zinc	67.4	35.2	52.9	51.3	96.7	59.7	22.8	33.2	37.1	28.3	177	153	167	156	53.3	90.1	27.3	28.1	26.9	71.9	41.9	41.0	29.1	56.3	28.5	32.7	19.2	12.9
TPH (mg/kg)																												
TPH (as diesel)	< 7.5	< 6.8	< 7.2	< 7.3	20 HD	< 9.5	< 5.1	< 5.9	< 6.0	< 5.8	29 HD	< 5.7	< 5.9	< 6.0	8.6 HD	< 6.2	< 5.9	< 5.8	< 5.8	< 8.2	< 6.5	< 6.4	< 6.1	20 HD	< 5.6	< 5.6	< 5.6	< 5.7
Pesticides (µg/kg)																												
2,4'-DDD	< 0.53	< 0.48	< 0.51	< 0.51	< 0.59	< 0.67	< 0.36	< 0.41	< 0.42	< 0.41	0.84 J	< 0.40	< 0.41	< 0.43	16	1.3	< 0.41	< 0.41	< 0.41	3.2	< 0.46	< 0.45	< 0.43	1.7	< 0.39	< 0.40	< 0.40	< 0.40
2,4'-DDE	< 0.48	< 0.43	< 0.46	< 0.46	< 0.53	< 0.61	< 0.32	< 0.37	< 0.38	< 0.37	1.3	< 0.36	< 0.37	< 0.38	8.1	0.48 J	< 0.37	< 0.37	< 0.37	2.3	< 0.41	< 0.41	< 0.38	2.5	< 0.35	< 0.36	< 0.36	< 0.36
2,4'-DDT	< 0.47	< 0.42	< 0.45	< 0.46	< 0.52	< 0.60	< 0.32	< 0.37	< 0.38	< 0.36	< 0.32	0.36 J	< 0.37	< 0.38	54	0.53 J	< 0.37	< 0.36	< 0.36	13	< 0.41	< 0.40	< 0.38	21	0.58 J	0.67 J	< 0.35	< 0.36
4,4'-DDD	< 0.49	0.61 J	< 0.48	< 0.48	3.4	< 0.63	< 0.33	< 0.38	< 0.40	< 0.38	2.3	2.1	< 0.39	< 0.40	35	5.3	0.44 J	< 0.38	< 0.38	23	< 0.43	< 0.42	< 0.40	24	0.71 J	1.0 J	< 0.37	< 0.38
4,4'-DDE	1.1 J	3.1	1.4 J	0.72 J	6.7	< 0.59	0.50 J	< 0.36	< 0.37	< 0.36	19	1.7	< 0.37	< 0.38	880	47	2.0	< 0.36	< 0.36	270	2.5	2.0	0.54 J	330	12	11	< 0.35	< 0.36
4,4'-DDT	< 0.52	< 0.47	< 0.50	< 0.51	2.1	< 0.66	< 0.35	< 0.41	< 0.42	< 0.40	8.3	11	< 0.41	< 0.42	350	3.9	< 0.41	< 0.40	< 0.40	120	< 0.45	< 0.45	< 0.42	110	3.1	2.6	< 0.39	< 0.40
Total DDTs	1.1 J	3.7 J	1.4 J	0.72 J	12.2	< 0.67	0.50 J	< 0.41	< 0.42	< 0.41	32 J	15 J	< 0.41	< 0.43	1340	59 J	2.4 J	< 0.41	< 0.41	430	2.5	2.0	0.54 J	490	16 J	15 J	< 0.40	< 0.40
Aldrin	< 0.49	< 0.44	< 0.47	< 0.48	< 0.55	< 0.62	< 0.33	< 0.38	< 0.39	< 0.38	< 0.34	< 0.37	< 0.39	< 0.40	< 0.65	< 0.41	< 0.38	< 0.38	< 0.38	< 0.53	< 0.43	< 0.42	< 0.40	< 0.33	< 0.36	< 0.37	< 0.37	< 0.37
Alpha Chlordane	< 0.50	< 0.45	< 0.48	< 0.49	< 0.56	< 0.64	< 0.34	< 0.39	< 0.40	< 0.39	< 0.34	< 0.38	< 0.39	< 0.40	< 0.66	< 0.42	< 0.39	< 0.38	< 0.39	5.4	< 0.43	< 0.43	< 0.40	8.1	< 0.37	< 0.38	< 0.38	< 0.38
alpha-BHC	< 0.51	< 0.46	< 0.49	< 0.49	< 0.56	< 0.64	< 0.34	< 0.39	< 0.41	< 0.39	< 0.35	< 0.38	< 0.40	< 0.41	< 0.67	< 0.42	< 0.40	< 0.39	< 0.39	< 0.55	< 0.44	< 0.43	< 0.41	< 0.34	< 0.37	< 0.38	< 0.38	< 0.39
beta-BHC	< 0.41	< 0.37	< 0.40	< 0.40	< 0.46	< 0.52	< 0.28	< 0.32	< 0.33	< 0.32	< 0.28	< 0.31	< 0.32	< 0.33	< 0.54	< 0.34	< 0.32	< 0.32	< 0.32	< 0.45	< 0.36	< 0.35	< 0.33	< 0.27	< 0.31	< 0.31	< 0.31	< 0.31
Chlordane (Technical)	< 5.10	< 4.60	< 4.90	< 5.00	< 5.70	< 6.50	< 3.50	< 4.00	< 4.10	< 3.90	< 3.50	< 3.90	< 4.00	< 4.10	< 6.70	< 4.20	< 4.00	< 3.90	< 3.90	30	< 4.40	< 4.40	< 4.10	86	< 3.80	< 3.80	< 3.80	< 3.90
Cis-nonachlor	< 0.46	< 0.41	< 0.44	< 0.45	< 0.51	< 0.58	< 0.31	< 0.36	< 0.37	< 0.35	< 0.32	< 0.35	< 0.36	< 0.37	< 0.60	< 0.38	< 0.36	< 0.35	< 0.35	< 0.50	< 0.40	< 0.39	< 0.37	4.4	< 0.34	< 0.34	< 0.34	< 0.35
delta-BHC	< 0.40	< 0.36	< 0.39	< 0.39	< 0.44	< 0.51	< 0.27	< 0.31	< 0.32	< 0.31	< 0.27	< 0.30	< 0.31	< 0.32	< 0.53	< 0.33	< 0.31	< 0.31	< 0.31	< 0.43	< 0.35	< 0.34	< 0.32	< 0.27	< 0.30	< 0.30	< 0.30	< 0.30
Dieldrin	< 0.52	< 0.46	< 0.50	< 0.50	< 0.57	< 0.65	< 0.35	< 0.40	< 0.41	< 0.40	< 0.35	< 0.39	< 0.40	< 0.41	< 0.68	< 0.43	< 0.40	< 0.40	< 0.40	3.9	< 0.45	< 0.44	< 0.41	19	0.47 J	0.58 J	< 0.39	< 0.39
Endosulfan sulfate	< 0.53	< 0.48	< 0.51	< 0.51	< 0.59	< 0.67	< 0.36	< 0.41	< 0.42	< 0.41	< 0.36	< 0.40	< 0.41	< 0.42	< 0.69	< 0.44	< 0.41	< 0.41	< 0.41	< 0.57	< 0.46	< 0.45	< 0.43	< 0.35	< 0.39	< 0.40	< 0.40	< 0.40
Endosulfan-alpha (I)	< 0.41	< 0.37	< 0.39	< 0.40	< 0.45	< 0.52	< 0.28	< 0.32	< 0.33	< 0.32	< 0.28	< 0.31	< 0.32	< 0.33	< 0.54	< 0.34	< 0.32	< 0.31	< 0.31	< 0.44	< 0.36	< 0.35	< 0.33	< 0.27	< 0.30	< 0.31	< 0.31	< 0.31
Endosulfan-beta (II)	< 0.44	< 0.39	< 0.42	< 0.42	< 0.49	< 0.55	< 0.30	< 0.34	< 0.35	< 0.34	< 0.30	< 0.33	< 0.34	< 0.35	< 0.57	< 0.36	< 0.34	< 0.34	< 0.34	< 0.47	< 0.38	< 0.37	< 0.35	< 0.29	< 0.32	< 0.33	< 0.33	< 0.33
Endrin	< 0.56	< 0.50	< 0.54	< 0.54	< 0.62	< 0.71	< 0.38	< 0.44	< 0.45	< 0.43	< 0.38	< 0.43	< 0.44	< 0.45	< 0.74	< 0.46	< 0.44	< 0.43	< 0.43	< 0.61	< 0.49	< 0.48	< 0.45	< 0.37	< 0.41	< 0.42	< 0.42	< 0.43
Endrin aldehyde	< 0.38	< 0.34	< 0.37	< 0.37	< 0.42	< 0.48	< 0.26	< 0.30	< 0.31	< 0.29	< 0.26	< 0.29	< 0.30	< 0.31	< 0.50	< 0.32	< 0.30	< 0.29	< 0.29	< 0.41	< 0.33	< 0.33	< 0.31	< 0.25	< 0.28	< 0.29	< 0.29	< 0.29
Endrin ketone	< 0.54	< 0.49	< 0.52	< 0.53	< 0.60	< 0.69	< 0.37	< 0.42	< 0.44	< 0.42	< 0.37	< 0.41	< 0.42	< 0.44	< 0.71	< 0.45	< 0.42	< 0.42	< 0.42	< 0.59	< 0.47	< 0.46	< 0.44	< 0.36	< 0.40	< 0.41	< 0.41	< 0.41
Gamma Chlordane	< 0.50	< 0.45	< 0.48	< 0.48	< 0.55	< 0.63	< 0.34	< 0.39	< 0.40	< 0.38	< 0.34	< 0.38	< 0.39	< 0.40	< 0.65	< 0.41	< 0.39	< 0.38	< 0.38	3.7	< 0.43	< 0.43	< 0.40	9.3	< 0.37	< 0.37	< 0.37	< 0.38
gamma-BHC (Lindane)	< 0.54	< 0.49	< 0.52	< 0.53	< 0.60	< 0.69	< 0.37	< 0.42	< 0.43	< 0.42	< 0.37	< 0.41	< 0.42	< 0.43	< 0.71	< 0.45	< 0.42	< 0.42	< 0.42	< 0.59	< 0.47	< 0.46	< 0.44	< 0.36	< 0.40	< 0.40	< 0.41	< 0.41
Heptachlor	< 0.50	< 0.45	< 0.48	< 0.49	< 0.56	< 0.64	< 0.34	< 0.39	< 0.40	< 0.39	< 0.35	< 0.38	< 0.39	< 0.40	< 0.66	< 0.42	< 0.39	< 0.39	< 0.39	< 0.54	< 0.44	< 0.43	< 0.40	< 0.33	< 0.37	< 0.38	< 0.38	< 0.38
Heptachlor epoxide	< 0.56	< 0.50	< 0.54	< 0.54	< 0.62	< 0.71	< 0.38	< 0.43	< 0.45	< 0.43	< 0.38	< 0.42	< 0.44	< 0.45	< 0.73	< 0.46	< 0.43	< 0.43	< 0.43	< 0.60	< 0.48	< 0.48	< 0.45	< 0.37	< 0.41	< 0.42	< 0.42	< 0.42
Methoxychlor	< 0.51	< 0.46	< 0.49	< 0.49	< 0.56	< 0.64	< 0.34	< 0.40	< 0.41	< 0.39	< 0.35	< 0.39	< 0.40	< 0.41	< 0.67	< 0.42	< 0.40	< 0.39	< 0.39	< 0.55	< 0.44	< 0.43	< 0.41	< 0.34	< 0.38	< 0.38	< 0.38	< 0.39
Oxychlordane	< 0.44	< 0.40	< 0.42	< 0.43	< 0.49	< 0.56	< 0.30	< 0.34	< 0.35	< 0.34	< 0.30	< 0.33	< 0.34	< 0.35	< 0.58	< 0.36	< 0.34	< 0.34	< 0.34	< 0.48	< 0.38	< 0.38	< 0.35	< 0.29	< 0.33	< 0.33	< 0.33	< 0.33
Total Chlordanes	< 0.50	< 0.45	< 0.48	< 0.49	< 0.56	< 0.64	< 0.34	< 0.39	< 0.40	< 0.39	< 0.34	< 0.38	< 0.39	< 0.40	< 0.66	< 0.42	< 0.39	< 0.38	< 0.39	10.4	< 0.43	< 0.43	< 0.40	26	< 0.37	< 0.38	< 0.38	< 0.38
Toxaphene	< 9.9	< 8.9	< 9.5	< 9.6	< 11	< 13	< 6.7	< 7.7	< 7.9	< 7.6	15 J	< 7.5	< 7.8	< 8.0	1200	34	< 7.7	< 7.6	< 7.6	310	< 8.6	< 8.5	< 8.0	670	17 J	19 J	< 7.4	< 7.5
Trans-nonachlor	< 0.45	< 0.40	< 0.43	< 0.44	< 0.50	< 0.57	< 0.30	< 0.35	< 0.36	< 0.35	< 0.31	< 0.34	< 0.35	< 0.36	< 0.59	< 0.37	< 0.35	< 0.35	< 0.35	1.30 J	< 0.39	< 0.39	< 0.36	3.8	< 0.33	< 0.34	< 0.34	< 0.34
PCB Congeners (µg/kg)																												
PCB018	NA	NA	NA	NA	NA	NA	< 0.17	< 0.19	< 0.2	< 0.19	< 0.17	< 0.19	< 0.19	< 0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.16	< 0.18	< 0.18	< 0.18	< 0.19
PCB028	NA	NA	NA	NA	NA	NA	< 0.11	< 0.12	< 0.12	< 0.12	< 0.11	< 0.12	< 0.12	< 0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10	< 0.11	< 0.12	< 0.12	< 0.12
PCB037	NA	NA	NA	NA	NA	NA	< 0.14	< 0.16	< 0.16	< 0.16	< 0.14	< 0.16	< 0.16	< 0.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.14	< 0.15	< 0.15	< 0.15	< 0.16
PCB044	NA	NA	NA	NA	NA	NA	< 0.14	< 0.16	< 0.16	< 0.16	0.20 J	< 0.16	< 0.16	< 0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.14	< 0.15	< 0.15	< 0.15	< 0.16
PCB049	NA	NA	NA	NA	NA	NA	< 0.12	< 0.14	< 0.15	< 0.14	< 0.13	< 0.14	< 0.14	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.12	< 0.14	< 0.14	< 0.14	< 0.14
PCB052	NA	NA	NA	NA	NA	NA	< 0.10	< 0.12	< 0.12	< 0.12	0.52 J	< 0.11	< 0.12	< 0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10	< 0.11	< 0.11	< 0.11	< 0.12
PCB066	NA	NA	NA	NA	NA	NA	< 0.097	< 0.11	< 0.11	< 0.11	0.13 J	< 0.11	< 0.11	< 0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.095	< 0.11	< 0.11	< 0.11	< 0.11
PCB070	NA	NA	NA	NA	NA	NA	< 0.087	< 0.10	< 0.10	< 0.099	0.29 J	< 0.097	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.085	< 0.095	< 0.096	< 0.096	< 0.098
PCB074	NA	NA	NA	NA	NA	NA	< 0.10	< 0.12	< 0.12	< 0.11	< 0.10	< 0.11	< 0.12	< 0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.098	< 0.11	< 0.11	< 0.11	< 0.11
PCB077	NA	NA	NA	NA	NA	NA	< 0.10	< 0.12	< 0.12	< 0.12	0.2 J	< 0.12	< 0.12	< 0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10	< 0.11	< 0.11	< 0.11	< 0.12
PCB081	NA	NA	NA	NA	NA	NA	< 0.13	< 0.15	< 0.15	< 0.15	< 0.13	< 0.14	< 0.15	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.13	< 0.14	< 0.14	< 0.14	< 0.15
PCB087	NA	NA	NA	NA	NA	NA	< 0.11	< 0.12	< 0.13	< 0.12	1.0	< 0.12	< 0.12	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10	< 0.12	< 0.12	< 0.12	< 0.12
PCB099	NA	NA	NA	NA	NA	NA	< 0.090	< 0.10	< 0.11	< 0.10	0.80	< 0.10	< 0.10	< 0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.088	< 0.098	< 0.10	< 0.10	< 0.10
PCB101	NA	NA	NA	NA	NA	NA	< 0.086	< 0.099	< 0.10	< 0.098	2.7	< 0.096	< 0.099	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.17 J	< 0.094	< 0.095	< 0.095	< 0.097
PCB105	NA	NA	NA	NA	NA	NA	< 0.11	< 0.13	< 0.13	< 0.13	1.2	< 0.12	< 0.13	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.11	< 0.12	< 0.12	< 0.12	< 0.12
PCB110	NA	NA	NA	NA	NA	NA	< 0.11	< 0.13	< 0.13	< 0.12	2.3	< 0.12	< 0.13	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.18 J	< 0.12	< 0.12	< 0.12	< 0.12
PCB114	NA	NA	NA	NA	NA	NA	< 0.11	< 0.12	< 0.12	< 0.12	< 0.11	< 0.12	< 0.12	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10	< 0.12	< 0.12	< 0.12	< 0.12
PCB118	NA	NA	NA	NA	NA	NA	< 0.14	< 0.16	< 0.17	< 0.16	2.3	< 0.16	< 0.16	< 0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.14	< 0.15	< 0.16	< 0.16	< 0.16
PCB119	NA	NA	NA	NA	NA	NA	< 0.092	< 0.11	< 0.11	< 0.10	< 0.093	< 0.10	< 0.11	< 0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.090	< 0.10	< 0.10	< 0.10	< 0.10
PCB123	NA	NA	NA	NA	NA	NA	< 0.092	< 0.11	< 0.11	< 0.11	< 0.094	< 0.10	< 0.11	< 0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.090	< 0.10	< 0.10	< 0.10	< 0.10
PCB126	NA	NA	NA	NA	NA	NA	< 0.15	< 0.17	< 0.17	< 0.17	0.70	< 0.16	< 0.17	< 0.17	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.14	< 0.16	< 0.16	< 0.16	< 0.16
PCB128	NA	NA	NA	NA	NA	NA	< 0.11	< 0.12	< 0.13	< 0.12	0.80	< 0.12	< 0.13	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.11	< 0.12	< 0.12	< 0.12	< 0.12
PCB138/158	NA	NA	NA	NA	NA	NA	< 0.22	< 0.25	< 0.25	< 0.24	5.3	< 0.24	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.50 J	< 0.23	< 0.24	< 0.24	< 0.24
PCB149	NA	NA	NA	NA	NA	NA	< 0.095	< 0.11	< 0.11	< 0.11	3.5	< 0.11	< 0.11	< 0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.32 J	< 0.10	< 0.10	< 0.10	< 0.11
PCB151	NA	NA	NA	NA	NA	NA	< 0.11	< 0.13	< 0.13	< 0.12	1.2	< 0.12	< 0.13	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.11	< 0.12	< 0.12	< 0.12	< 0.12
PCB153	NA	NA	NA	NA	NA	NA	< 0.11	< 0.13	< 0.13	< 0.13	4.7	< 0.12	< 0.13	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.43 J	< 0.12	< 0.12	< 0.12	< 0.12

Table 7
Results of Physical and Chemical Analyses of Soil and Sediment Composite Samples

Subarea Name	OR-1,2,3		OR-4,5,6		OR-7,8,9		ORFP-1,2,3,4,5,6				ORFP-7,9,10,11,12,13				ORFP-8,14,15,16					NC-1 and NC-2				S3				
Composite Sample ID	OR-1,2,3-A	OR-1,2,3-B	OR-4,5,6-A	OR-4,5,6-B	OR-7,8,9-A	OR-7,8,9-B	A-12	B-12	C-12	D-12	A-12	B-12	C-12	D-12	A-12	B-12	C-12	D-12	D-12-DUP	A-12	B-12	B-12-DUP	C-12	A-12	B-12	B-12-DUP	C-12	D-12
Depth Interval/Elevation Range	Mudline to -4 feet MLLW	-4 to -6 feet MLLW	Mudline to -4 feet MLLW	-4 to -6 feet MLLW	Mudline -4 feet MLLW	-4 to -6 feet MLLW	Ground surface to 1 foot bgs	1 foot bgs to 0 feet NAVD88	0 to - 6 feet NAVD88	-6 to -8 feet NAVD88	Ground surface to 1 foot bgs	1 foot bgs to 0 feet NAVD88	0 to - 6 feet NAVD88	-6 to -8 feet NAVD88	Ground surface to 1 foot bgs	1 foot bgs to 0 feet NAVD88	0 to - 6 feet NAVD88	-6 to -8 feet NAVD88	-6 to -8 feet NAVD88	Ground surface to 1 foot bgs	1 foot bgs to -6 feet NAVD88	1 foot bgs to -6 feet NAVD88	-6 to -8 feet NAVD88	Ground surface to 1 foot bgs	1 foot bgs to +6 feet NAVD88	1 foot bgs to +6 feet NAVD88	+6 to -4 feet NAVD88	-4 to -6 feet NAVD88
Sample Date	5/11/2012	5/11/2012	5/10/2012	5/10/2012	5/9/2012	5/9/2012	5/8/2012	5/8/2012	5/8/2012	5/8/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012
PCB156	NA	NA	NA	NA	NA	NA	< 0.10	< 0.12	< 0.12	< 0.12	0.71	< 0.12	< 0.12	< 0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10	< 0.11	< 0.11	< 0.11	< 0.12
PCB157	NA	NA	NA	NA	NA	NA	< 0.10	< 0.12	< 0.12	< 0.12	< 0.10	< 0.11	< 0.12	< 0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.099	< 0.11	< 0.11	< 0.11	< 0.11
PCB167	NA	NA	NA	NA	NA	NA	< 0.11	< 0.12	< 0.13	< 0.12	< 0.11	< 0.12	< 0.12	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.10	< 0.12	< 0.12	< 0.12	< 0.12
PCB168	NA	NA	NA	NA	NA	NA	< 0.091	< 0.10	< 0.11	< 0.10	0.64	< 0.10	< 0.11	< 0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.089	< 0.099	< 0.10	< 0.10	< 0.10
PCB169	NA	NA	NA	NA	NA	NA	< 0.087	< 0.099	< 0.10	< 0.098	0.88	< 0.097	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.085	< 0.094	< 0.096	< 0.096	< 0.097
PCB170	NA	NA	NA	NA	NA	NA	< 0.098	< 0.11	< 0.12	< 0.11	3.1	< 0.11	< 0.11	< 0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.25 J	< 0.11	< 0.11	< 0.11	< 0.11
PCB177	NA	NA	NA	NA	NA	NA	< 0.13	< 0.15	< 0.15	< 0.15	1.0	< 0.15	< 0.15	< 0.15	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.13	< 0.14	< 0.14	< 0.14	< 0.15
PCB180	NA	NA	NA	NA	NA	NA	< 0.065	< 0.074	< 0.077	< 0.074	6.0	< 0.073	< 0.075	< 0.077	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.390 J	< 0.071	< 0.072	< 0.072	< 0.073
PCB183	NA	NA	NA	NA	NA	NA	< 0.12	< 0.14	< 0.14	< 0.13	1.3	< 0.13	< 0.14	< 0.14	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.12	< 0.13	< 0.13	< 0.13	< 0.13
PCB187	NA	NA	NA	NA	NA	NA	< 0.11	< 0.13	< 0.13	< 0.13	3.5	< 0.12	< 0.13	< 0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.25 J	< 0.12	< 0.12	< 0.12	< 0.12
PCB189	NA	NA	NA	NA	NA	NA	< 0.091	< 0.10	< 0.11	< 0.10	< 0.092	< 0.10	< 0.10	< 0.11	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.089	< 0.099	< 0.10	< 0.10	< 0.10
PCB194	NA	NA	NA	NA	NA	NA	< 0.10	< 0.12	< 0.12	< 0.12	2.7	< 0.11	< 0.12	< 0.12	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.15 J	< 0.11	< 0.11	< 0.11	< 0.11
PCB201	NA	NA	NA	NA	NA	NA	< 0.060	< 0.069	< 0.071	< 0.069	0.30 J	< 0.068	< 0.07	< 0.072	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.059	< 0.066	< 0.067	< 0.067	< 0.068
PCB206	NA	NA	NA	NA	NA	NA	< 0.088	< 0.10	< 0.10	< 0.10	1.3	< 0.098	< 0.10	< 0.10	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.19 J	< 0.096	< 0.097	< 0.097	< 0.099
Total PCB Congeners	NA	NA	NA	NA	NA	NA	< 0.22	< 0.25	< 0.25	< 0.24	49.3 J	< 0.24	< 0.25	< 0.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.83 J	< 0.23	< 0.24	< 0.24	< 0.24
PAH (µg/kg)																												
1-Methylnaphthalene	NA	NA	NA	NA	NA	NA	< 1.9	< 2.2	3.70 J	< 2.2	< 1.9	< 2.1	< 2.2	< 2.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.9	< 2.1	< 2.1	< 2.1	< 2.1
Acenaphthene	NA	NA	NA	NA	NA	NA	13	< 2.3	< 2.3	< 2.2	3.9 J	< 2.2	< 2.3	< 2.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	14	< 2.1	< 2.2	< 2.2	< 2.2
Acenaphthylene	NA	NA	NA	NA	NA	NA	14	< 2.0	< 2.1	< 2.0	3.3 J	< 2.0	< 2.0	< 2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	13	< 1.9	< 1.9	< 1.9	< 2.0
Anthracene	NA	NA	NA	NA	NA	NA	< 1.9	< 2.2	< 2.3	< 2.2	< 1.9	< 2.1	< 2.2	< 2.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.9	< 2.1	< 2.1	< 2.1	< 2.1
Benzo (a) Anthracene	NA	NA	NA	NA	NA	NA	< 2.3	< 2.6	< 2.7	< 2.6	< 2.3	< 2.6	< 2.6	< 2.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 2.2	< 2.5	< 2.5	< 2.5	< 2.6
Benzo (a) Pyrene	NA	NA	NA	NA	NA	NA	2.2 J	< 2.1	< 2.2	< 2.1	< 1.9	< 2.1	< 2.1	< 2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.8	< 2.0	< 2.0	< 2.1	< 2.1
Benzo (b) Fluoranthene	NA	NA	NA	NA	NA	NA	2.3 J	< 2.2	< 2.3	< 2.2	< 1.9	< 2.1	< 2.2	< 2.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.9	< 2.1	< 2.1	< 2.1	< 2.1
Benzo (g,h,i) Perylene	NA	NA	NA	NA	NA	NA	< 2.0	< 2.3	< 2.3	< 2.2	< 2.0	< 2.2	< 2.3	< 2.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.9	< 2.1	< 2.2	< 2.2	< 2.2
Benzo (k) Fluoranthene	NA	NA	NA	NA	NA	NA	< 2.6	< 3.0	< 3.1	< 3.0	< 2.7	< 3.0	< 3.1	< 3.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 2.6	< 2.9	< 2.9	< 2.9	< 3.0
Chrysene	NA	NA	NA	NA	NA	NA	3.0 J	< 2.5	< 2.6	< 2.5	< 2.2	< 2.4	< 2.5	< 2.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.8 J	< 2.4	< 2.4	< 2.4	< 2.4
Dibenz (a,h) Anthracene	NA	NA	NA	NA	NA	NA	< 2.1	< 2.4	< 2.4	< 2.3	< 2.1	< 2.3	< 2.4	< 2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 2.0	< 2.3	< 2.3	< 2.3	< 2.3
Fluoranthene	NA	NA	NA	NA	NA	NA	4.6 J	< 2.3	< 2.4	< 2.3	< 2.0	< 2.3	< 2.3	< 2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6 J	< 2.2	< 2.2	< 2.2	< 2.3
Fluorene	NA	NA	NA	NA	NA	NA	7.7 J	< 2.1	< 2.2	< 2.1	2.9 J	< 2.1	< 2.1	< 2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9 J	< 2.0	< 2.0	< 2.1	< 2.1
Indeno (1,2,3-c,d) Pyrene	NA	NA	NA	NA	NA	NA	< 1.9	< 2.2	< 2.3	< 2.2	< 1.9	< 2.1	< 2.2	< 2.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.9	< 2.1	< 2.1	< 2.1	< 2.1
Naphthalene	NA	NA	NA	NA	NA	NA	49	< 2.3	3.5 J	< 2.2	7.0 J	< 2.2	< 2.3	< 2.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	86	3.6 J	< 2.2	< 2.2	< 2.2
Phenanthrene	NA	NA	NA	NA	NA	NA	2.9 J	< 2.3	< 2.4	< 2.3	< 2.0	< 2.3	< 2.3	< 2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 2.0	< 2.2	< 2.2	< 2.2	< 2.3
Pyrene	NA	NA	NA	NA	NA	NA	11	< 3.0	< 3.1	< 3.0	2.7 J	< 3.0	< 3.1	< 3.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.1 J	< 2.9	< 2.9	< 2.9	< 3.0
Total HMW PAHs	NA	NA	NA	NA	NA	NA	23	< 3.0	< 3.1	< 3.0	2.7	< 3.0	< 3.1	< 3.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.5	< 2.9	< 2.9	< 2.9	< 3.0
Total LMW PAHs	NA	NA	NA	NA	NA	NA	87	< 2.3	7.2	< 2.3	17.1	< 2.3	< 2.3	< 2.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	116	3.6	< 2.2	< 2.2	< 2.3
Total PAHs	NA	NA	NA	NA	NA	NA	110	< 3.0	7.2	< 3.0	19.8	< 3.0	< 3.1	< 3.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	124	3.6	< 2.9	< 2.9	< 3.0
Phenols (µg/kg)																												
2,4,5-Trichlorophenol	NA	NA	NA	NA	NA	NA	< 1.9	< 2.1	< 2.2	< 2.1	< 1.9	< 2.1	< 2.1	< 2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.8	< 2.0	< 2.0	< 2.1	< 2.1
2,4,6-Trichlorophenol	NA	NA	NA	NA	NA	NA	< 1.4	< 1.6	< 1.6	< 1.6	< 1.4	< 1.5	< 1.6	< 1.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.3	< 1.5	< 1.5	< 1.5	< 1.5
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	< 1.4	< 1.6	< 1.7	< 1.6	< 1.5	< 1.6	< 1.7	< 1.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.4	< 1.6	< 1.6	< 1.6	< 1.6
2,4-Dimethylphenol	NA	NA	NA	NA	NA	NA	< 1.7	< 2.0	< 2.1	< 2.0	< 1.8	< 2.0	< 2.0	< 2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.7	< 1.9	< 1.9	< 1.9	< 2.0
2,4-Dinitrophenol	NA	NA	NA	NA	NA	NA	< 57	< 66	< 68	< 65	< 58	< 64	< 66	< 68	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 56	< 62	< 63	< 63	< 64
2-Chlorophenol	NA	NA	NA	NA	NA	NA	8.3 J	< 2.0	< 2.1	< 2.0	4.3 J	< 2.0	< 2.0	< 2.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	37	< 1.9	< 1.9	< 1.9	< 2.0
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	< 1.9	< 2.1	< 2.2	< 2.1	< 1.9	< 2.1	< 2.1	< 2.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.8	< 2.0	< 2.0	< 2.1	< 2.1
2-Methylphenol	NA	NA	NA	NA	NA	NA	< 1.7	< 1.9	< 2.0	< 1.9	< 1.7	< 1.9	< 2.0	< 2.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.7	< 1.8	< 1.9	< 1.9	< 1.9
2-Nitrophenol	NA	NA	NA	NA	NA	NA	< 1.6	< 1.8	< 1.9	< 1.8	< 1.6	< 1.8	< 1.8	< 1.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.6	2.1 J	< 1.8	< 1.8	< 1.8
3/4-Methylphenol	NA	NA	NA	NA	NA	NA	< 1.7	< 1.9	< 2.0	< 1.9	< 1.7	< 1.9	< 2.0	< 2.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.7	< 1.8	< 1.9	< 1.9	< 1.9
4,6-Dinitro-2-Methylphenol	NA	NA	NA	NA	NA	NA	< 73	< 84	< 87	< 83	< 74	< 82	< 85	< 87	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 72	< 80	< 81	< 81	< 82
4-Chloro-3-Methylphenol	NA	NA	NA	NA	NA	NA	4.8 J	< 1.7	< 1.8	< 1.7	< 1.5	< 1.7	< 1.7	< 1.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.5	< 1.6	< 1.6	< 1.6	< 1.7
4-Nitrophenol	NA	NA	NA	NA	NA	NA	< 68	< 78	< 80	< 77	< 69	< 76	< 78	< 80	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 66	< 74	< 75	< 75	< 76
Pentachlorophenol	NA	NA	NA	NA	NA	NA	< 57	< 66	< 68	< 65	< 58	< 64	< 66	< 68	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 56	< 62	< 63	< 63	< 64
Phenol	NA	NA	NA	NA	NA	NA	< 1.9	< 2.2	< 2.3	< 2.2	< 1.9	< 2.1	< 2.2	< 2.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 1.9	< 2.1	< 2.1	< 2.1	< 2.1
Phthalates (µg/kg)																												
Diethyl Phthalate	NA	NA	NA	NA	NA	NA	5.8 BJ	6.8 BJ	6.4 BJ	6.2 BJ	8.7 BJ	11 BJ	7.3 BJ	8.2 BJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6 BJ	9.8 BJ	7.4 BJ	7.3 BJ	7.9 BJ
Dimethyl Phthalate	NA	NA	NA	NA	NA	NA	310 B	420 B	470 B	560 B	240 B	410 B	530 B	570 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	400 B	470 B	420 B	470 B	360 B
Di-n-Butyl Phthalate	NA	NA	NA	NA	NA	NA	4.9 BJ	4.3 BJ	4.2 BJ	3.4 BJ	4.5 BJ	10 BJ	5.9 BJ	6.1 BJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.0 BJ	10 BJ	7.1 BJ	8.2 BJ	7.3 BJ
Di-n-Octyl Phthalate	NA	NA	NA	NA	NA	NA	< 3.1	< 3.5	< 3.6	< 3.5	< 3.1	< 3.4	< 3.5	< 3.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 3.0	< 3.4	< 3.4	< 3.4	< 3.4
Bis(2-Ethylhexyl) Phthalate	NA	NA	NA	NA	NA	NA	40 B	15 B	13 B	13 B	36 B	22 B	13 B	16 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	20 B	14 B	11 BJ	11 BJ	18 B
Butyl Benzyl Phthalate	NA	NA	NA	NA	NA	NA	7.6 J	4.3 J	4.7 J	4.1 J	11 J	33	7.7 J	9.2 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.4 J	9.9 J	7.8 J	10 J	8.8 J

Notes:
B = analyte was present in the associated method blank
J = reported value is estimated
HD = chromatographic pattern inconsistent with diesel fuel standard indicating a different type of fuel or weathered diesel
µg/kg = micrograms per kilogram
bgs = below ground surface
HMW = high molecular weight
LMW = low molecular weight
mg/kg = milligrams per kilogram
MLLW = mean lower low water
NA = not analyzed
NAVD88 = North American Vertical Datum of 1988
PAHs = polycyclic aromatic hydrocarbons
PCBs = polychlorinated biphenyls
TPHs = total petroleum hydrocarbons
Non-detect samples are reported as less than method c
For calculated total chemicals (Total DDTs, PAHs, PCBs, and Chlordane) only detected compounds were summed.
Total DDTs are the sum of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, 2,4'-DDD, 2,4'-DDE, and 2,4'-DDT.
Total Chlordanes are the sum of Alpha Chlordane, Gamma Chlordane, Cis-Nonachlor, Oxychlordane, and Trans-Nonachlor.
Total HMW PAHs are the sum of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)flouranthene, chrysene, dibenzo(a,h,)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, and pyrene.
Total LMW PAHs are the sum of 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, flourene, napthalene, and phenathrene.
Total PAHs are the sum of the HMW and LMW PAHs.

In the Otay River Floodplain, DDTs were detected in composite samples from ORFP-7,9,10,11,12,13 in the surface (top 1 foot) and second depth interval (extending down to 0 feet NAVD88). For composite samples from ORFP-8,14,15,16, detections were observed in the surface, and in the second and third depth intervals (extending down to -6 feet NAVD88). Toxaphene was detected in the surface from ORFP-7,9,10,11,12,13 and in the surface and second depth interval (extending down to 0 feet NAVD88) from ORFP-8,14,15,16. No pesticides were detected within composite samples from ORFP-1,2,3,4,5,6.

In Subarea 3, DDTs, dieldrin, and toxaphene were detected in the surface and second depth interval (extending to +6 feet NAVD88).

In Nestor Creek, DDT compounds were detected in the surface and second depth interval (extending to -6 feet NAVD88). Dieldrin and toxaphene were detected in the surface.

In the Otay River, DDT compounds were detected in the lower depth interval (from -4 to -6 feet mean lower low water [MLLW]) for composite samples from OR-1,2,3. For composite samples from OR-7,8,9, similar detections were observed in the upper depth interval (from mudline to -4 feet MLLW).

3.1.2.3 PCBs

PCBs were detected in the surface composite samples from ORFP-7,9,10,11,12,13 and Subarea 3.

3.1.2.4 TPHs and SVOCs

No detections were observed for TPHs and polycyclic aromatic hydrocarbons (PAHs); phenols were generally not detected in most composite samples analyzed. Phthalates were detected; however, many samples were B qualified, indicating these results may be biased high due to chemicals being present in the laboratory's analytical blank samples.

3.2 Soil and Sediment Archive Samples

Based on the physical and chemical results of composite samples, additional testing was performed on archived samples. Testing was completed to further characterize grain size

distributions throughout site soils and to better delineate concentrations of pesticides and PCBs, as follows:

- The grain size distribution of composite samples indicated variability between areas and depths. Therefore, grain size was measured in archived samples from each depth interval of each station to further delineate the vertical and horizontal grain size distribution and to identify areas and/or depths that are predominantly coarse-grained material for specific sediment/soil management alternatives.
- As described in Section 3.1.2.2, elevated concentrations of pesticides were detected within the top three depth intervals of composite samples from ORFP-7,9,10,11,12,13; ORFP-8,14,15,16; Subarea 3; and Nestor Creek. Pesticides were analyzed in archived samples from the top three depth intervals of each station within these areas to determine which stations contributed to the elevated concentrations within composite samples.
- As described in Section 3.1.2.3, elevated concentrations of PCBs were measured in the surface composite sample from ORFP-7,9,10,11,12,13. PCBs were measured in archived samples from the surface of each station within this area to determine which stations contributed to the elevated concentrations within the composite sample. PCBs were not initially measured on composite samples from ORFP-8,14,15,16 or Nestor Creek. These composite areas are located adjacent to ORFP-7,9,10,11,12,13; therefore, PCBs were also analyzed on archived composite samples from these areas to determine the horizontal extent of contamination. A summary of physical and chemical analyses performed on archived samples is presented in Table 8.

Table 8
Summary of Physical and Chemical Analyses Performed on Archived Samples

Station ID	Subsurface Sediment Sample ID	Sample Interval		Archive Testing	
		Depth (feet bgs)	Elevation (feet NAVD88)	Chemistry	Physical
Composite Area ORFP-1,2,3,4,5,6					
ORFP-1	ORFP-1-A-12-A	0 to 1	8 to 7	--	GS
	ORFP-1-B-12-A	1 to 3	7 to 5	--	GS
	ORFP-1-C-12-A	3 to 5	5 to 3	--	GS
	ORFP-1-D-12-A	5 to 7	3 to 1	--	GS
	ORFP-1-E-12-A	7 to 9	1 to -1	--	GS
	ORFP-1-F-12-A	9 to 11	-1 to -3	--	GS
	ORFP-1-G-12-A	11 to 14	-3 to -6	--	GS
	ORFP-1-H-12-A	14 to 16	-6 to -8	--	GS
ORFP-2	ORFP-2-A-12-A	0 to 1	12 to 11	--	GS
	ORFP-2-B-12-A	1 to 3	11 to 9	--	GS
	ORFP-2-C-12-A	3 to 5	9 to 7	--	GS
	ORFP-2-D-12-A	5 to 7	7 to 5	--	GS
	ORFP-2-E-12-A	7 to 9	5 to 3	--	GS
	ORFP-2-F-12-A	9 to 11	3 to 1	--	GS
	ORFP-2-G-12-A	11 to 13	1 to -1	--	GS
	ORFP-2-H-12-A	13 to 15	-1 to -3	--	GS
	ORFP-2-I-12-A	15 to 17	-3 to -5	--	GS
	ORFP-2-J-12-A	17 to 20	-5 to -8	--	GS
ORFP-3	ORFP-3-A-12-A	0 to 1	12 to 11	--	GS
	ORFP-3-B-12-A	1 to 3	11 to 9	--	GS
	ORFP-3-C-12-A	3 to 5	9 to 7	--	GS
	ORFP-3-D-12-A	5 to 7	7 to 5	--	GS
	ORFP-3-E-12-A	7 to 9	5 to 3	--	GS
	ORFP-3-F-12-A	9 to 11	3 to 1	--	GS
	ORFP-3-G-12-A	11 to 13	1 to -1	--	GS
	ORFP-3-H-12-A	13 to 15	-1 to -3	--	GS
	ORFP-3-I-12-A	15 to 17	-3 to -5	--	GS
	ORFP-3-J-12-A	17 to 20	-5 to -8	--	GS
ORFP-4	ORFP-4-A-12-A	0 to 1	10 to 9	--	GS
	ORFP-4-B-12-A	1 to 3	9 to 7	--	GS
	ORFP-4-C-12-A	3 to 5	7 to 5	--	GS
	ORFP-4-D-12-A	5 to 7	5 to 3	--	GS
	ORFP-4-E-12-A	7 to 9	3 to 1	--	GS
	ORFP-4-F-12-A	9 to 11	1 to -1	--	GS
	ORFP-4-G-12-A	11 to 13	-1 to -3	--	GS
	ORFP-4-H-12-A	13 to 15	-3 to -5	--	GS
	ORFP-4-I-12-A	15 to 18	-5 to -8	--	GS
ORFP-5	ORFP-5-A-12-A	0 to 1	12 to 11	--	GS
	ORFP-5-B-12-A	1 to 3	11 to 9	--	GS
	ORFP-5-C-12-A	3 to 5	9 to 7	--	GS
	ORFP-5-D-12-A	5 to 7	7 to 5	--	GS
	ORFP-5-E-12-A	7 to 9	5 to 3	--	GS
	ORFP-5-F-12-A	9 to 11	3 to 1	--	GS
	ORFP-5-G-12-A	11 to 13	1 to -1	--	GS
	ORFP-5-H-12-A	13 to 15	-1 to -3	--	GS
	ORFP-5-I-12-A	15 to 17	-3 to -5	--	GS
	ORFP-5-J-12-A	17 to 20	-5 to -8	--	GS
ORFP-6	ORFP-6-A-12-A	0 to 1	12 to 11	--	GS
	ORFP-6-B-12-A	1 to 3	11 to 9	--	GS
	ORFP-6-C-12-A	3 to 5	9 to 7	--	GS
	ORFP-6-D-12-A	5 to 7	7 to 5	--	GS
	ORFP-6-E-12-A	7 to 9	5 to 3	--	GS
	ORFP-6-F-12-A	9 to 11	3 to 1	--	GS
	ORFP-6-G-12-A	11 to 13	1 to -1	--	GS
	ORFP-6-H-12-A	13 to 15	-1 to -3	--	GS
	ORFP-6-I-12-A	15 to 17	-3 to -5	--	GS
	ORFP-6-J-12-A	17 to 20	-5 to -8	--	GS
Composite Area ORFP-7,9,10,11,12,13					
ORFP-7	ORFP-7-A-12-A	0 to 1	9 to 8	PCBs/Pesticides	GS/TS
	ORFP-7-B-12-A	1 to 3	8 to 6	Pesticides	GS/TS
	ORFP-7-C-12-A	3 to 5	6 to 4	Pesticides	GS/TS
	ORFP-7-D-12-A	5 to 7	4 to 2	--	GS
	ORFP-7-E-12-A	7 to 9	2 to 0	--	GS
	ORFP-7-F-12-A	9 to 11	0 to -2	--	GS
	ORFP-7-G-12-A	11 to 13	-2 to -4	--	GS

Table 8
Summary of Physical and Chemical Analyses Performed on Archived Samples

Station ID	Subsurface Sediment Sample ID	Sample Interval		Archive Testing	
		Depth (feet bgs)	Elevation (feet NAVD88)	Chemistry	Physical
	ORFP-7-H-12-A	13 to 15	-4 to -6	--	GS
	ORFP-7-I-12-A	15 to 17	-6 to -8	--	GS
ORFP-9	ORFP-9-A-12-A	0 to 1	11 to 10	PCBs/Pesticides	GS/TS
	ORFP-9-B-12-A	1 to 3	10 to 8	Pesticides	GS/TS
	ORFP-9-C-12-A	3 to 5	8 to 6	Pesticides	GS/TS
	ORFP-9-D-12-A	5 to 7	6 to 4	--	GS
	ORFP-9-E-12-A	7 to 9	4 to 2	--	GS
	ORFP-9-F-12-A	9 to 11	2 to 0	--	GS
	ORFP-9-G-12-A	11 to 13	0 to -2	--	GS
	ORFP-9-H-12-A	13 to 15	-2 to -4	--	GS
	ORFP-9-I-12-A	15 to 17	-4 to -6	--	GS
	ORFP-9-J-12-A	17 to 19	-6 to -8	--	GS
ORFP-10	ORFP-10-A-12-A	0 to 1	11 to 10	PCBs/Pesticides	GS/TS
	ORFP-10-B-12-A	1 to 3	10 to 8	Pesticides	GS/TS
	ORFP-10-C-12-A	3 to 5	8 to 6	Pesticides	GS/TS
	ORFP-10-D-12-A	5 to 7	6 to 4	--	GS
	ORFP-10-E-12-A	7 to 9	4 to 2	--	GS
	ORFP-10-F-12-A	9 to 11	2 to 0	--	GS
	ORFP-10-G-12-A	11 to 13	0 to -2	--	GS
	ORFP-10-H-12-A	13 to 15	-2 to -4	--	GS
	ORFP-10-I-12-A	15 to 17	-4 to -6	--	GS
	ORFP-10-J-12-A	17 to 19	-6 to -8	--	GS
ORFP-11	ORFP-11-A-12-A	0 to 1	12 to 11	PCBs/Pesticides	GS/TS
	ORFP-11-B-12-A	1 to 3	11 to 9	Pesticides	GS/TS
	ORFP-11-C-12-A	3 to 5	9 to 7	Pesticides	GS/TS
	ORFP-11-D-12-A	5 to 7	7 to 5	--	GS
	ORFP-11-E-12-A	7 to 9	5 to 3	--	GS
	ORFP-11-F-12-A	9 to 11	3 to 1	--	GS
	ORFP-11-G-12-A	11 to 13	1 to -1	--	GS
	ORFP-11-H-12-A	13 to 15	-1 to -3	--	GS
	ORFP-11-I-12-A	15 to 17	-3 to -5	--	GS
	ORFP-11-J-12-A	17 to 20	-5 to -8	--	GS
ORFP-12	ORFP-12-A-12-A	0 to 1	8 to 7	PCBs/Pesticides	GS/TS
	ORFP-12-B-12-A	1 to 3	7 to 5	Pesticides	GS/TS
	ORFP-12-C-12-A	3 to 5	5 to 3	Pesticides	GS/TS
	ORFP-12-D-12-A	5 to 7	3 to 1	--	GS
	ORFP-12-E-12-A	7 to 9	1 to -1	--	GS
	ORFP-12-F-12-A	9 to 11	-1 to -3	--	GS
	ORFP-12-G-12-A	11 to 13	-3 to -5	--	GS
	ORFP-12-H-12-A	13 to 17	-5 to -9	--	GS
ORFP-13	ORFP-13-A-12-A	0 to 1	11 to 10	PCBs/Pesticides	GS/TS
	ORFP-13-B-12-A	1 to 3	10 to 8	Pesticides	GS/TS
	ORFP-13-C-12-A	3 to 5	8 to 6	Pesticides	GS/TS
	ORFP-13-D-12-A	5 to 7	6 to 4	--	GS
	ORFP-13-E-12-A	7 to 9	4 to 2	--	GS
	ORFP-13-F-12-A	9 to 11	2 to 0	--	GS
	ORFP-13-G-12-A	11 to 13	0 to -2	--	GS
	ORFP-13-H-12-A	13 to 15	-2 to -4	--	GS
	ORFP-13-I-12-A	15 to 17	-4 to -6	--	GS
	ORFP-13-J-12-A	17 to 20	-6 to -9	--	GS
Composite Area ORFP-8,14,15,16					
Composite	ORFP-8,14,15,16-A-12	Composite	Ground surface to 1 below	PCBS	GS/TS
ORFP-8	ORFP-8-A-12-A	0 to 1	11 to 10	Pesticides	GS/TS
	ORFP-8-B-12-A	1 to 3	10 to 8	Pesticides	GS/TS
	ORFP-8-C-12-A	3 to 5	8 to 6	Pesticides	GS/TS
	ORFP-8-D-12-A	5 to 7	6 to 4	--	GS
	ORFP-8-E-12-A	7 to 9	4 to 2	--	GS
	ORFP-8-F-12-A	9 to 11	2 to 0	--	GS
	ORFP-8-G-12-A	11 to 13	0 to -2	--	GS
	ORFP-8-H-12-A	13 to 15	-2 to -4	--	GS
	ORFP-8-I-12-A	15 to 17	-4 to -6	--	GS
	ORFP-8-J-12-A	17 to 19	-6 to -8	--	GS
	ORFP-14-A-12-A	0 to 1	14 to 13	Pesticides	GS/TS
	ORFP-14-B-12-A	1 to 3	13 to 11	Pesticides	GS/TS
	ORFP-14-C-12-A	3 to 5	11 to 9	Pesticides	GS/TS
	ORFP-14-D-12-A	5 to 7	9 to 7	--	GS

Table 8
Summary of Physical and Chemical Analyses Performed on Archived Samples

Station ID	Subsurface Sediment Sample ID	Sample Interval		Archive Testing	
		Depth (feet bgs)	Elevation (feet NAVD88)	Chemistry	Physical
ORFP-14	ORFP-14-E-12-A	7 to 9	7 to 5	--	GS
	ORFP-14-F-12-A	9 to 11	5 to 3	--	GS
	ORFP-14-G-12-A	11 to 14	3 to 0	--	GS
	ORFP-14-H-12-A	14 to 16	0 to -2	--	GS
	ORFP-14-I-12-A	16 to 18	-2 to -4	--	GS
	ORFP-14-J-12-A	18 to 20	-4 to -6	--	GS
	ORFP-14-K-12-A	20 to 22	-6 to -8	--	GS
ORFP-15	ORFP-15-A-12-A	0 to 1	13 to 12	Pesticides	GS/TS
	ORFP-15-B-12-A	1 to 3	12 to 10	Pesticides	GS/TS
	ORFP-15-C-12-A	3 to 5	10 to 8	Pesticides	GS/TS
	ORFP-15-D-12-A	5 to 7	8 to 6	--	GS
	ORFP-15-E-12-A	7 to 9	6 to 4	--	GS
	ORFP-15-F-12-A	9 to 11	4 to 2	--	GS
	ORFP-15-G-12-A	11 to 13	2 to 0	--	GS
	ORFP-15-H-12-A	13 to 15	0 to -2	--	GS
	ORFP-15-I-12-A	15 to 17	-2 to -4	--	GS
	ORFP-15-J-12-A	17 to 19	-4 to -6	--	GS
	ORFP-15-K-12-A	19 to 21	-6 to -8	--	GS
ORFP-16	ORFP-16-A-12-A	0 to 1	11 to 10	Pesticides	GS/TS
	ORFP-16-B-12-A	1 to 3	10 to 8	Pesticides	GS/TS
	ORFP-16-C-12-A	3 to 5	8 to 6	Pesticides	GS/TS
	ORFP-16-D-12-A	5 to 7	6 to 4	--	GS
	ORFP-16-E-12-A	7 to 9	4 to 2	--	GS
	ORFP-16-F-12-A	9 to 11	2 to 0	--	GS
	ORFP-16-G-12-A	11 to 13	0 to -2	--	GS
	ORFP-16-H-12-A	13 to 15	-2 to -4	--	GS
	ORFP-16-I-12-A	15 to 17	-4 to -6	--	GS
	ORFP-16-J-12-A	17 to 19	-6 to -8	--	GS
Nestor Creek					
Composite	NC-A-12	Composite	Surface to 1 ft below	PCBS	GS/TS
NC-1	NC-1-A-12-A	0 to 1	5 to 4	Pesticides	GS/TS
	NC-1-B-12-A	1 to 3	4 to 2	Pesticides	GS/TS
	NC-1-C-12-A	3 to 5	2 to 0	Pesticides	GS/TS
	NC-1-D-12-A	5 to 7	0 to -2	--	GS
	NC-1-E-12-A	7 to 9	-2 to -4	--	GS
	NC-1-F-12-A	9 to 11	-4 to -6	--	GS
	NC-1-G-12-A	11 to 13	-6 to -8	--	GS
NC-2	NC-2-A-12-A	0 to 1	4 to 3	Pesticides	GS/TS
	NC-2-B-12-A	1 to 3	3 to 1	Pesticides	GS/TS
	NC-2-C-12-A	3 to 5	1 to -1	Pesticides	GS/TS
	NC-2-D-12-A	5 to 7	-1 to -3	--	GS
	NC-2-E-12-A	7 to 9	-3 to -5	--	GS
	NC-2-F-12-A	9 to 11	-5 to -7	--	GS
	NC-2-G-12-A	11 to 13	-7 to -9	--	GS
Subarea S3					
S3-1	S3-1-A-12-A	0 to 1	16 to 15	Pesticides	GS/TS
	S3-1-B-12-A	1 to 3	15 to 13	Pesticides	GS/TS
	S3-1-C-12-A	3 to 5	13 to 11	Pesticides	GS/TS
	S3-1-D-12-A	5 to 7	11 to 9	--	GS
	S3-1-E-12-A	7 to 9	9 to 7	--	GS
	S3-1-F-12-A	9 to 11	7 to 5	--	GS
	S3-1-G-12-A	11 to 13	5 to 3	--	GS
	S3-1-H-12-A	13 to 15	3 to 1	--	GS
	S3-1-I-12-A	15 to 17	1 to -1	--	GS
	S3-1-J-12-A	17 to 19	-1 to -3	--	GS
	S3-1-K-12-A	19 to 22	-3 to -6	--	GS
S3-2	S3-2-A-12-A	0 to 1	16 to 15	Pesticides	GS/TS
	S3-2-B-12-A	1 to 3	15 to 13	Pesticides	GS/TS
	S3-2-C-12-A	3 to 5	13 to 11	Pesticides	GS/TS
	S3-2-D-12-A	5 to 7	11 to 9	--	GS
	S3-2-E-12-A	7 to 9	9 to 7	--	GS
	S3-2-F-12-A	9 to 11	7 to 5	--	GS
	S3-2-G-12-A	11 to 13	5 to 3	--	GS
	S3-2-H-12-A	13 to 15	3 to 1	--	GS
	S3-2-I-12-A	15 to 17	1 to -1	--	GS
	S3-2-J-12-A	17 to 19	-1 to -3	--	GS

Table 8
Summary of Physical and Chemical Analyses Performed on Archived Samples

Station ID	Subsurface Sediment Sample ID	Sample Interval		Archive Testing	
		Depth (feet bgs)	Elevation (feet NAVD88)	Chemistry	Physical
	S3-2-K-12-A	19 to 22	-3 to -6	--	GS
S3-3	S3-3-A-12-A	0 to 1	16 to 15	Pesticides	GS/TS
	S3-3-B-12-A	1 to 3	15 to 13	Pesticides	GS/TS
	S3-3-C-12-A	3 to 5	13 to 11	Pesticides	GS/TS
	S3-3-D-12-A	5 to 7	11 to 9	--	GS
	S3-3-E-12-A	7 to 9	9 to 7	--	GS
	S3-3-F-12-A	9 to 11	7 to 5	--	GS
	S3-3-G-12-A	11 to 13	5 to 3	--	GS
	S3-3-H-12-A	13 to 15	3 to 1	--	GS
	S3-3-I-12-A	15 to 17	1 to -1	--	GS
	S3-3-J-12-A	17 to 19	-1 to -3	--	GS
	S3-3-K-12-A	19 to 22	-3 to -6	--	GS
S3-4	S3-4-A-12-A	0 to 1	16 to 15	Pesticides	GS/TS
	S3-4-B-12-A	1 to 3	15 to 13	Pesticides	GS/TS
	S3-4-C-12-A	3 to 5	13 to 11	Pesticides	GS/TS
	S3-4-D-12-A	5 to 7	11 to 9	--	GS
	S3-4-E-12-A	7 to 9	9 to 7	--	GS
	S3-4-F-12-A	9 to 11	7 to 5	--	GS
	S3-4-G-12-A	11 to 13	5 to 3	--	GS
	S3-4-H-12-A	13 to 15	3 to 1	--	GS
	S3-4-I-12-A	15 to 17	1 to -1	--	GS
	S3-4-J-12-A	17 to 19	-1 to -3	--	GS
	S3-4-K-12-A	19 to 22	-3 to -6	--	GS
S3-5	S3-5-A-12-A	0 to 1	16 to 15	Pesticides	GS/TS
	S3-5-B-12-A	1 to 3	15 to 13	Pesticides	GS/TS
	S3-5-C-12-A	3 to 5	13 to 11	Pesticides	GS/TS
	S3-5-D-12-A	5 to 7	11 to 9	--	GS
	S3-5-E-12-A	7 to 9	9 to 7	--	GS
	S3-5-F-12-A	9 to 11	7 to 5	--	GS
	S3-5-G-12-A	11 to 13	5 to 3	--	GS
	S3-5-H-12-A	13 to 15	3 to 1	--	GS
	S3-5-I-12-A	15 to 17	1 to -1	--	GS
	S3-5-J-12-A	17 to 19	-1 to -3	--	GS
	S3-5-K-12-A	19 to 21	-3 to -5	--	GS
S3-6	S3-6-A-12-A	0 to 1	16 to 15	Pesticides	GS/TS
	S3-6-B-12-A	1 to 3	15 to 13	Pesticides	GS/TS
	S3-6-C-12-A	3 to 5	13 to 11	Pesticides	GS/TS
	S3-6-D-12-A	5 to 7	11 to 9	--	GS
	S3-6-E-12-A	7 to 9	9 to 7	--	GS
	S3-6-F-12-A	9 to 11	7 to 5	--	GS
	S3-6-G-12-A	11 to 13	5 to 3	--	GS
	S3-6-H-12-A	13 to 15	3 to 1	--	GS
	S3-6-I-12-A	15 to 17	1 to -1	--	GS
	S3-6-J-12-A	17 to 19	-1 to -3	--	GS
	S3-6-K-12-A	19 to 22	-3 to -6	--	GS
S3-7	S3-7-A-12-A	0 to 1	16 to 15	Pesticides	GS/TS
	S3-7-B-12-A	1 to 3	15 to 13	Pesticides	GS/TS
	S3-7-C-12-A	3 to 5	13 to 11	Pesticides	GS/TS
	S3-7-D-12-A	5 to 7	11 to 9	--	GS
	S3-7-E-12-A	7 to 9	9 to 7	--	GS
	S3-7-F-12-A	9 to 11	7 to 5	--	GS
	S3-7-G-12-A	11 to 13	5 to 3	--	GS
	S3-7-H-12-A	13 to 15	3 to 1	--	GS
	S3-7-I-12-A	15 to 17	1 to -1	--	GS
	S3-7-J-12-A	17 to 19	-1 to -3	--	GS
	S3-7-K-12-A	19 to 22	-3 to -6	--	GS

Notes:
bgs = below ground surface
GS = Grain size
NAVD88 = North American Vertical Datum of 1988
PCBs = polychlorinated biphenyls
TS = total solids

3.2.1 Grain Size Results

Grain size results for archived samples are presented in Table 9. Laboratory reports are presented in Appendix B. Results indicate that soils within Otay River Floodplain, Subarea 3, and Nestor Creek are generally comprised of fine-grained materials (silt and clay) with some pockets of silty sand. No trends were apparent, and only a few stations consisted of primarily coarse-grained materials (ORFP-7, ORFP-10, ORFP-15, and S3-5).

3.2.2 Chemical Results

Chemical results for archived samples are presented in Table 10. Laboratory reports are presented in Appendix B.

3.2.2.1 Pesticides

Within the Otay River Floodplain, concentrations of DDTs, chlordane, and toxaphene were highest at the surface and decreased with depth, with only a few exceptions. At ORFP-13, concentrations of DDTs, chlordane, and toxaphene were highest in the third depth interval. At ORFP-12, concentrations of DDTs were similar across all three depth intervals. Highest concentrations of DDTs and toxaphene within the Otay River Floodplain were measured in the surface of ORFP-8, ORFP-14, ORFP-15, and ORFP-16. Dieldrin was only measured at ORFP-8, ORFP-13, and ORFP-14.

Within Nestor Creek, concentrations of DDTs, chlordane, and toxaphene were highest at the surface and decreased with depth. DDTs were detected at both stations; however, substantially higher concentrations were measured at NC-2. Chlordane and toxaphene were only measured at NC-2.

Within Subarea 3, concentrations of DDTs, chlordane, toxaphene, and dieldrin were highest at the surface and decreased with depth, with the exception of S3-4. At this station, concentrations increased with depth and were highest in the third depth interval. DDTs, chlordane, and toxaphene were elevated in at least one depth interval of all stations, while dieldrin was only detected at four stations (S3-2, S3-3, S3-6, and S3-7). Highest dieldrin concentrations were measured in the surface at S3-2 and S3-3.

Table 9
Grain Size Results for Archived Samples

Sample ID	Sample Date	Clay (less than 0.00391 mm)	Silt (0.00391 to 0.0625 mm)	Total Silt and Clay (0 to 0.0625 mm)	Very Fine Sand (0.0625 to 0.125 mm)	Fine Sand (0.125 to 0.25 mm)	Medium Sand (0.25 to 0.5 mm)	Coarse Sand (0.5 to 1 mm)	Very Coarse Sand (1 to 2 mm)	Gravel (greater than 2 mm)
NC-1-A-12-A	5/4/2012	24.81	61.02	85.83	8.49	5.39	0.28	< 0.01	< 0.01	< 0.01
NC-1-B-12-A	5/4/2012	26.24	59.3	85.54	13.4	1.06	< 0.01	< 0.01	< 0.01	< 0.01
NC-1-C-12-A	5/4/2012	24.36	53.69	78.05	18.8	3.15	< 0.01	< 0.01	< 0.01	< 0.01
NC-1-D-12-A	5/4/2012	12.16	28.4	40.56	13.4	19.1	21.6	4.9	0.45	< 0.01
NC-1-E-12-A	5/4/2012	23.51	65.06	88.57	11.39	0.04	< 0.01	< 0.01	< 0.01	< 0.01
NC-1-F-12-A	5/4/2012	27.1	66.17	93.26	6.72	0.02	< 0.01	< 0.01	< 0.01	< 0.01
NC-1-G-12-A	5/4/2012	27.96	67.83	95.79	4.16	0.05	< 0.01	< 0.01	< 0.01	< 0.01
NC-2-A-12-A	5/4/2012	24.09	54.12	78.21	15.41	6.37	0.01	< 0.01	< 0.01	< 0.01
NC-2-B-12-A	5/4/2012	35.91	64.08	100	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
NC-2-C-12-A	5/4/2012	36	64	100	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
NC-2-D-12-A	5/4/2012	21.38	65.16	86.54	13.09	0.37	< 0.01	< 0.01	< 0.01	< 0.01
NC-2-E-12-A	5/4/2012	29.91	65.08	94.99	4.99	0.03	< 0.01	< 0.01	< 0.01	< 0.01
NC-2-F-12-A	5/4/2012	30.07	62.08	92.14	7.71	0.15	< 0.01	< 0.01	< 0.01	< 0.01
NC-2-G-12-A	5/4/2012	32.89	66.9	99.79	0.21	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-1-A-12-A	5/8/2012	28.83	69.77	98.6	1.4	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-1-B-12-A	5/8/2012	27.82	72.15	99.96	0.04	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-1-C-12-A	5/8/2012	32.34	67.54	99.88	0.12	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-1-D-12-A	5/8/2012	29.72	69.59	99.31	0.69	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-1-E-12-A	5/8/2012	38.09	61.8	99.89	0.11	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-1-F-12-A	5/8/2012	35.51	64.4	99.9	0.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-1-G-12-A	5/8/2012	30.86	62.79	93.65	6.35	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-1-H-12-A	5/8/2012	38.83	60.49	99.32	0.68	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-2-A-12-A	5/4/2012	34.73	59.02	93.75	5.6	0.65	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-2-B-12-A	5/4/2012	2.79	4.39	7.18	5.68	37.31	44.91	4.92	< 0.01	< 0.01
ORFP-2-C-12-A	5/4/2012	5.62	14.18	19.8	11.88	32.96	31.26	3.78	0.32	< 0.01
ORFP-2-D-12-A	5/4/2012	17.55	63.4	80.95	13.2	5.84	0.01	< 0.01	< 0.01	< 0.01
ORFP-2-E-12-A	5/4/2012	24.42	67.51	91.93	8.05	0.01	0.01	< 0.01	< 0.01	< 0.01
ORFP-2-F-12-A	5/4/2012	25.88	59.68	85.56	14.2	0.24	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-2-G-12-A	5/4/2012	21.1	57.36	78.46	18.29	3.26	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-2-H-12-A	5/4/2012	35.69	64.12	99.81	0.19	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-2-I-12-A	5/4/2012	35.07	62.64	97.72	2.28	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-2-J-12-A	5/4/2012	3.56	9.26	12.82	7.6	21.71	38.72	18.71	0.43	< 0.01
ORFP-3-A-12-A	5/8/2012	2.65	6.09	8.73	1.62	5.46	40.57	41.57	2.06	< 0.01
ORFP-3-B-12-A	5/8/2012	1.49	2.74	4.23	1.73	9.59	51.51	32.8	0.14	< 0.01
ORFP-3-C-12-A	5/8/2012	3.16	4.99	8.14	2.83	15.29	53.26	20.29	0.19	< 0.01
ORFP-3-D-12-A	5/8/2012	15.87	46.82	62.68	23.01	14.31	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-3-E-12-A	5/8/2012	19.88	62.38	82.26	17.7	0.04	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-3-F-12-A	5/8/2012	24.65	67.7	92.35	7.65	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-3-G-12-A	5/8/2012	16.96	47.4	64.36	27.1	8.52	0.01	< 0.01	< 0.01	< 0.01
ORFP-3-H-12-A	5/8/2012	30.32	66.49	96.81	3.19	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-3-I-12-A	5/8/2012	20.89	60.86	81.74	17.99	0.27	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-3-J-12-A	5/8/2012	17.81	52.85	70.66	16.32	13.01	0.01	< 0.01	< 0.01	< 0.01
ORFP-4-A-12-A	5/8/2012	19.49	46.9	66.4	21.5	12.1	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-4-B-12-A	5/8/2012	10.13	25.31	35.44	14.5	18.8	25.11	5.8	0.35	< 0.01
ORFP-4-C-12-A	5/8/2012	18.43	56.31	74.74	16.2	9.01	0.05	< 0.01	< 0.01	< 0.01
ORFP-4-D-12-A	5/8/2012	29.33	59.59	88.92	7.83	3.25	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-4-E-12-A	5/8/2012	29.36	64.41	93.77	5.98	0.25	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-4-F-12-A	5/8/2012	25.18	62.12	87.29	12.7	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-4-G-12-A	5/8/2012	28.45	71.05	99.5	0.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-4-H-12-A	5/8/2012	18.45	66.25	84.71	15.11	0.18	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-4-I-12-A	5/8/2012	28.3	64.68	92.98	7.02	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-5-A-12-A	5/8/2012	0.83	3.69	4.52	3.22	10	35	40.6	6.65	< 0.01
ORFP-5-B-12-A	5/8/2012	0.84	2.29	3.13	2.21	9.95	44.4	37.3	3.02	< 0.01
ORFP-5-C-12-A	5/8/2012	20.21	60.54	80.75	14.41	4.84	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-5-D-12-A	5/8/2012	29.96	66.71	96.67	3.33	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-5-E-12-A	5/8/2012	28.39	69.29	97.68	2.32	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-5-F-12-A	5/8/2012	23.21	53.11	76.33	20.9	2.77	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-5-G-12-A	5/8/2012	37.19	62.76	99.95	0.05	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-5-H-12-A	5/8/2012	29.02	61.28	90.3	9.4	0.3	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-5-I-12-A	5/8/2012	36.63	57.67	94.3	4.86	0.84	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-5-J-12-A	5/8/2012	24.85	52.76	77.62	20.79	1.6	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-6-A-12-A	5/8/2012	10.19	31.11	41.3	12.9	13.5	18.31	13.9	0.08	< 0.01
ORFP-6-B-12-A	5/8/2012	13.4	46.19	59.59	19.5	8.82	10.7	1.4	< 0.01	< 0.01
ORFP-6-C-12-A	5/8/2012	12.11	41.52	53.63	15.61	10.81	13.41	6.54	< 0.01	< 0.01
ORFP-6-D-12-A	5/8/2012	18.97	62	80.97	17.6	1.43	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-6-E-12-A	5/8/2012	20.88	62.05	82.93	13.11	3.96	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-6-F-12-A	5/8/2012	13.74	46.2	59.94	26.9	11.8	1.2	0.16	< 0.01	< 0.01
ORFP-6-G-12-A	5/8/2012	28.04	61.28	89.32	8.02	2.66	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-6-H-12-A	5/8/2012	31.29	64.74	96.02	3.85	0.13	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-6-I-12-A	5/8/2012	32.56	63.86	96.43	3.57	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-6-J-12-A	5/8/2012	17.34	46.4	63.75	16.7	16.5	3.05	< 0.01	< 0.01	< 0.01
ORFP-7-A-12-A	5/2/2012	4.85	15.4	20.25	10.8	20.19	26.19	14.83	1.63	6.11
ORFP-7-B-12-A	5/2/2012	3.1	7.55	10.65	6.08	15.79	29.67	15.55	1.68	20.58
ORFP-7-C-12-A	5/2/2012	14.43	39.59	54.01	30.19	15.79	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-7-D-12-A	5/2/2012	30.68	66.51	97.19	2.81	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-7-E-12-A	5/2/2012	7	14.39	21.39	4.92	15.59	34.67	21.48	1.95	< 0.01
ORFP-7-F-12-A	5/2/2012	11.54	31.52	43.06	11.91	12.61	18.91	13.51	0.01	< 0.01
ORFP-7-G-12-A	5/2/2012	19.98	52.96	72.94	21.02	6.04	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-7-H-12-A	5/2/2012	10.68	29.99	40.67	13.29	17.09	19.29	9.65	0.01	< 0.01
ORFP-7-I-12-A	5/2/2012	4.79	12.01	16.8	7.63	16.43	30.74	23.25	1.25	3.89
ORFP-8-A-12-A	5/1/2012	2.21	13.7	15.91	7.99	10.47	32.97	28.67	1.76	2.22
ORFP-8-B-12-A	5/1/2012	10.92	22.17	33.1	4.24	14.94	28.17	14.56	0.07	4.93
ORFP-8-C-12-A	5/1/2012	24.62	59.94	84.56	7.05	8.34	0.04	< 0.01	< 0.01	< 0.01
ORFP-8-D-12-A	5/1/2012	24.43	54.32	78.75	14.81	6.44	< 0.01	< 0.01	< 0.01	< 0.01

Table 9
Grain Size Results for Archived Samples

Sample ID	Sample Date	Clay (less than 0.00391 mm)	Silt (0.00391 to 0.0625 mm)	Total Silt and Clay (0 to 0.0625 mm)	Very Fine Sand (0.0625 to 0.125 mm)	Fine Sand (0.125 to 0.25 mm)	Medium Sand (0.25 to 0.5 mm)	Coarse Sand (0.5 to 1 mm)	Very Coarse Sand (1 to 2 mm)	Gravel (greater than 2 mm)
ORFP-8-E-12-A	5/1/2012	37.74	61.96	99.7	0.3	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-8-F-12-A	5/1/2012	20.77	51.89	72.66	17.6	9.74	0.01	< 0.01	< 0.01	< 0.01
ORFP-8-G-12-A	5/1/2012	34.14	65.25	99.39	0.61	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-8-H-12-A	5/1/2012	27.06	64.07	91.12	8.86	0.02	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-8-I-12-A	5/1/2012	23.67	62.26	85.93	12.99	1.08	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-8-J-12-A	5/1/2012	26.85	69.65	96.5	3.5	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-9-A-12-A	5/2/2012	3.47	19.75	23.22	11.34	14.79	20.67	12.19	1.77	16.01
ORFP-9-B-12-A	5/2/2012	9.96	26.4	36.35	12.72	17.63	16.16	3.1	< 0.01	14.03
ORFP-9-C-12-A	5/2/2012	20.61	50.19	70.8	19.9	9	0.3	< 0.01	< 0.01	< 0.01
ORFP-9-D-12-A	5/2/2012	25.74	62.19	87.93	12	0.07	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-9-E-12-A	5/2/2012	34.2	59.72	93.93	5.51	0.56	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-9-F-12-A	5/2/2012	19.06	49.83	68.89	15.11	14.21	1.79	< 0.01	< 0.01	< 0.01
ORFP-9-G-12-A	5/2/2012	35.88	57.5	93.38	4.71	1.91	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-9-H-12-A	5/2/2012	17.53	44.27	61.8	30.28	7.92	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-9-I-12-A	5/2/2012	29.03	53.81	82.84	6.93	10.18	0.04	< 0.01	< 0.01	< 0.01
ORFP-9-J-12-A	5/2/2012	20.37	47.12	67.49	15.21	15.81	1.49	< 0.01	< 0.01	< 0.01
ORFP-10-A-12-A	5/2/2012	9.4	22.8	32.2	10.8	15.9	24.4	14.3	2.4	< 0.01
ORFP-10-B-12-A	5/2/2012	27.17	66.19	93.36	6.01	0.63	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-10-C-12-A	5/2/2012	6.68	16	22.68	12.2	25.31	29.01	9.57	1.23	< 0.01
ORFP-10-D-12-A	5/2/2012	2.6	8.2	10.81	3.25	11.51	47.63	25.52	1.29	< 0.01
ORFP-10-E-12-A	5/2/2012	0.8	1.47	2.27	1.09	10.29	45.45	36.46	4.44	< 0.01
ORFP-10-F-12-A	5/2/2012	1.21	3.68	4.89	2.41	8.11	28.59	49.38	6.64	< 0.01
ORFP-10-G-12-A	5/2/2012	1.64	5.29	6.93	1.47	5.07	21.51	48.61	16.4	< 0.01
ORFP-10-H-12-A	5/2/2012	4.81	11.7	16.51	6.34	16.1	26.3	30.6	4.16	< 0.01
ORFP-10-I-12-A	5/2/2012	29.73	61.34	91.06	7.17	1.76	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-10-J-12-A	5/2/2012	31.17	66.07	97.25	2.75	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-11-A-12-A	5/2/2012	12.04	35.7	47.74	23	19.4	7.73	2.14	< 0.01	< 0.01
ORFP-11-B-12-A	5/2/2012	31.95	53.7	85.65	8.16	0.22	< 0.01	< 0.01	< 0.01	5.97
ORFP-11-C-12-A	5/2/2012	25.23	46.31	71.54	5.65	1.82	0.27	< 0.01	< 0.01	20.72
ORFP-11-D-12-A	5/2/2012	18.31	41.16	59.47	21.18	16.98	2.14	0.23	< 0.01	< 0.01
ORFP-11-E-12-A	5/2/2012	31.18	66.05	97.22	2.18	0.6	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-11-F-12-A	5/2/2012	21.87	48.99	70.86	14	14.5	0.65	< 0.01	< 0.01	< 0.01
ORFP-11-G-12-A	5/2/2012	29.08	70.63	99.71	0.29	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-11-H-12-A	5/2/2012	35.83	64.03	99.86	0.14	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-11-I-12-A	5/2/2012	21.61	60.05	81.66	11.21	7.09	0.04	< 0.01	< 0.01	< 0.01
ORFP-11-J-12-A	5/2/2012	23.86	61.12	84.98	13.51	1.51	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-12-A-12-A	5/2/2012	3.53	8.17	11.7	4.57	11.7	43.49	27.79	0.75	< 0.01
ORFP-12-B-12-A	5/2/2012	37.81	60.89	98.7	1.3	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-12-C-12-A	5/2/2012	19.24	56.08	75.33	21.99	2.68	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-12-D-12-A	5/2/2012	24.76	69.48	94.24	5.76	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-12-E-12-A	5/2/2012	37.81	62.13	99.93	0.07	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-12-F-12-A	5/2/2012	36.33	63.02	99.35	0.65	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-12-G-12-A	5/2/2012	41.87	58.11	99.97	0.03	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-12-H-12-A	5/2/2012	34.63	63.5	98.13	1.87	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-13-A-12-A	5/2/2012	30.4	63	93.4	6.12	0.48	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-13-B-12-A	5/2/2012	23.24	64.42	87.66	12.3	0.03	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-13-C-12-A	5/2/2012	22.67	46.01	68.69	14.67	7.85	< 0.01	< 0.01	< 0.01	8.8
ORFP-13-D-12-A	5/2/2012	21.79	60.1	81.89	18.1	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-13-E-12-A	5/2/2012	8.34	21.71	30.05	11.61	16.11	23.11	14.71	4.41	< 0.01
ORFP-13-F-12-A	5/2/2012	15.71	46.91	62.63	16.1	15.2	5.61	0.45	< 0.01	< 0.01
ORFP-13-G-12-A	5/2/2012	23.96	53.42	77.38	11.5	10.6	0.51	< 0.01	< 0.01	< 0.01
ORFP-13-H-12-A	5/2/2012	28.36	66.42	94.78	5.22	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-13-I-12-A	5/2/2012	37.09	62.73	99.82	0.18	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-13-J-12-A	5/2/2012	36.12	63.79	99.91	0.09	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-14-A-12-A	5/1/2012	1.84	11	12.84	8.32	14.4	41.1	22.9	0.44	< 0.01
ORFP-14-B-12-A	5/1/2012	1.86	6.41	8.27	5.28	13.79	43.18	27.89	1.6	< 0.01
ORFP-14-C-12-A	5/1/2012	21.09	56.25	77.35	13.09	9.55	0.01	< 0.01	< 0.01	< 0.01
ORFP-14-D-12-A	5/1/2012	25.11	63.77	88.88	10.7	0.42	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-14-E-12-A	5/1/2012	29.95	57.82	87.78	9.26	2.96	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-14-F-12-A	5/1/2012	23.25	56.84	80.09	12.59	7.08	0.24	< 0.01	< 0.01	< 0.01
ORFP-14-G-12-A	5/1/2012	29.42	61.69	91.11	5.62	3.27	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-14-H-12-A	5/1/2012	31.25	65.12	96.37	3.41	0.22	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-14-I-12-A	5/1/2012	49.44	50.56	100	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-14-J-12-A	5/1/2012	12.51	33.91	46.42	19.41	24.31	8.53	1.33	< 0.01	< 0.01
ORFP-14-K-12-A	5/1/2012	2.09	6.41	8.5	4.34	13.59	42.97	27.68	2.93	< 0.01
ORFP-15-A-12-A	5/1/2012	2.5	15.4	17.91	8.58	12	36.91	23.61	0.99	< 0.01
ORFP-15-B-12-A	5/1/2012	2.6	6.13	8.73	4.04	12.3	44.58	28.99	1.37	< 0.01
ORFP-15-C-12-A	5/1/2012	35.05	62.6	97.65	2.35	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-15-D-12-A	5/1/2012	9.92	21.21	31.13	9.99	15.91	27.21	14.01	1.75	< 0.01
ORFP-15-E-12-A	5/1/2012	5.65	12.09	17.74	5.65	16.08	34.76	22.87	2.89	< 0.01
ORFP-15-F-12-A	5/1/2012	8.01	18.98	27	6.51	10.25	20.65	11.68	3.4	20.52
ORFP-15-G-12-A	5/1/2012	6.25	16.68	22.93	7.19	13.23	19.4	14.43	2.95	19.87
ORFP-15-H-12-A	5/1/2012	29.31	67.48	96.79	3.21	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-15-I-12-A	5/1/2012	24.19	63.77	87.96	9.6	2.44	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-15-J-12-A	5/1/2012	28.74	67.03	95.77	4.23	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-15-K-12-A	5/1/2012	11.35	32.12	43.47	19.71	27.12	9.36	0.35	< 0.01	< 0.01
ORFP-16-A-12-A	5/1/2012	2.94	21.73	24.67	10.91	11.82	27.84	22.93	1.83	< 0.01
ORFP-16-B-12-A	5/1/2012	27.35	59.82	87.17	10	2.83	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-16-C-12-A	5/1/2012	19.14	49.13	68.27	14.18	16.28	1.27	< 0.01	< 0.01	< 0.01
ORFP-16-D-12-A	5/1/2012	24.65	53.68	78.33	10.3	11.1	0.28	< 0.01	< 0.01	< 0.01
ORFP-16-E-12-A	5/1/2012	25.37	72.09	97.46	2.54	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-16-F-12-A	5/1/2012	22.17	61.98	84.15	13.29	2.56	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-16-G-12-A	5/1/2012	28.73	67.99	96.72	3.28	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-16-H-12-A	5/1/2012	31.18	61.87	93.05	5.67	1.28	< 0.01	< 0.01	< 0.01	< 0.01

Table 9
Grain Size Results for Archived Samples

Sample ID	Sample Date	Clay (less than 0.00391 mm)	Silt (0.00391 to 0.0625 mm)	Total Silt and Clay (0 to 0.0625 mm)	Very Fine Sand (0.0625 to 0.125 mm)	Fine Sand (0.125 to 0.25 mm)	Medium Sand (0.25 to 0.5 mm)	Coarse Sand (0.5 to 1 mm)	Very Coarse Sand (1 to 2 mm)	Gravel (greater than 2 mm)
ORFP-16-I-12-A	5/1/2012	**37.16**	**62.84**	**100**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
ORFP-16-J-12-A	5/1/2012	**52.13**	**47.87**	**100**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-1-A-12-A	5/4/2012	**31.83**	**58.97**	**90.8**	**5.92**	**3.28**	< 0.01	< 0.01	< 0.01	< 0.01
S3-1-B-12-A	5/4/2012	**36.46**	**62.53**	**98.99**	**1.01**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-1-C-12-A	5/4/2012	**14.96**	**39.87**	**54.83**	**26.88**	**18.29**	**0.01**	< 0.01	< 0.01	< 0.01
S3-1-D-12-A	5/4/2012	**22.02**	**70.33**	**92.35**	**7.64**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-1-E-12-A	5/4/2012	**37.31**	**62.46**	**99.77**	**0.23**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-1-F-12-A	5/4/2012	**27.77**	**63.96**	**91.74**	**8.26**	**0.01**	< 0.01	< 0.01	< 0.01	< 0.01
S3-1-G-12-A	5/4/2012	**31.92**	**67.85**	**99.77**	**0.23**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-1-H-12-A	5/4/2012	**32.73**	**66.49**	**99.22**	**0.78**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-1-I-12-A	5/4/2012	**17.39**	**46.76**	**64.15**	**14.99**	**17.48**	**3.38**	< 0.01	< 0.01	< 0.01
S3-1-J-12-A	5/4/2012	**3.03**	**7.67**	**10.71**	**6.08**	**19.91**	**46.12**	**15.71**	**1.47**	< 0.01
S3-1-K-12-A	5/4/2012	**2.42**	**5.68**	**8.1**	**3.41**	**9.25**	**21.01**	**32.01**	**26.21**	< 0.01
S3-2-A-12-A	5/3/2012	**5.61**	**17.1**	**22.71**	**8.62**	**15.7**	**34.5**	**17.9**	**0.57**	< 0.01
S3-2-B-12-A	5/3/2012	**32.82**	**60.58**	**93.4**	**6.42**	**0.18**	< 0.01	< 0.01	< 0.01	< 0.01
S3-2-C-12-A	5/3/2012	**15.29**	**43.6**	**58.88**	**25.4**	**11.9**	**3.05**	**0.77**	< 0.01	< 0.01
S3-2-D-12-A	5/3/2012	**30.86**	**62.68**	**93.54**	**6.46**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-2-E-12-A	5/3/2012	**29.85**	**64.82**	**94.67**	**5.33**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-2-F-12-A	5/3/2012	**18.25**	**49.92**	**68.16**	**20.21**	**11.6**	**0.02**	< 0.01	< 0.01	< 0.01
S3-2-G-12-A	5/3/2012	**27.71**	**65.69**	**93.4**	**6.59**	**0.01**	< 0.01	< 0.01	< 0.01	< 0.01
S3-2-H-12-A	5/3/2012	**22.44**	**58.58**	**81.03**	**15.8**	**3.18**	< 0.01	< 0.01	< 0.01	< 0.01
S3-2-I-12-A	5/3/2012	**18.56**	**58.26**	**76.82**	**18.59**	**4.6**	< 0.01	< 0.01	< 0.01	< 0.01
S3-2-J-12-A	5/3/2012	**9.34**	**28.8**	**38.14**	**22**	**26.1**	**12.7**	**1.07**	< 0.01	< 0.01
S3-2-K-12-A	5/3/2012	**13.21**	**38.3**	**51.51**	**20.4**	**21.2**	**6.52**	**0.37**	< 0.01	< 0.01
S3-3-A-12-A	5/3/2012	**2.51**	**11**	**13.5**	**6.78**	**13.89**	**40.48**	**24.79**	**0.55**	< 0.01
S3-3-B-12-A	5/3/2012	**1.16**	**2.5**	**3.66**	**2.06**	**9.49**	**48.18**	**35.69**	**0.93**	< 0.01
S3-3-C-12-A	5/3/2012	**24.36**	**62.65**	**87.01**	**12.21**	**0.78**	< 0.01	< 0.01	< 0.01	< 0.01
S3-3-D-12-A	5/3/2012	**29.72**	**66.69**	**96.41**	**3.59**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-3-E-12-A	5/3/2012	**33.03**	**62.72**	**95.75**	**4.25**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-3-F-12-A	5/4/2012	**34.29**	**65.62**	**99.91**	**0.09**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-3-G-12-A	5/3/2012	**24.04**	**62.34**	**86.38**	**12.11**	**1.51**	< 0.01	< 0.01	< 0.01	< 0.01
S3-3-H-12-A	5/4/2012	**35.11**	**64.09**	**99.2**	**0.8**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-3-I-12-A	5/3/2012	**17.19**	**56.93**	**74.12**	**22.01**	**3.87**	< 0.01	< 0.01	< 0.01	< 0.01
S3-3-J-12-A	5/3/2012	**4.93**	**13.42**	**18.36**	**10.88**	**37.25**	**9.25**	**2.78**	**0.05**	**21.43**
S3-3-K-12-A	5/3/2012	**1.77**	**3.71**	**5.48**	**0.61**	**1.59**	**9.73**	**33.36**	**30.98**	**18.24**
S3-4-A-12-A	5/3/2012	**22.34**	**55.71**	**78.05**	**18.5**	**3.45**	< 0.01	< 0.01	< 0.01	< 0.01
S3-4-B-12-A	5/3/2012	**24.46**	**63.41**	**87.87**	**11**	**1.13**	< 0.01	< 0.01	< 0.01	< 0.01
S3-4-C-12-A	5/3/2012	**2.02**	**10.7**	**12.72**	**8.28**	**19.1**	**42.4**	**17.3**	**0.2**	< 0.01
S3-4-D-12-A	5/3/2012	**29.63**	**64.8**	**94.43**	**5.57**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-4-E-12-A	5/3/2012	**26.49**	**59.19**	**85.68**	**9.5**	**4.79**	**0.03**	< 0.01	< 0.01	< 0.01
S3-4-F-12-A	5/3/2012	**23.4**	**67.62**	**91.02**	**7.47**	**1.51**	< 0.01	< 0.01	< 0.01	< 0.01
S3-4-G-12-A	5/3/2012	**22.32**	**58.67**	**80.99**	**11.49**	**5.31**	**2.21**	< 0.01	< 0.01	< 0.01
S3-4-H-12-A	5/3/2012	**28.15**	**59.65**	**87.8**	**8.36**	**3.84**	< 0.01	< 0.01	< 0.01	< 0.01
S3-4-I-12-A	5/3/2012	**2.21**	**6.91**	**9.12**	**4.44**	**12.7**	**39**	**32.2**	**2.54**	< 0.01
S3-4-J-12-A	5/3/2012	**2.96**	**6.62**	**9.59**	**3.77**	**7.98**	**24.31**	**27.91**	**12.28**	**14.16**
S3-4-K-12-A	5/3/2012	**2.45**	**6.12**	**8.57**	**4.04**	**7.03**	**19.29**	**27.39**	**33.69**	< 0.01
S3-5-A-12-A	5/4/2012	**7.4**	**14.2**	**21.61**	**7.09**	**17.31**	**36.31**	**17.31**	**0.38**	< 0.01
S3-5-B-12-A	5/4/2012	**3.75**	**8.7**	**12.44**	**5.36**	**17.09**	**44.17**	**20.89**	**0.05**	< 0.01
S3-5-C-12-A	5/4/2012	**9.55**	**22.81**	**32.37**	**23.11**	**31.22**	**10.81**	**2.39**	**0.11**	< 0.01
S3-5-D-12-A	5/4/2012	**30.35**	**65.93**	**96.32**	**3.68**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-5-E-12-A	5/4/2012	**22.91**	**57.98**	**80.89**	**13.29**	**5.82**	< 0.01	< 0.01	< 0.01	< 0.01
S3-5-F-12-A	5/4/2012	**14.86**	**41.5**	**56.37**	**20.9**	**17.2**	**3.73**	**1.8**	< 0.01	< 0.01
S3-5-G-12-A	5/4/2012	**29.06**	**69.86**	**98.92**	**1.08**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-5-H-12-A	5/4/2012	**21.58**	**43.52**	**65.1**	**15.31**	**19.31**	**0.28**	< 0.01	< 0.01	< 0.01
S3-5-I-12-A	5/4/2012	**4.71**	**10.7**	**15.42**	**7.72**	**17.81**	**37.31**	**20.81**	**0.93**	< 0.01
S3-5-J-12-A	5/4/2012	**7.67**	**16.7**	**24.37**	**6.93**	**23.9**	**25.51**	**17.5**	**1.78**	< 0.01
S3-5-K-12-A	5/4/2012	**3.37**	**9.48**	**12.85**	**6.19**	**13.7**	**36**	**29.6**	**1.66**	< 0.01
S3-6-A-12-A	5/3/2012	**1.51**	**8.54**	**10.05**	**7.58**	**16.49**	**42.97**	**22.28**	**0.63**	< 0.01
S3-6-B-12-A	5/3/2012	**2.49**	**15.8**	**18.29**	**13.6**	**19**	**34.3**	**14.7**	**0.12**	< 0.01
S3-6-C-12-A	5/3/2012	**32.72**	**61.51**	**94.23**	**5.19**	**0.58**	< 0.01	< 0.01	< 0.01	< 0.01
S3-6-D-12-A	5/3/2012	**28.01**	**60.04**	**88.04**	**7.84**	**4.11**	< 0.01	< 0.01	< 0.01	< 0.01
S3-6-E-12-A	5/3/2012	**31.37**	**63.41**	**94.78**	**5.22**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-6-F-12-A	5/3/2012	**19.8**	**48.91**	**68.71**	**15.9**	**10.7**	**4.46**	**0.22**	< 0.01	< 0.01
S3-6-G-12-A	5/3/2012	**21.38**	**58.24**	**79.61**	**13.78**	**6.6**	< 0.01	< 0.01	< 0.01	< 0.01
S3-6-H-12-A	5/3/2012	**19.75**	**57.62**	**77.36**	**17.31**	**5.33**	< 0.01	< 0.01	< 0.01	< 0.01
S3-6-I-12-A	5/3/2012	**23.63**	**63.11**	**86.75**	**12.4**	**0.85**	< 0.01	< 0.01	< 0.01	< 0.01
S3-6-J-12-A	5/3/2012	**4.41**	**11.89**	**16.3**	**8.49**	**24.38**	**34.68**	**14.39**	**1.76**	< 0.01
S3-6-K-12-A	5/3/2012	**4.32**	**12**	**16.32**	**7.57**	**18.7**	**37.19**	**19.5**	**0.73**	< 0.01
S3-7-A-12-A	5/3/2012	**3.69**	**20.9**	**24.59**	**11.8**	**17.6**	**31.69**	**13.9**	**0.43**	< 0.01
S3-7-B-12-A	5/3/2012	**9.76**	**40.5**	**50.26**	**18.8**	**17.1**	**9.67**	**4.14**	**0.02**	< 0.01
S3-7-C-12-A	5/3/2012	**19.81**	**50.2**	**70.01**	**17.7**	**11.6**	**0.69**	< 0.01	< 0.01	< 0.01
S3-7-D-12-A	5/3/2012	**28.1**	**61.91**	**90.01**	**8.16**	**1.83**	< 0.01	< 0.01	< 0.01	< 0.01
S3-7-E-12-A	5/3/2012	**30.56**	**65.7**	**96.26**	**3.74**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
S3-7-F-12-A	5/3/2012	**25.61**	**65.1**	**90.71**	**9.28**	**0.01**	< 0.01	< 0.01	< 0.01	< 0.01
S3-7-G-12-A	5/3/2012	**25.98**	**64.41**	**90.39**	**9.58**	**0.03**	< 0.01	< 0.01	< 0.01	< 0.01
S3-7-H-12-A	5/3/2012	**6.12**	**15.8**	**21.92**	**7.98**	**15.1**	**31.1**	**20.5**	**3.41**	< 0.01
S3-7-I-12-A	5/3/2012	**1.81**	**6.11**	**7.92**	**4.63**	**13.71**	**43.14**	**27.83**	**2.77**	< 0.01
S3-7-J-12-A	5/3/2012	**2.09**	**7.15**	**9.24**	**4.63**	**10.8**	**31.71**	**33.51**	**10.1**	< 0.01
S3-7-K-12-A	5/3/2012	**3.02**	**7.9**	**10.92**	**4.73**	**8.31**	**24.72**	**30.28**	**6.57**	**14.48**

Notes:

Bold = detected result

< = less than listed method detection limit

mm = millimeters

Table 10
Pesticide and PCB Results for Archived Samples

	Composite Area ORFP-7,9,10,11,12,13																		Composite Area ORFP-8,14,15,16													Nestor Creek						
Parameter	ORFP-7-A-12-A	ORFP-7-B-12-A	ORFP-7-C-12-A	ORFP-9-A-12-A	ORFP-9-B-12-A	ORFP-9-C-12-A	ORFP-10-A-12-A	ORFP-10-B-12-A	ORFP-10-C-12-A	ORFP-11-A-12-A	ORFP-11-B-12-A	ORFP-11-C-12-A	ORFP-12-A-12-A	ORFP-12-B-12-A	ORFP-12-C-12-A	ORFP-13-A-12-A	ORFP-13-B-12-A	ORFP-13-C-12-A	ORFP-8,14,-15,16-A-12	ORFP-8-A-12-A	ORFP-8-B-12-A	ORFP-8-C-12-A	ORFP-14-A-12-A	ORFP-14-B-12-A	ORFP-14-C-12-A	ORFP-15-A-12-A	ORFP-15-B-12-A	ORFP-15-C-12-A	ORFP-16-A-12-A	ORFP-16-B-12-A	ORFP-16-C-12-A	NC-A-12	NC-1-A-12-A	NC-1-B-12-A	NC-1-C-12-A	NC-2-A-12-A	NC-2-B-12-A	NC-2-C-12-A
	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/2/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/1/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012	5/4/2012
Conventional Parameters (%)																																							
Total solids	92.3	88.8	78.4	92.6	89.5	82.1	96	92.5	88.3	95.2	88.6	91.3	96.4	88.3	83.1	85.3	80.4	91.8	97.3	96.8	96.7	80.6	96.7	94.4	86.5	96	95.1	90.6	93.6	69.8	77.2	59	45.9	69.5	72.8	76.7	72.7	69.2
Pesticides (µg/kg)																																							
2,4'-DDD	2.2	< 0.38	< 0.43	2.5	< 0.38	< 0.41	< 0.35	< 0.37	< 0.38	1.1	< 0.38	< 0.37	< 0.35	0.95 J	0.76 J	< 0.40	< 0.42	< 0.37	NA	27	< 0.35	< 0.42	19	< 0.36	< 0.39	49	1.2	7.1	160	13	< 0.44	NA	2.00 J	< 0.49	< 0.47	6.1	< 0.47	< 0.49
2,4'-DDE	3.6	< 0.34	< 0.39	< 0.33	< 0.34	< 0.37	11	< 0.33	< 0.35	< 0.32	< 0.34	< 0.33	< 0.32	< 0.35	< 0.37	< 0.36	< 0.38	4.2	NA	25	0.99 J	< 0.38	21	< 0.32	< 0.35	32	1.00 J	4.3	66	5.1	< 0.40	NA	< 0.67	< 0.44	< 0.42	4.6	< 0.42	< 0.44
2,4'-DDT	1.9	< 0.34	< 0.38	2.2	< 0.34	< 0.37	< 0.31	< 0.32	< 0.34	< 0.32	0.61 J	< 0.33	< 0.31	< 0.34	< 0.36	< 0.35	< 0.37	19	NA	150	< 0.31	< 0.37	140	6.3	< 0.35	240	13	28	230	18	< 0.39	NA	< 0.65	< 0.43	< 0.41	16	0.44 J	< 0.43
4,4'-DDD	7.6	< 0.36	< 0.40	6.4	0.59 J	< 0.38	< 0.33	1.2	0.47 J	2	0.65 J	1.8	1.9	2.1	8.8	1.6	< 0.39	< 0.34	NA	< 3.30	< 0.33	< 0.39	< 3.30	< 0.33	< 0.37	130	< 0.33	15	< 3.40	< 0.45	< 0.41	NA	1.80 J	< 0.45	< 0.43	15	1.20 J	< 0.46
4,4'-DDE	33	0.71 J	< 0.38	43	5.3	< 0.36	24	7.3	2.1	6.7	1.6	2.4	12	11	5.9	1.2	< 0.37	30	NA	890	14	7.2	680	42	2.9	1300	45	140	1700	150	2.3	NA	5.3	0.95 J	0.58 J	170	6.7	0.90 J
4,4'-DDT	9.1	< 0.38	< 0.43	6.3	0.70 J	< 0.41	< 0.35	0.68 J	< 0.38	3.5	3.2	3.6	1.2	0.71 J	< 0.40	3.3	< 0.42	170	NA	320	1.6	1.6	310	13	1.10 J	720	35	84	590	33	< 0.43	NA	< 0.73	< 0.48	< 0.46	67	0.95 J	< 0.48
Total DDTs (ND = 0)	57.4	0.71	< 0.43	60.4	6.59	< 0.41	35	9.18	2.57	13.3	6.06	7.8	15.1	14.76	15.46	6.1	< 0.42	223.2	NA	1412	16.59	8.8	1170	61.3	4	2471	95.2	278.4	2746	219.1	2.3	NA	9.1	0.95	0.58	278.7	9.29	0.9
Aldrin	< 0.34	< 0.35	< 0.40	< 0.34	< 0.35	< 0.38	< 0.33	< 0.34	< 0.36	< 0.33	< 0.36	< 0.34	< 0.33	< 0.36	< 0.38	< 0.37	< 0.39	< 0.34	NA	< 3.30	< 0.33	< 0.39	< 3.30	< 0.33	< 0.36	< 3.30	< 0.33	< 0.35	< 3.40	< 0.45	< 0.41	NA	< 0.69	< 0.45	< 0.43	< 0.41	< 0.43	< 0.45
Alpha Chlordane	< 0.35	< 0.36	< 0.41	< 0.35	< 0.36	< 0.39	< 0.33	< 0.35	< 0.36	< 0.34	< 0.36	< 0.35	< 0.33	< 0.36	< 0.39	< 0.38	< 0.40	< 0.35	NA	< 3.30	< 0.33	< 0.40	< 3.30	< 0.34	< 0.37	< 3.30	< 0.34	< 0.35	< 3.40	< 0.46	< 0.42	NA	< 0.70	< 0.46	< 0.44	< 0.42	< 0.44	< 0.46
alpha-BHC	< 0.35	< 0.36	< 0.41	< 0.35	< 0.36	< 0.39	< 0.34	< 0.35	< 0.37	< 0.34	< 0.37	< 0.35	< 0.34	< 0.37	< 0.39	< 0.38	< 0.40	< 0.35	NA	< 3.30	< 0.34	< 0.40	< 3.40	< 0.34	< 0.37	< 3.40	< 0.34	< 0.36	< 3.50	< 0.46	< 0.42	NA	< 0.71	< 0.47	< 0.45	< 0.42	< 0.45	< 0.47
beta-BHC	< 0.29	< 0.30	< 0.34	< 0.29	< 0.30	< 0.32	< 0.28	< 0.29	< 0.30	< 0.28	< 0.30	< 0.29	< 0.27	< 0.30	< 0.32	< 0.31	< 0.33	< 0.29	NA	< 2.70	< 0.27	< 0.33	< 2.70	< 0.28	< 0.31	< 2.80	0.31 J	< 0.29	< 2.80	< 0.38	< 0.34	NA	< 0.58	< 0.38	< 0.36	< 0.34	< 0.36	< 0.38
Chlordane (Technical)	32	< 3.70	< 4.20	< 3.50	< 3.70	< 4.00	< 3.40	< 3.50	< 3.70	< 3.40	< 3.70	< 3.60	< 3.40	< 3.70	< 3.90	< 3.80	< 4.10	120	NA	64	< 3.40	< 4.10	49	< 3.50	< 3.80	130	< 3.40	23	170	17	< 4.20	NA	< 7.10	< 4.70	< 4.50	36	< 4.50	< 4.70
Cis-nonachlor	< 0.32	< 0.33	< 0.37	< 0.32	< 0.33	< 0.36	20	< 0.32	< 0.33	< 0.31	< 0.33	< 0.32	< 0.30	< 0.33	< 0.35	< 0.34	< 0.37	< 0.32	NA	< 3.00	< 0.30	< 0.36	< 3.00	< 0.31	< 0.34	< 3.10	< 0.31	< 0.32	< 3.10	< 0.42	< 0.38	NA	< 0.64	< 0.42	< 0.40	< 0.38	< 0.40	< 0.42
delta-BHC	< 0.28	< 0.29	< 0.33	< 0.28	< 0.29	< 0.31	< 0.27	< 0.28	< 0.29	< 0.27	< 0.29	< 0.28	< 0.27	< 0.29	< 0.31	< 0.30	< 0.32	< 0.28	NA	< 2.60	< 0.26	< 0.32	< 2.60	< 0.27	0.38 J	< 2.70	< 0.27	< 0.28	< 2.70	< 0.37	< 0.33	NA	< 0.56	< 0.37	< 0.35	< 0.33	< 0.35	< 0.37
Dieldrin	< 0.36	< 0.37	< 0.42	< 0.36	< 0.37	< 0.40	< 0.34	< 0.36	< 0.37	< 0.35	< 0.37	< 0.36	< 0.34	< 0.37	< 0.40	< 0.39	< 0.41	4.8	NA	< 3.40	0.63 J	< 0.41	< 3.40	2.4	0.39 J	< 3.40	< 0.35	< 0.36	< 3.50	< 0.47	< 0.43	NA	< 0.72	< 0.47	< 0.45	< 0.43	< 0.45	< 0.48
Endosulfan sulfate	< 0.37	< 0.38	< 0.43	< 0.36	< 0.38	< 0.41	< 0.35	< 0.37	< 0.38	< 0.35	< 0.38	< 0.37	< 0.35	< 0.38	< 0.41	< 0.40	< 0.42	< 0.37	NA	< 3.50	< 0.35	< 0.42	< 3.50	< 0.36	< 0.39	< 3.50	< 0.36	< 0.37	< 3.60	< 0.48	< 0.44	NA	< 0.74	< 0.49	< 0.46	< 0.44	< 0.46	< 0.49
Endosulfan-alpha (I)	< 0.28	< 0.30	< 0.33	< 0.28	< 0.29	< 0.32	< 0.27	< 0.28	< 0.30	< 0.28	< 0.30	< 0.29	< 0.27	< 0.30	< 0.32	< 0.31	< 0.33	< 0.29	NA	< 2.70	< 0.27	< 0.33	< 2.70	< 0.28	< 0.30	< 2.70	< 0.28	< 0.29	< 2.80	< 0.38	< 0.34	NA	< 0.57	< 0.38	< 0.36	< 0.34	< 0.36	< 0.38
Endosulfan-beta (II)	< 0.30	< 0.31	< 0.36	< 0.30	< 0.31	< 0.34	< 0.29	< 0.30	< 0.32	< 0.29	< 0.32	< 0.31	< 0.29	< 0.32	< 0.34	< 0.33	< 0.35	< 0.30	NA	< 2.90	< 0.29	< 0.35	< 2.90	< 0.30	< 0.32	< 2.90	< 0.29	< 0.31	< 3.00	< 0.40	< 0.36	NA	< 0.61	< 0.40	< 0.38	< 0.36	< 0.38	< 0.40
Endrin	< 0.39	< 0.40	< 0.46	< 0.39	< 0.40	< 0.44	< 0.37	< 0.39	< 0.41	< 0.38	< 0.40	< 0.39	< 0.37	< 0.41	< 0.43	< 0.42	< 0.45	< 0.39	NA	< 3.70	< 0.37	< 0.44	< 3.70	< 0.38	< 0.41	< 3.70	< 0.38	< 0.40	< 3.80	< 0.51	< 0.46	NA	< 0.78	< 0.52	< 0.49	< 0.47	< 0.49	< 0.52
Endrin aldehyde	< 0.26	< 0.28	< 0.31	< 0.26	< 0.27	< 0.30	< 0.25	< 0.26	< 0.28	< 0.26	< 0.28	< 0.27	< 0.25	< 0.28	< 0.29	< 0.29	< 0.30	< 0.27	NA	< 2.50	< 0.25	< 0.30	< 2.50	< 0.26	< 0.28	< 2.50	< 0.26	< 0.27	< 2.60	< 0.35	< 0.32	NA	< 0.53	< 0.35	< 0.34	< 0.32	< 0.34	< 0.35
Endrin ketone	< 0.38	< 0.39	< 0.44	< 0.37	< 0.39	< 0.42	< 0.36	< 0.38	< 0.39	< 0.36	< 0.39	< 0.38	< 0.36	< 0.39	< 0.42	< 0.41	< 0.43	< 0.38	NA	< 3.60	< 0.36	< 0.43	< 3.60	< 0.37	< 0.40	< 3.60	< 0.37	< 0.38	< 3.70	< 0.50	< 0.45	NA	< 0.76	< 0.50	< 0.48	< 0.45	< 0.48	< 0.50
Gamma Chlordane	< 0.34	< 0.36	< 0.41	< 0.34	< 0.35	< 0.39	< 0.33	< 0.34	< 0.36	< 0.33	< 0.36	< 0.35	< 0.33	< 0.36	< 0.38	< 0.37	< 0.40	< 0.35	NA	< 3.30	< 0.33	< 0.39	< 3.30	< 0.34	< 0.37	4.30 J	< 0.33	< 0.35	< 3.40	< 0.46	< 0.41	NA	< 0.69	< 0.46	< 0.44	< 0.41	< 0.44	< 0.46
gamma-BHC (Lindane)	< 0.38	< 0.39	< 0.44	< 0.37	< 0.39	< 0.42	< 0.36	< 0.37	< 0.39	< 0.36	< 0.39	< 0.38	< 0.36	< 0.39	< 0.42	< 0.41	< 0.43	< 0.38	NA	< 3.60	< 0.36	< 0.43	< 3.60	< 0.37	< 0.40	< 3.60	< 0.36	< 0.38	< 3.70	< 0.50	< 0.45	NA	< 0.75	< 0.50	< 0.48	< 0.45	< 0.48	< 0.50
Heptachlor	< 0.35	< 0.36	< 0.41	< 0.35	< 0.36	< 0.39	< 0.33	< 0.35	< 0.36	< 0.34	< 0.36	< 0.35	< 0.33	< 0.36	< 0.39	< 0.38	< 0.40	< 0.35	NA	< 3.30	< 0.33	< 0.40	< 3.30	< 0.34	< 0.37	< 3.30	< 0.34	< 0.35	< 3.40	< 0.46	< 0.42	NA	< 0.70	< 0.46	< 0.44	< 0.42	< 0.44	< 0.46
Heptachlor epoxide	< 0.39	< 0.40	0.46 J	< 0.38	< 0.40	< 0.43	< 0.37	< 0.38	< 0.40	< 0.37	< 0.40	< 0.39	< 0.37	< 0.40	< 0.43	< 0.42	< 0.44	< 0.39	NA	< 3.70	< 0.37	< 0.44	< 3.70	< 0.38	< 0.41	< 3.70	< 0.37	< 0.39	< 3.80	< 0.51	< 0.46	NA	< 0.77	< 0.51	< 0.49	< 0.46	< 0.49	< 0.51
Methoxychlor	< 0.35	< 0.37	< 0.41	< 0.35	< 0.36	< 0.40	< 0.34	< 0.35	< 0.37	< 0.34	< 0.37	< 0.36	< 0.34	< 0.37	< 0.39	< 0.38	< 0.40	< 0.35	NA	< 3.40	< 0.34	< 0.40	< 3.40	< 0.34	< 0.38	< 3.40	< 0.34	< 0.36	< 3.50	< 0.47	< 0.42	NA	< 0.71	< 0.47	< 0.45	< 0.42	< 0.45	< 0.47
Oxychlordane	2.2	< 0.32	< 0.36	43	< 0.31	< 0.34	6.1	< 0.30	< 0.32	6.8	< 0.32	< 0.31	< 0.29	< 0.32	< 0.34	< 0.33	< 0.35	< 0.31	NA	< 2.90	< 0.29	< 0.35	< 2.90	< 0.30	< 0.33	< 2.90	< 0.30	< 0.31	< 3.00	< 0.40	< 0.36	NA	< 0.61	< 0.40	< 0.39	< 0.37	< 0.39	< 0.41
Toxaphene	35	< 7.10	< 8.10	< 6.80	< 7.10	< 7.70	< 6.60	< 6.90	< 7.20	< 6.70	< 7.20	< 6.90	< 6.60	< 7.20	< 7.60	< 7.40	< 7.90	17.00 J	NA	1500	18.00 J	13.00 J	1500	59	9.80 J	2100	150	250	2500	140	< 8.20	NA	< 14.00	< 9.10	< 8.70	160	< 8.70	< 9.20
Trans-nonachlor	< 0.31	< 0.32	< 0.37	< 0.31	< 0.32	< 0.35	< 0.30	< 0.31	< 0.33	< 0.30	< 0.32	< 0.32	< 0.30	< 0.33	< 0.35	< 0.34	< 0.36	< 0.31	NA	< 3.00	< 0.30	< 0.36	< 3.00	< 0.30	< 0.33	< 3.00	< 0.30	< 0.32	< 3.10	< 0.41	< 0.37	NA	< 0.63	< 0.41	< 0.40	< 0.38	< 0.40	< 0.42
Total Chlordanes (ND = 0)	2.2	< 0.36	< 0.41	43	< 0.36	< 0.39	26.1	< 0.35	< 0.36	6.8	< 0.36	< 0.35	< 0.33	< 0.36	< 0.39	< 0.38	< 0.40	< 0.35	NA	< 3.30	< 0.33	< 0.40	< 3.30	< 0.34	< 0.37	4.3	< 0.34	< 0.35	< 3.40	< 0.46	< 0.42	NA	< 0.70	< 0.46	< 0.44	< 0.42	< 0.44	< 0.46
PCB Congeners (µg/kg)																																							
PCB018	< 0.170	NA	NA	< 0.170	NA	NA	< 0.160	NA	NA	< 0.170	NA	NA	< 0.160	NA	NA	< 0.180	NA	NA	< 0.160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.270	NA	NA	NA	NA	NA	NA
PCB028	< 0.110	NA	NA	< 0.110	NA	NA	0.340 J	NA	NA	< 0.100	NA	NA	< 0.100	NA	NA	< 0.120	NA	NA	< 0.100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.190 J	NA	NA	NA	NA	NA	NA
PCB037	< 0.140	NA	NA	< 0.140	NA	NA	< 0.140	NA	NA	< 0.140	NA	NA	< 0.140	NA	NA	< 0.150	NA	NA	< 0.130	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.220	NA	NA	NA	NA	NA	NA
PCB044	0.380 J	NA	NA	< 0.140	NA	NA	2.3	NA	NA	< 0.140	NA	NA	< 0.140	NA	NA	< 0.150	NA	NA	< 0.140	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.710 J	NA	NA	NA	NA	NA	NA
PCB049	< 0.130	NA	NA	< 0.130	NA	NA	0.99	NA	NA	< 0.120	NA	NA	< 0.120	NA	NA	< 0.140	NA	NA	< 0.120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.350 J	NA	NA	NA	NA	NA	NA
PCB052	0.510 J	NA	NA	< 0.100	NA	NA	3.7	NA	NA	0.200 J	NA	NA	< 0.100	NA	NA	< 0.110	NA	NA	0.120 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.93	NA	NA	NA	NA	NA	NA
PCB066	0.250 J	NA	NA	< 0.099	NA	NA	1.1	NA	NA	< 0.096	NA	NA	< 0.095	NA	NA	< 0.110	NA	NA	< 0.094	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.660 J	NA	NA	NA	NA	NA	NA
PCB070	0.440 J	NA	NA	< 0.089	NA	NA	2.4	NA	NA	< 0.086	NA	NA	< 0.085	NA	NA	< 0.096	NA	NA	< 0.084	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.560 J	NA	NA	NA	NA	NA	NA
PCB074	0.100 J	NA	NA	< 0.100	NA	NA	0.56	NA	NA	< 0.099	NA	NA	< 0.098	NA	NA	< 0.110	NA	NA	< 0.097	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.380 J	NA	NA	NA	NA	NA	NA
PCB077	< 0.110	NA	NA	< 0.110	NA	NA	0.9	NA	NA	< 0.100	NA	NA	< 0.100	NA	NA	< 0.110	NA	NA	< 0.100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.170	NA	NA	NA	NA	NA	NA
PCB081	< 0.130	NA	NA	< 0.130	NA	NA	< 0.130	NA	NA	< 0.130	NA	NA	< 0.130	NA	NA	< 0.140	NA	NA	< 0.130	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.210	NA	NA	NA	NA	NA	NA
PCB087	0.56	NA	NA	< 0.110	NA	NA	5.8	NA	NA	0.240 J	NA	NA	< 0.100	NA	NA	< 0.120	NA	NA	0.200 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.320 J	NA	NA	NA	NA	NA	NA
PCB099	0.470 J	NA	NA	< 0.092	NA	NA	4.8	NA	NA	0.260 J	NA	NA	< 0.088	NA	NA	< 0.100	NA	NA	0.170 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.350 J	NA	NA	NA	NA	NA	NA
PCB101	1.2	NA	NA	< 0.088	NA	NA	15	NA	NA	0.62	NA	NA	< 0.084	NA	NA	< 0.095	NA	NA	0.440 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.680 J	NA	NA	NA	NA	NA	NA
PCB105	0.420 J	NA	NA	< 0.110	NA	NA	6.9	NA	NA	0.310 J	NA	NA	< 0.110	NA	NA	< 0.120	NA	NA	0.270 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.430 J	NA	NA	NA	NA	NA	NA
PCB110	1.3	NA	NA	< 0.110	NA	NA	14	NA	NA	0.73	NA	NA	< 0.110	NA	NA	< 0.120	NA	NA	0.54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.720 J	NA	NA	NA	NA	NA	NA
PCB114	< 0.110	NA	NA	< 0.110	NA	NA	< 0.100	NA	NA	< 0.100	NA	NA	< 0.100	NA	NA	< 0.120	NA	NA	< 0.100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.170	NA	NA	NA	NA	NA	NA
PCB118	1	NA	NA	< 0.140	NA	NA	15	NA	NA	0.450 J	NA	NA	< 0.140	NA	NA	< 0.160	NA	NA	0.340 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.660 J	NA	NA	NA	NA	NA	NA
PCB119	< 0.094	NA	NA	< 0.094	NA	NA	0.220 J	NA	NA	< 0.091	NA	NA	< 0.090	NA	NA	< 0.100	NA	NA	< 0.089	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.150	NA	NA	NA	NA	NA	NA
PCB123	< 0.095	NA	NA	< 0.094	NA	NA	< 0.091	NA	NA	< 0.092	NA	NA	< 0.090	NA	NA	< 0.100	NA	NA	< 0.090	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.150	NA	NA	NA	NA	NA	NA
PCB126	0.280 J	NA	NA	< 0.150	NA	NA	0.290 J	NA	NA	0.260 J	NA	NA	< 0.140	NA	NA	< 0.160	NA	NA	0.300 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.230	NA	NA	NA	NA	NA	NA
PCB128	0.310 J	NA	NA	< 0.110	NA	NA	5.5	NA	NA	0.280 J	NA	NA	< 0.110	NA	NA	< 0.120	NA	NA	0.240 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.250 J	NA	NA	NA	NA	NA	NA
PCB138/158	1.4	NA	NA	< 0.220	NA	NA	30	NA	NA	1.1	NA	NA	< 0.210	NA	NA	< 0.240	NA	NA	1.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.200 J	NA	NA	NA	NA	NA	NA
PCB149	0.83	NA	NA	< 0.097	NA	NA	20	NA	NA	0.7	NA	NA	< 0.093	NA	NA	< 0.100	NA	NA	0.79	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.660 J	NA	NA	NA	NA	NA	NA
PCB151	0.210 J	NA	NA	< 0.110	NA	NA	6.5	NA	NA	0.190 J	NA	NA	< 0.110	NA	NA	< 0.120	NA	NA	0.210 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.220 J	NA	NA	NA	NA	NA	NA
PCB153	1.2	NA	NA	< 0.110	NA	NA	31	NA	NA	1	NA	NA	0.130 J	NA	NA	< 0.120	NA	NA	1.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.94	NA	NA	NA	NA	NA	NA
PCB156	< 0.110	NA	NA	< 0.110	NA	NA	3.3	NA	NA	0.150 J	NA	NA	< 0.100	NA	NA	< 0.110	NA	NA	0.100 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.170	NA	NA	NA	NA	NA	NA
PCB157	< 0.100	NA	NA	< 0.100	NA	NA	0.76	NA	NA	< 0.100	NA	NA	< 0.099	NA	NA	< 0.110	NA	NA	< 0.098	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.160	NA	NA	NA	NA	NA	NA
PCB167	< 0.110	NA	NA	< 0.110	NA	NA	< 0.100	NA	NA	< 0.100	NA	NA	< 0.100	NA	NA	< 0.120	NA	NA	< 0.100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.170	NA	NA	NA	NA	NA	NA
PCB168	< 0.093	NA	NA	< 0.093	NA	NA	< 0.090	NA	NA	< 0.090	NA	NA	< 0.089	NA	NA	< 0.100	NA	NA	< 0.088	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.150	NA	NA	NA	NA	NA	NA
PCB169	< 0.088	NA	NA	< 0.088	NA	NA	3.7	NA	NA	< 0.086	NA	NA	< 0.085	NA	NA	< 0.096	NA	NA	0.090 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.140	NA	NA	NA	NA	NA	NA
PCB170	0.62	NA	NA	< 0.100	NA	NA	16	NA	NA	0.510 J	NA	NA	< 0.096	NA	NA	< 0.110	NA	NA	0.78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.630 J	NA	NA	NA	NA	NA	NA
PCB177	< 0.130	NA	NA	< 0.130	NA	NA	6.7	NA	NA	< 0.130	NA	NA	< 0.130	NA	NA	< 0.140	NA	NA	0.230 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.210	NA	NA	NA	NA	NA	NA
PCB180	0.82	NA	NA	< 0.066	NA	NA	31	NA	NA	0.66	NA	NA	0.095 J	NA	NA	< 0.072	NA	NA	0.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.820 J	NA	NA	NA	NA	NA	NA
PCB183	0.170 J	NA	NA	< 0.120	NA	NA	6.5	NA	NA	0.140 J	NA	NA	< 0.120	NA	NA	< 0.130	NA	NA	0.190 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.190	NA	NA	NA	NA	NA	NA
PCB187	0.380 J	NA	NA	< 0.110	NA	NA	20	NA	NA	0.390 J	NA	NA	< 0.110	NA	NA	< 0.120	NA	NA	0.57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.540 J	NA	NA	NA	NA	NA	NA
PCB189	< 0.093	NA	NA	< 0.092	NA	NA	0.350 J	NA	NA	< 0.090	NA	NA	< 0.089	NA	NA	< 0.100	NA	NA	< 0.088	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.150	NA	NA	NA	NA	NA	NA
PCB194	0.270 J	NA	NA	< 0.100	NA	NA	13	NA	NA	0.350 J	NA	NA	< 0.099	NA	NA	< 0.110	NA	NA	0.390 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.540 J	NA	NA	NA	NA	NA	NA
PCB201	< 0.062	NA	NA	< 0.062	NA	NA	1.3	NA	NA	< 0.060	NA	NA	< 0.059	NA	NA	< 0.067	NA	NA	< 0.059	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	< 0.097	NA	NA	NA	NA	NA	NA
PCB206	0.320 J	NA	NA	< 0.089	NA	NA	5.2	NA	NA	0.360 J	NA	NA	< 0.086	NA	NA	< 0.097	NA	NA	< 0.085	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.410 J	NA	NA	NA	NA	NA	NA
Total PCB Congeners (ND = 0)	13.44	NA	NA	< 0.220	NA	NA	275.11	NA	NA	8.9	NA	NA	0.225	NA	NA	< 0.240	NA	NA	9.61	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.15	NA	NA	NA	NA	NA	NA

Table 10
Pesticide and PCB Results for Archived Samples

	Subarea 3																				
Parameter	S3-1-A-12-A	S3-1-B-12-A	S3-1-C-12-A	S3-2-A-12-A	S3-2-B-12-A	S3-2-C-12-A	S3-3-A-12-A	S3-3-B-12-A	S3-3-C-12-A	S3-4-A-12-A	S3-4-B-12-A	S3-4-C-12-A	S3-5-A-12-A	S3-5-B-12-A	S3-5-C-12-A	S3-6-A-12-A	S3-6-B-12-A	S3-6-C-12-A	S3-7-A-12-A	S3-7-B-12-A	S3-7-C-12-A
	5/4/2012	5/4/2012	5/4/2012	5/3/2012	5/3/2012	5/3/2012	5/3/2012	5/3/2012	5/3/2012	5/3/2012	5/3/2012	5/3/2012	5/4/2012	5/4/2012	5/4/2012	5/3/2012	5/3/2012	5/3/2012	5/3/2012	5/3/2012	5/3/2012
Conventional Parameters (%)																					
Total solids	**96.4**	**95.8**	**86.9**	**88.8**	**93.7**	**85.8**	**93.2**	**95.6**	**86.5**	**89.4**	**87.3**	**95.8**	**96.4**	**94.6**	**89.9**	**96.6**	**94.8**	**85.2**	**93.7**	**86.2**	**90.4**
Pesticides (µg/kg)																					
2,4'-DDD	**1.00 J**	< 0.35	< 0.39	**4.6**	**1.1**	< 0.39	< 0.36	< 0.35	< 0.39	< 0.38	< 0.39	**2.9**	< 3.50	< 0.36	< 0.38	**5.9**	< 0.36	< 0.40	**2.8**	< 0.39	< 0.37
2,4'-DDE	**8**	**3.1**	< 0.35	**7.2**	**1.2**	< 0.36	**6**	< 0.32	< 0.35	< 0.34	< 0.35	**6.9**	**12**	**2.3**	< 0.34	< 0.32	< 0.32	< 0.36	**7.5**	< 0.35	< 0.34
2,4'-DDT	**44**	**18**	< 0.35	**57**	**3.3**	< 0.35	**50**	< 0.31	< 0.35	< 0.34	< 0.34	**56**	**120**	**23**	**0.96 J**	**5.7**	< 0.32	< 0.35	**43**	< 0.35	< 0.33
4,4'-DDD	**27**	**6.7**	< 0.36	**9.8**	**4.5**	< 0.37	**16**	< 0.33	< 0.37	< 0.35	**0.44 J**	< 0.33	< 3.30	< 0.33	< 0.35	< 0.33	**4.1**	< 0.37	< 0.34	**0.38 J**	< 0.35
4,4'-DDE	**290**	**150**	**0.98 J**	**260**	**47**	**0.36 J**	**300**	**1.8**	**0.47 J**	**0.49 J**	**2.1**	**300**	**410**	**97**	**4.6**	**120**	**3.8**	**1.3**	**330**	**3.1**	< 0.33
4,4'-DDT	**110**	**41**	< 0.39	**140**	**6.9**	< 0.39	**160**	< 0.35	< 0.39	< 0.37	**0.47 J**	**150**	**220**	**43**	**2.3**	**77**	< 0.35	**1.10 J**	**140**	**0.87 J**	< 0.37
Total DDTs (ND = 0)	**480**	**218.8**	**0.98**	**478.6**	**64**	**0.36**	**532**	**1.8**	**0.47**	**0.49**	**3.01**	**515.8**	**762**	**165.3**	**7.86**	**208.6**	**7.9**	**2.4**	**523.3**	**4.35**	< 0.37
Aldrin	< 0.33	< 0.33	< 0.36	< 0.35	< 0.34	< 0.37	< 0.34	< 0.33	< 0.36	< 0.35	< 0.36	< 0.33	< 3.30	< 0.33	< 0.35	< 0.33	< 0.33	< 0.37	< 0.34	< 0.37	< 0.35
Alpha Chlordane	< 0.33	< 0.33	< 0.37	< 0.36	< 0.34	< 0.37	< 0.34	< 0.34	< 0.37	< 0.36	< 0.37	< 0.33	< 3.30	< 0.34	< 0.36	< 0.33	< 0.34	< 0.38	< 0.34	< 0.37	< 0.35
alpha-BHC	< 0.34	< 0.34	< 0.37	< 0.36	< 0.35	< 0.38	< 0.35	< 0.34	< 0.37	< 0.36	< 0.37	< 0.34	< 3.40	< 0.34	< 0.36	< 0.34	< 0.34	< 0.38	< 0.35	< 0.38	< 0.36
beta-BHC	< 0.27	< 0.28	< 0.30	< 0.30	< 0.28	< 0.31	< 0.28	< 0.28	< 0.31	< 0.30	< 0.30	< 0.28	< 2.70	< 0.28	< 0.29	< 0.27	< 0.28	< 0.31	< 0.28	< 0.31	< 0.29
Chlordane (Technical)	**74**	**40**	< 3.80	**40**	< 3.50	< 3.80	**64**	< 3.40	< 3.80	< 3.70	< 3.70	**120**	**86**	**13**	< 3.60	**720**	**7.80 J**	**12**	**140**	< 3.80	< 3.60
Cis-nonachlor	< 0.30	< 0.31	< 0.34	< 0.33	< 0.31	< 0.34	< 0.32	< 0.31	< 0.34	< 0.33	< 0.34	< 0.31	< 3.00	< 0.31	< 0.33	< 0.30	< 0.31	< 0.34	< 0.31	< 0.34	< 0.32
delta-BHC	< 0.27	< 0.27	< 0.29	< 0.29	< 0.27	< 0.30	< 0.27	< 0.27	< 0.30	< 0.29	< 0.29	< 0.27	< 2.70	< 0.27	< 0.28	< 0.26	< 0.27	< 0.30	< 0.27	< 0.30	< 0.28
Dieldrin	< 0.34	< 0.34	< 0.38	**23**	**2**	< 0.38	**41**	**0.66 J**	< 0.38	< 0.37	< 0.38	< 0.34	< 3.40	< 0.35	< 0.37	< 0.34	**1.7**	< 0.39	< 0.35	**0.72 J**	< 0.36
Endosulfan sulfate	< 0.35	< 0.35	< 0.39	< 0.38	< 0.36	< 0.39	< 0.36	< 0.35	< 0.39	< 0.38	< 0.39	< 0.35	< 3.50	< 0.36	< 0.38	< 0.35	< 0.36	< 0.40	< 0.36	< 0.39	< 0.37
Endosulfan-alpha (I)	< 0.27	< 0.27	< 0.30	< 0.30	< 0.28	< 0.31	< 0.28	< 0.27	< 0.30	< 0.29	< 0.30	< 0.27	< 2.70	< 0.28	< 0.29	< 0.27	< 0.28	< 0.31	< 0.28	< 0.30	< 0.29
Endosulfan-beta (II)	< 0.29	< 0.29	< 0.32	< 0.31	< 0.30	< 0.33	< 0.30	< 0.29	< 0.32	< 0.31	< 0.32	< 0.29	< 2.90	< 0.30	< 0.31	< 0.29	< 0.29	< 0.33	< 0.30	< 0.32	< 0.31
Endrin	< 0.37	< 0.37	< 0.41	< 0.40	< 0.38	< 0.42	< 0.38	< 0.37	< 0.41	< 0.40	< 0.41	< 0.37	< 3.70	< 0.38	< 0.40	< 0.37	< 0.38	< 0.42	< 0.38	< 0.42	< 0.40
Endrin aldehyde	< 0.25	< 0.25	< 0.28	< 0.28	< 0.26	< 0.28	< 0.26	< 0.26	< 0.28	< 0.27	< 0.28	< 0.25	< 2.50	< 0.26	< 0.27	< 0.25	< 0.26	< 0.29	< 0.26	< 0.28	< 0.27
Endrin ketone	< 0.36	< 0.36	< 0.40	< 0.39	< 0.37	< 0.40	< 0.37	< 0.36	< 0.40	< 0.39	< 0.40	< 0.36	< 3.60	< 0.37	< 0.39	< 0.36	< 0.37	< 0.41	< 0.37	< 0.40	< 0.38
Gamma Chlordane	< 0.33	< 0.33	< 0.37	< 0.36	< 0.34	< 0.37	< 0.34	< 0.33	< 0.37	< 0.36	< 0.36	< 0.33	< 3.30	< 0.34	< 0.35	< 0.33	< 0.34	< 0.37	< 0.34	< 0.37	< 0.35
gamma-BHC (Lindane)	< 0.36	< 0.36	< 0.40	< 0.39	< 0.37	< 0.40	< 0.37	< 0.36	< 0.40	< 0.39	< 0.40	< 0.36	< 3.60	< 0.37	< 0.39	< 0.36	< 0.37	< 0.41	< 0.37	< 0.40	< 0.38
Heptachlor	< 0.33	< 0.34	< 0.37	< 0.36	< 0.34	< 0.37	< 0.34	< 0.34	< 0.37	< 0.36	< 0.37	< 0.34	< 3.30	< 0.34	< 0.36	< 0.33	< 0.34	< 0.38	< 0.34	< 0.37	< 0.36
Heptachlor epoxide	< 0.37	< 0.37	< 0.41	< 0.40	< 0.38	< 0.41	< 0.38	< 0.37	< 0.41	< 0.40	< 0.41	< 0.37	< 3.70	< 0.38	< 0.40	< 0.37	< 0.38	< 0.42	< 0.38	< 0.41	< 0.39
Methoxychlor	< 0.34	< 0.34	< 0.37	< 0.37	< 0.35	< 0.38	< 0.35	< 0.34	< 0.38	< 0.36	< 0.37	< 0.34	< 3.40	< 0.34	< 0.36	< 0.34	< 0.34	< 0.38	< 0.35	< 0.38	< 0.36
Oxychlordane	< 0.29	< 0.29	< 0.32	< 0.32	< 0.30	< 0.33	< 0.30	< 0.29	< 0.33	< 0.31	< 0.32	< 0.29	< 2.90	< 0.30	< 0.31	< 0.29	< 0.30	< 0.33	< 0.30	< 0.33	< 0.31
Toxaphene	**1000**	**220**	< 7.30	**480**	< 6.80	< 7.40	**360**	< 6.60	< 7.30	< 7.10	< 7.30	**960**	**1700**	**250**	**19.00 J**	**160**	**7.90 J**	< 7.40	**960**	**14.00 J**	< 7.00
Trans-nonachlor	< 0.30	< 0.30	< 0.33	< 0.32	< 0.31	< 0.34	< 0.31	< 0.30	< 0.33	< 0.32	< 0.33	< 0.30	< 3.00	< 0.30	< 0.32	< 0.30	< 0.30	< 0.34	< 0.31	< 0.33	< 0.32
Total Chlordanes (ND = 0)	< 0.33	< 0.33	< 0.37	< 0.36	< 0.34	< 0.37	< 0.34	< 0.34	< 0.37	< 0.36	< 0.37	< 0.33	< 3.30	< 0.34	< 0.36	< 0.33	< 0.34	< 0.38	< 0.34	< 0.37	< 0.35
PCB Congeners (µg/kg)																					
PCB018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB028	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB037	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB044	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB049	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB052	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB066	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB070	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB074	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB077	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB081	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB087	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB099	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB101	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB105	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB114	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB118	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB119	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB123	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB126	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB128	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB138/158	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB149	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB151	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB153	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB156	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB157	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB167	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB168	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB169	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB170	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB177	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB183	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB187	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB189	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB194	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB201	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCB206	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCB Congeners (ND = 0)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Bold = detected result
< = less than listed method detection limit
J = indicates an estimated value
µg/kg = micrograms per kilogram
NA = not analyzed
ND = non-detect
Non-detect samples are reported as less than method detection limit.
For calculated total chemicals (Total DDTs, PAHs, PCBs, and Chlordane) only detected compounds were summed.
Total DDTs are the sum of 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, 2,4'-DDD, 2,4'-DDE, and 2,4'-DDT.
Total Chlordanes are the sum of Alpha Chlordane, Gamma Chlordane, Cis-Nonachlor, Oxychlordane, and Trans-Nonachlor.

3.2.2.2 PCBs

PCBs were detected in composite archive samples from ORFP-8,14,15,16 and Nestor Creek. Total PCB concentrations were 9.61 and 13.15 micrograms per kilogram (µg/kg), respectively.

For the composite archive sample from ORFP-7,9,10,11,12,13, PCBs were detected in ORFP-7, ORFP-10, ORFP-11, and ORFP-12. Concentrations were substantially higher at OERFP-10 when compared to the other stations.

3.3 Quality Assurance/Quality Control Summary

A review of analytical results was conducted to evaluate the laboratory performance in meeting quality assurance/quality control (QA/QC) guidelines outlined in the SAP (Anchor QEA 2012). Data validation reports generated by Anchor QEA are presented in Appendix C. All composite samples were analyzed within holding times. Archived samples were frozen prior to holding time expiration and remained in that condition until analysis. Generally, QA/QC sample results were within the project-specified and/or laboratory control limits, with the following exceptions:

- Composite samples
  - Arsenic, nickel, and several SVOCs were detected in method blanks. All concentrations detected in method blanks were at levels below reporting limits.
  - The matrix spike (MS) and/or matrix spike duplicate (MSD) percent recovery (%R) values for lead and zinc were outside the project-specific control limits.
  - The MS and/or MSD %R values and/or relative percent difference (RPD) values for several pesticides were greater than control limits.
  - The MS and/or MSD RPD values for four SVOCs were greater than control limits.
- Archive samples
  - The pesticide surrogate %R values were greater than control limits due to matrix interference in 10 samples.
  - The PCB surrogate %R values were greater than control limits due to matrix interference in two samples.

- The MS and/or MSD %R values and/or RPD values for several pesticides were outside control limits.

4 REFERENCES

Anchor QEA, L.P., 2012. *Sampling and Analysis Plan for Otay River Estuary Restoration Soil Characterization Program*. Prepared for Poseidon Resources, LLC. April 2012.

LIST OF APPENDICES

APPENDIX A FIELD FORMS AND CORE PHOTOGRAPHS

APPENDIX B LABORATORY DATA REPORTS

APPENDIX C DATA VALIDATION REPORTS