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Final

Record of Decision
Site 17
Seaplane Lagoon

Alameda Point
Alameda, California

October 2006

Prepared For:
Base Realignment and Closure
Program Management Office West
San Diego, CA 92108

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ABBREVIATIONS AND ACRONYMS

AF	Adherence factor
ALARA	As low as reasonably achievable
AR	Administrative record
ARAR	Applicable or relevant and appropriate requirements
ARRA	Alameda Reuse and Redevelopment Authority
AT_c	Averaging time–cancer
AT_{nc}	Averaging time–noncancer
AWQC	Ambient water quality criteria
BAAQMD	Bay Area Air Quality Management District
BAF	Bioaccumulation factor
BAT	Best available technology
BCPCT	Best conventional pollution control technology
BCT	BRAC Cleanup Team
BERA	Baseline ecological risk assessment
BERC	Berkeley Environmental Restoration Center
bgs	Below ground surface
BPTCP	Bay Area Protection and Toxics Hotspot Cleanup Program
BRAC	Base Realignment and Closure
BW	Body weight
Cal-EPA	California Environmental Protection Agency
CCR	California Code of Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Act Information System
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
cm	Centimeter
COC	Contaminants of concern
COPC	Chemicals of potential concern
COPEC	Contaminants of potential ecological concern
CPRC	California Public Resources Code
CSM	Conceptual site model
CTE	Central tendency exposure
CTR	California Toxics Standards
CWA	Clean Water Act of 1977
CWC	California Water Code
cy	Cubic yards
DAF	Dermal absorption factor
DDD	4,4′-dichlorodiphenyldichlorethane
DDE	4,4′-dichlorodiphenyldichloroethene
DDT	4,4′-dichlorodiphenyltrichlorethane
DDx	The sum of DDD, DDE and DDT
DO	Dissolved oxygen
DON	Department of the Navy (United States)
DTSC	Department of Toxic Substances Control (California)

ED	Exposure duration
EF	Exposure frequency
EPA	Environmental Protection Agency (United States)
EPC	Exposure point concentration
ET	Exposure time percentage
FFA	Federal Facility Agreement
FI	Fraction ingested
FMS	First Merritt Sand
FS	Feasibility Study
ft	Feet
FWBZ	First water-bearing zone
GGAS	Golden Gate Audubon Society
GS	*Gamma* shielding factor
HQ	Hazard quotient
IAS	Initial Site Assessment
ID	Identification
in/yr	inches per year
IR	Installation Restoration
IR_{tissue}	Ingestion rate -Fish or Shellfish
IR_{sed}	Ingestion rate - Sediment
IRP	Installation Restoration Program
kg	Kilogram
LDR	Land disposal restrictions
MARSSIM	Multi-Agency Radiation Survey and Site Manual
MLLW	Mean lower low water
mg	Milligrams
NACIP	Navy Assessment and Control of Installation Pollutants
NAS	Naval Air Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NRC	Nuclear Regulatory Commission
NTR	National Toxics Rule
O&M	Operation and maintenance
OU	Operable Unit
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyls
pCi/g	PicoCuries per gram
PMO	Program Management Office
ppb	Parts per billion
PRC	PRC Environmental Management, Inc.

Ra-226	Radium 226
RAB	Restoration Advisory Board
RAO	Remedial action objective
RCRA	Resource Conservation and Recovery Act
RfD	Reference dose
RG	Remediation goals
RI	Remedial Investigation
RME	Reasonable maximum exposure
RMP	Regional Monitoring Program
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SA	Skin surface area
SARA	Superfund Amendments and Reauthorization Act
SFEI	San Francisco Estuary Initiative
SLERA	Screening-level ecological risk assessment
SUF	Site use factor
SVOC	Semivolatile organic compounds
SWBZ	Second water-bearing zone
SWMU	Solid waste management units
SWRCB	State Water Resources Control Board
TBC	To be considered
TEDE	Total effective dose equivalent
TOC	Total organic carbon
TPH	Total petroleum hydrocarbons
TtEMI	Tetra Tech EM, Inc.
UCB	University of California at Berkeley
UCL	Upper confidence limit
UMTRCA	Uranium Mill Tailings Radiation Control Act
U.S.	United States
USC	United States Code
VOC	Volatile organic compounds
WQO	Water quality objectives
yr	Year

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DECLARATION

SITE NAME AND LOCATION

This decision document addresses Seaplane Lagoon (Installation Restoration [IR] Site 17) at the former Naval Air Station (NAS) Alameda, now referred to as Alameda Point, in Alameda, California. The United States (U.S.) Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) identification (ID) number is CA 2170023236. NAS Alameda was added to the National Priorities List on July 22, 1999.

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedy, Alternative 5, for the cleanup of contaminated sediments at Site 17, Seaplane Lagoon, Alameda Point, Alameda, CA. This remedy was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by Superfund Amendments and Reauthorization Act (SARA) of 1986 (Title 42 United States Code (USC) Section [§] 9601 et seq.), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Title 40 Code of Federal Regulations [CFR] Part 300). A Federal Facility Agreement (FFA) between the Department of the Navy (DON) and EPA was signed on July 5, 2001. This ROD was prepared in accordance with the FFA, which defines the DON's obligations under CERCLA. The DON is the lead Federal agency for IR site activities at Alameda Point.

The decision presented in this ROD is based on information contained in the administrative record (AR) file (a site-specific AR index is included as Attachment A) as well as on extensive field investigations, laboratory analyses, interpretation of the data, review of current and future conditions, and assessment of the potential human health and ecological risks. Based on these findings, corrective action is required at the site.

The DON, the EPA, California EPA (Cal-EPA) Department of Toxic Substances Control (DTSC), and the San Francisco Regional Water Quality Control Board (RWQCB) concur on the selected remedy for the site.

ASSESSMENT OF THE SITE

The DON has concluded that remedial action selected in this ROD is necessary to protect public health and the environment from actual or threatened releases of pollutants or contaminants from this site which may endanger ecological and public health or welfare based on the following:

- Site histories
- Field investigations
- Laboratory analytical results
- Evaluation of potential ecological and human health risks
- Current and reasonably anticipated future land use.

Results of investigations at Site 17 have verified that the current conditions at the site pose a potential risk to human health and the environment. Total polychlorinated biphenyl (PCB) was the only chemical for

which risks were elevated above both the risk range and reference conditions for human health. Total PCBs, cadmium, chromium, lead, and Total DDx (the sum of 4,4′-dichlorodiphenyldichlorethane (DDD), 4,4′-dichlorodiphenyldichloroethene (DDE), and 4.4'-dichlorodiphenyltrichloroethane (DDT)) were the primary risk drivers identified for ecological receptors. Specifically, sediments within the northern corners of the lagoon are associated with potential unacceptable risks to both human health and the environment. The remediation areas encompass approximately 8 acres (4.9 acres in the northeast corner and 2.9 acres in the northwest corner) down to a depth of 4 feet.

The larger of the two Site 17 debris piles along the Site 17 shoreline was sampled in February 2006. Concentrations in the debris pile exceeded the remedial goal for Total PCBs, and these debris piles will be addressed separately prior to beginning the Site 17 sediment remediation.

DESCRIPTION OF SELECTED REMEDY: DREDGING, DEWATERING, AND UPLAND DISPOSAL AT A PERMITTED OFF-SITE WASTE DISPOSAL FACILITY

Seven alternatives were evaluated to address sediment contamination at IR Site 17. The remedy selected, Alternative 5 *Dredging, Dewatering, and Upland Disposal at a Permitted Off-Site Waste Disposal Facility*, entails dredging contaminated sediment within the remediation areas in the northeast and northwest corners of the lagoon to a uniform depth of 4 feet (ft) (plus 1-ft overdredge allowance to ensure that the design thickness is achieved). Approximately 63,000 cubic yards (cy) of contaminated sediment will be removed. The dredged sediment will be dewatered on-site in temporary drying beds and disposed of at a permitted off-site commercial landfill. The removal of contaminated sediment from the lagoon will be verified through confirmation sampling. The estimated 30-year present worth cost for this alternative is approximately $24.6 million. This remedy was chosen because it will comply with the statutory requirements set by CERCLA to the maximum extent practicable, which will allow for unrestricted future use of the site and will accommodate the proposed reuse. Under the Alameda Point General Plan, as amended in 2003, Chapter 9, Figure 9-2 (City of Alameda. 2003) the proposed future use of the site is as a commercial marina, including development of the surrounding area as a mixed-use marina-related district comprised of housing, an industrial park, a recreational/commercial area, and open waterfront space.

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate (ARARs) to the remedial action, and is cost-effective. It also accommodates the proposed future reuse of the site. This remedy uses permanent solutions by removing the contaminated sediments so that fish, birds, and humans will not come in contact with them in the future. Alternative treatment (or resource recovery) technologies were considered during the feasibility study (FS) process; however, the selected remedy does not satisfy the statutory preference for treatment as a principal element for the following reasons:

- *In Situ Treatment*: *In situ* treatment technologies (e.g., activated carbon amendment, nanoscale iron amendment, bioaugmentation, and stabilization) are insufficiently mature, making their effectiveness and implementability uncertain. Also, no single technology is available that has been proven to address all of the Site 17 contaminants. Therefore, *in situ* remediation technologies were not carried forward into the detailed analysis of alternatives.

- *Ex Situ Treatment*: All of the *ex situ* treatment technologies (e.g., thermal desorption, incineration, sediment washing, and biological treatment) would require bench-scale or pilot-scale testing and the effectiveness is uncertain given the high water content of Site 17 sediments and the presence of multiple contaminants, including organic and inorganic constituents.

Incineration and stabilization are relatively well established technologies for addressing organic and inorganic contamination, respectively; however, the significantly high cost makes them less feasible.

The selected remedy (Alternative 5) will result in the removal of contaminants that otherwise would be present at levels that would preclude unlimited use and unrestricted exposure; therefore, a five-year review would not be required.

Table D-1. Data Certification Checklist

Checklist Item	Description
Chemicals of potential concern (COPCs) and their respective concentrations.	COPCs are characterized throughout Site 17 based on data from several investigations. A description of these investigations is provided in Section 2.2.1 of the ROD. A description of the nature and extent of contamination at Site 17 is presented in Section 5.5 of the ROD.
Risk assessments are representative of the chemicals of potential concern.	A baseline human health risk assessment and screening-level ecological risk assessment (SLERA) were conducted as part of the remedial investigation (RI) using data representative of current conditions at Site 17. The results of these risk assessments are presented in Section 7.0 of this ROD.
Remedial levels established for chemicals of concern and the basis for these levels.	The response action selected in this ROD is necessary to protect the public health or welfare and/or the environment from actual or threatened releases of hazardous substances into the environment. The risk assessments are presented in Section 7.0 of this ROD, and the remedial levels are presented in Section 8.0.
How source material constituting principal threats will be addressed.	Former buildings and surrounding areas, along with storm sewers, were investigated and evaluated as potential sources. Results of environmental investigations have not identified the presence of a continuing source; however, remedial action at Site 17 will be coordinated with continued evaluation and remediation of the storm sewer line. Section 5.5 of the ROD describes the nature and extent of the contamination, and principal threat waste is described in Section 11.0.
Current and reasonable anticipated future land use assumptions used in the human health and ecological risk assessment and this ROD.	Site 17 is not currently used for any human-related activity, except limited boat use. According to the Alameda Point General Plan Amendment (City of Alameda, 2003), the long-term reuse of Site 17 is anticipated to be a commercial marina surrounded by a mixed-use marina-related district. For ecological receptors, risks were evaluated for the benthic community, fish, and to birds feeding on aquatic species. For human health, it was assumed that the primary exposure pathway under both current and future use would be the consumption of fish and shellfish. Direct contact to sediments during the collection of shellfish was also considered. Future land use is discussed in Section 6.0 of this ROD.
Potential land use that will be available at the site as a result of the Selected Remedy.	According to the Alameda Point General Plan Amendment (City of Alameda, 2003), the long-term reuse of Site 17 is anticipated to be a commercial marina surrounded by a mixed-use marina-related district. Potential land uses at Site 17 are discussed in Section 6.0 of the ROD. After remediation goals are met, the selected remedy will allow for unrestricted site use.

Table D-1. Data Certification Checklist, Continued

Checklist Item	Description
Estimated capital and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected.	This ROD recommends remedial action for sediment at the site. It is estimated that it will take approximately 2 years to complete the remedial action. Section 12.0 of this ROD describes the selected sediment remedy. Estimated capital costs are presented in Table 12-1.
Key factors that led to selecting the remedy.	Sediment contamination at the site poses a potential risk to human health and the environment; removal of contaminated sediments eliminates these risks and allows for unrestricted access to the site. Section 12.0 of this ROD describes the selected remedy, and Section 13.0 describes the statutory determinations that were made regarding the selected remedy. Section 3.0 documents that the DON has reviewed all written and oral comments submitted during the public comment period and has determined that no significant changes to the selected remedial action are necessary or appropriate.

AUTHORIZING SIGNATURES

Signature

October 30, 2006
Date

Mr. Thomas L. Macchiarella
Base Realignment and Closure Environmental Coordinator
Base Realignment and Closure Program Management Office West
Department of the Navy

Signature

October 30, 2006
Date

Ms. Kathleen Johnson
Chief, Superfund Federal Facility and Site Cleanup Branch
United States Environmental Protection Agency

Signature

October 30, 2006
Date

The State of California, Department of Toxic Substances Control had an opportunity to review and comment on the Record of Decision, and Department of Toxic Substances Control's comments were addressed.

Mr. Anthony Landis, P.E.
Chief, Northern California Operations,
Office of Military Facilities
California Environmental Protection Agency
Department of Toxic Substances Control

Signature

November 1, 2006
Date

Mr. Bruce Wolfe
Executive Officer
San Francisco Bay Regional Water Quality Control Board

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1.0 SITE NAME, LOCATION, AND DESCRIPTION

This Record of Decision (ROD) presents the selected remedy for Installation Restoration (IR) Site 17, Seaplane Lagoon. Site 17 is part of Operable Unit (OU) 4B at the former Naval Air Station (NAS) Alameda, now referred to as Alameda Point, in Alameda, California. The U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) Identification (ID) number is CA 2170023236. Former NAS Alameda was added to the National Priorities List on July 22, 1999. This document was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by Superfund Amendments and Reauthorization Act (SARA) of 1986 (Title 42 United States Code (USC) § 9601 *et seq.*), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Title 40 Code of Federal Regulations (CFR) Part 300). The decision for Site 17 is based on information contained in the administrative record (AR) file (a site-specific AR index is included as Attachment A) which includes documents that describe the results of extensive field investigations, laboratory analyses, interpretation of the data, review of current and future conditions, and a thorough assessment of the potential human health and ecological risks. Based on these findings, action is required at the site.

1.1 Site Name

This ROD addresses IR Site 17, Seaplane Lagoon at Alameda Point (hereinafter referred to as Site 17).

1.2 Site Location

The former NAS Alameda was sited on Alameda Point at the western tip of Alameda Island which is surrounded by San Francisco Bay and the Oakland Inner Harbor. Site 17 is one of 35 IR sites on the former NAS Alameda, which is located at the west end of the City of Alameda in Alameda County, California (Figures 1-1 and 1-2), adjacent to the City of Oakland, California.

1.3 Site Description

From the 1940s to 1975, approximately 300 million gallons of untreated industrial wastewater and stormwater that reportedly contained heavy metals, solvents, paints, detergents, acids, caustics, mercury, oil and grease, and Radium 226 (Ra-226) were discharged into a network of storm drains and carried, in part, through storm sewer outfalls directly into Seaplane Lagoon. The outfalls located in the northeast and northwest corners of the lagoon were the primary sources of contamination.

Table 1-1 provides a detailed physical description of Site 17.

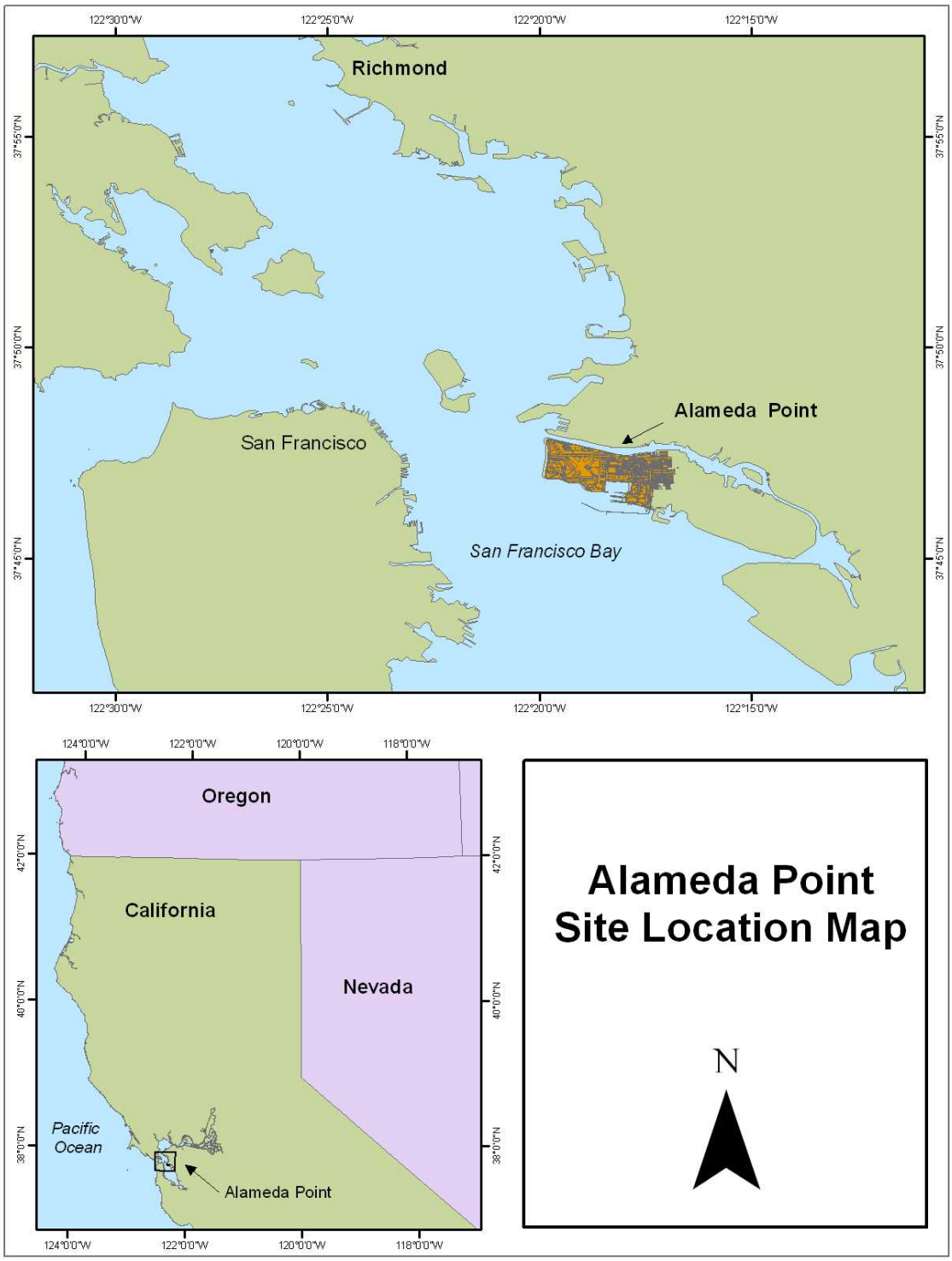

Figure 1-1. Alameda Point Site Location Map

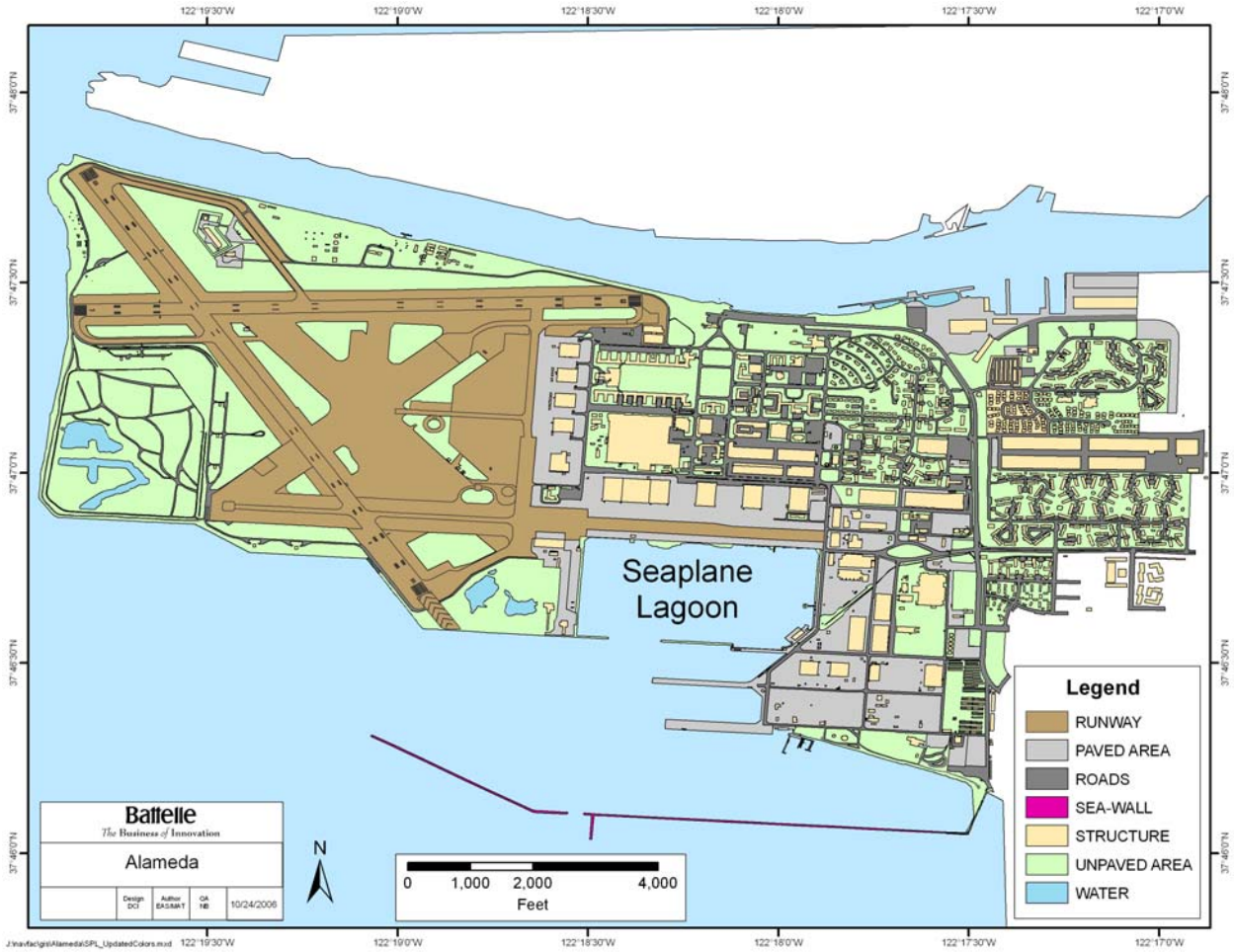

Figure 1-2. Site Map of Alameda Point

Table 1-1. Site 17 Description

Operable Unit Number	Site Name	Approximate Area (acres)	Approximate Water Depth (feet [ft])	Site Description
OU 4B	Seaplane Lagoon	110 acres	12 - 20 ft	Site 17 is a partially enclosed lagoon on the southeastern corner of Alameda Point (Figure 1-2) that was constructed in the 1930s by dredging a former tidal flat. Its entrance is an 800-ft opening in the seawall along the southern perimeter. During construction, seawalls were built along the eastern, western, and southern boundaries, and a bulkhead wall was constructed on the northern side. Four water access ramps are roughly evenly spaced along the northern perimeter. These ramps appear to have been constructed of concrete and soil, and the two central ramps have become larger over time with the addition of general construction debris (e.g., soil and concrete/brick rubble).

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2.0 SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 Site History

The former NAS Alameda was selected for closure by Congress in September 1993, and officially closed in April 1997. NAS Alameda was an active military installation from the 1930s to the 1990s that primarily provided facilities and support for fleet aviation activities. Site 17 was used by the DON for a variety of water-related activities, throughout the history of the NAS. From the 1940s to 1975, industrial wastewater and stormwater generated at the former NAS Alameda was discharged directly into a network of storm drains and carried, in part, into Site 17 through storm sewer outfalls (Figure 2-1). During this period, approximately 300 million gallons of untreated industrial wastewater and stormwater that reportedly contained heavy metals, solvents, paints, detergents, acids, caustics, mercury, oil and grease, and radium were discharged into the lagoon. The outfalls located in the northeast and northwest corners of Site 17 were the primary sources of contamination. In 1975, the direct discharge of industrial wastewater through the storm sewer network was terminated and since that time, a stormwater pollution prevention program has been in place at Alameda Point to ensure that only surface runoff is carried into the lagoon. During the 1990s, the DON cleaned, repaired, and replaced a significant portion of the storm sewer network. Currently, there remains a need for additional evaluation and remediation of the sewer lines leading to the lagoon. This work will be coordinated with the remediation of Site 17 in the timeframe of the CERCLA process.

2.2 Investigation Activities

No enforcement activities are related to Site 17. Environmental investigation and remedial activities associated with the site are implemented under an installation-wide environmental program called the IR program. The purpose of the program is to identify, investigate, assess, characterize, and cost-effectively clean up or control releases of hazardous substances to reduce the risk to human health and the environment. The program is administered in accordance with CERCLA, as amended by SARA. CERCLA generally applies to inactive sites such as Site 17 where there are actual or threatened releases of hazardous substances into the environment.

2.2.1 CERCLA Investigation Activities

The DON initiated environmental investigation and cleanup activities at Alameda Point in the early 1980s. In 1983 an Initial Assessment Study (IAS) was performed to assess the entire NAS for areas where further investigation was warranted (Naval Energy and Environmental Support Activity [NEESA], 1983). Site 17 has been the focus of several investigations due to the elevated levels of contaminants identified in the IAS.

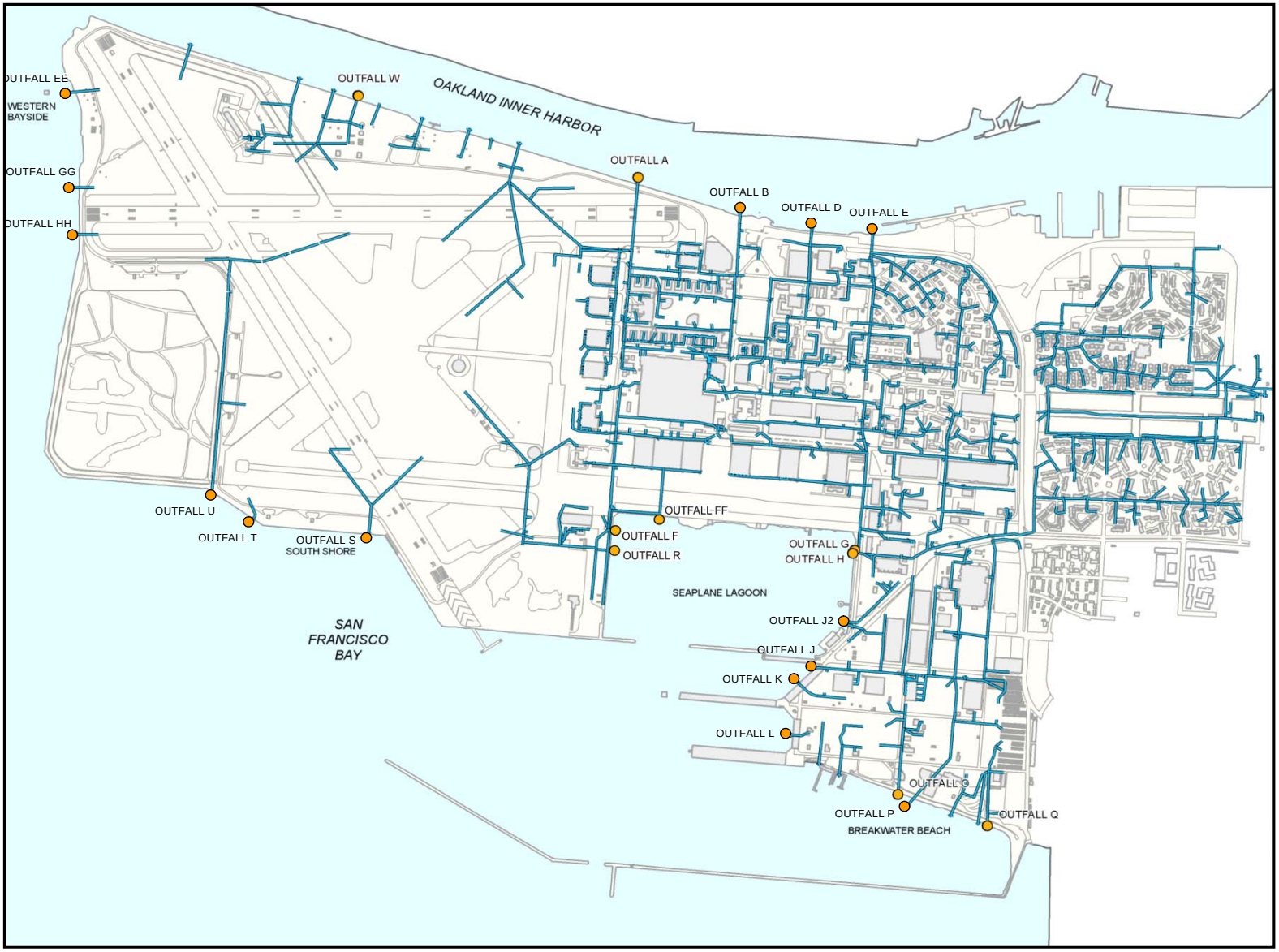

Figure 2-1. Storm Sewer Lines and Outfalls at Alameda Point

Previous investigations have focused on ecological risk as the key consideration for remedial decisions at Site 17 because the site allows limited human access. Data collected under the Navy Assessment and Control of Installation Pollutants (NACIP) program were not included in the Remedial Investigation (RI) report due to the age of the results and lack of supporting quality assurance documentation. In 1988, the DON converted the NACIP program into the Installation Restoration Program (IRP) to be consistent with the CERCLA program. Under the IRP, several investigations were performed from 1993 through 1998. Figure 2-2 shows the extensive sediment sampling activities that have been completed through the course of these previous investigations, and Table 2-1 shows a summary of the environmental investigations performed under CERCLA.

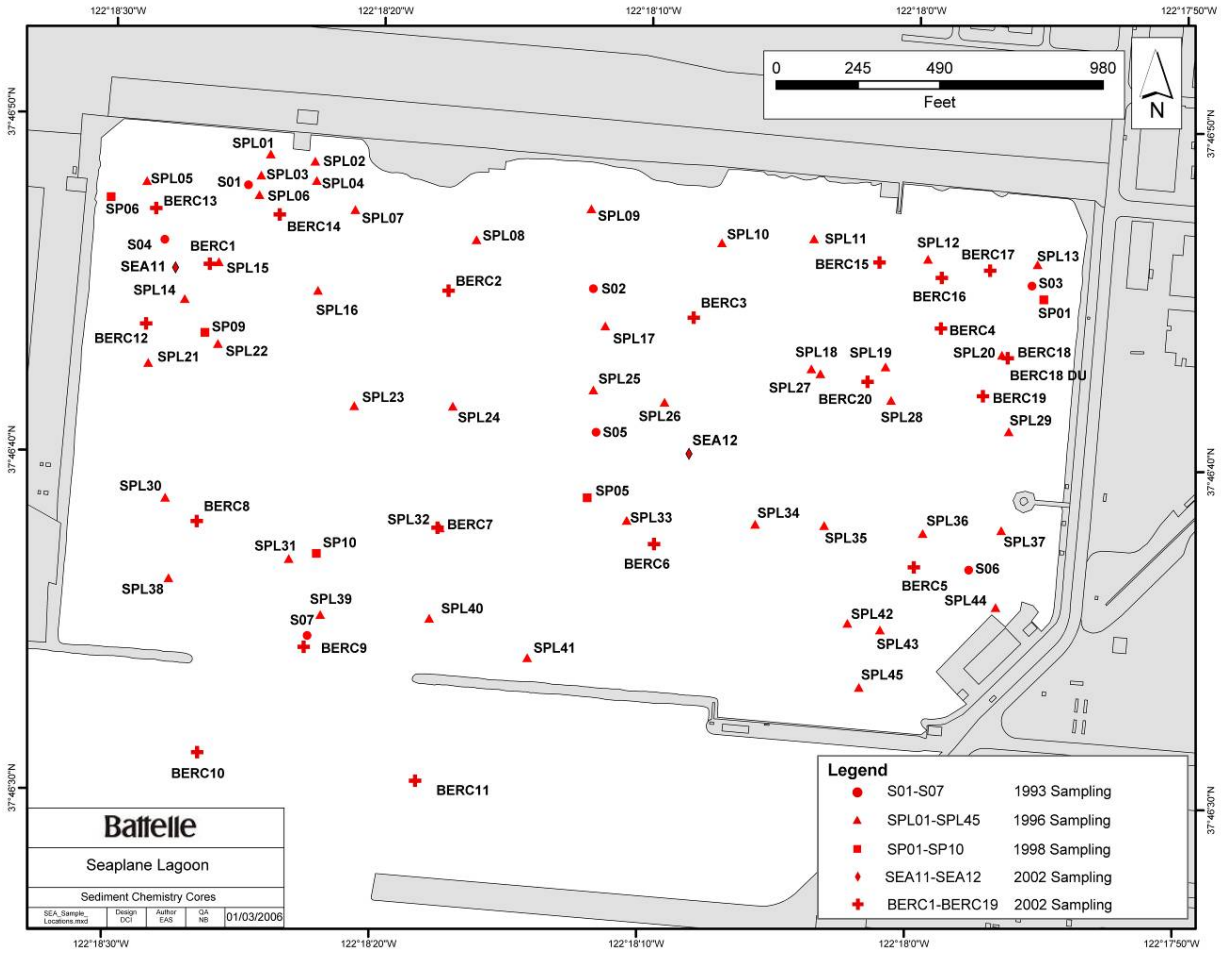

Figure 2-2. Sediment Sampling Locations in Site 17

Table 2-1. Summary of Investigation Activities Performed at Site 17

Date	Investigation/Activity	Objective	Summary of Findings
1993/1994	As part of preliminary sampling for the RI, seven surface sediment grabs from Site 17 (S01 to S07) and one reference sample from San Pablo Bay were collected and analyzed for total metals, semivolatile organic compounds (SVOCs), pesticides, Total PCBs, total organic carbon (TOC), gross *alpha* and *beta* radiation. Bioaccumulation and/or toxicity tests were also conducted.	Designed to identify ecological impacts on biota within the lagoon.	Identified elevated levels of metals, polycyclic aromatic hydrocarbons (PAHs), and Total PCBs. Concluded that a potential relationship between observed toxicity and sediment chemistry might exist. Also concluded that additional chemistry and bioaccumulation data was required.
1996	Additional 45 subsurface cores collected throughout the lagoon (SPL01 to SPL45) and analyzed for total metals, SVOCs, volatile organic compounds (VOCs), sulfides, pesticides, Total PCBs, TOC. Twenty-four of the stations were analyzed for radiological contamination.	Designed in response to the data needs identified in 1993/1994 to provide the additional chemical/physical information. Data collected in transects moving diagonally away from the northern corners of the Lagoon. Provided initial radiological evaluation.	Indicated that concentrations of radiological constituents were low throughout the lagoon. Provided confirmatory evidence that chemical concentrations decrease with increasing distance from the corners.
1998	Ten surface sediment grabs were collected (SP-1 to SP10) and analyzed for metals, SVOCs, Total PCBs, pesticides, organotins, total petroleum hydrocarbons (TPH). Numerous toxicity tests also conducted.	To further investigate the relationship between sediment chemistry and ecological effects. Focusing on areas identified as having high concentrations of contaminants.	Polychaete tests were not acutely toxic. Toxicity was observed in the amphipod tests; however, survival at the reference was also low, indicating potential confounding factors.
1999[a]	Thirteen samples collected by the Berkeley Environmental Restoration Center (BERC). Of these, 8 were evaluated in the RI (SC2 to SC4, C1 to C3 and two grab samples). Metals, Total PCBs, and PAHs were evaluated.	To evaluate the physical, chemical, and biological conditions of the stormwater outfalls.	Results support evidence from other studies that the northeast corner contains elevated metals concentrations.

Table 2-1. Summary of Investigation Activities Performed at Site 17, Continued

Date	Investigation/Activity	Objective	Summary of Findings
2001	Forage fish collected at six equally sized areas within the lagoon and at two reference locations within San Francisco Bay. Fish analyzed for metals, Total PCBs, PAHs, pesticides, and butyltins.	To determine chemical burdens in fish tissue to evaluate the risks to fish and refine the dose estimates for assessing risks to piscivorous birds associated with sediment exposures.	Results indicated that several chemicals were bioaccumulating to greater levels in fish from Site 17 than at the reference areas. Highest concentrations observed near outfalls.
2002[a]	Subsurface cores collected from 20 locations (BERC1 to BERC19) and analyzed for Total PCBs, PAHs, pesticides, and butyltins.	To update the current understanding of the spatial distribution of key contaminants and to fill data gaps.	Results are incorporated into the RI and FS investigations.
2002	A supplemental amphipod test was conducted using sediments from eight locations (SEA11, SEA12, SP02, SP03, SP04, SP07, SP08, and SP09). Samples were also evaluated for Total PCBs, PAHs, pesticides, butyltins, metals, grain-size distribution, and TOC.	To reduce uncertainties associated with the historical amphipod bioassays conducted in 1993/1994 and 1998.	Supported the conclusion that the historical bioassays likely overpredicted toxicity to benthic invertebrates.

[a] Investigators from the University of California at Berkeley (UCB) collected 20 sediment cores in 2002 from Site 17 for a sediment dynamics study. The objective of the investigation was to investigate depositional history within the lagoon using chemical and radiological indicators such as Ra-226. These data were collected using analytical methods not certified by the DON or EPA; therefore, they are considered to be an ancillary screening tool only. However, as part of this investigation, duplicate cores were collected from each of the 20 locations and given to the Navy for chemical analyses (Battelle et al., 2003). The data from those 20 duplicate cores are incorporated into the RI/FS.

The larger of the two Site 17 debris piles along the Site 17 shoreline was sampled in February 2006. Concentrations in the debris pile exceeded the remedial goal for Total PCBs, and these debris piles will be addressed separately prior to beginning the Site 17 sediment remediation.

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3.0 COMMUNITY PARTICIPATION

A Community Relations Plan (Tetra Tech, 2003) was developed to document the public's interests and concerns regarding the ongoing environmental investigations and cleanup activities throughout Alameda Point. The plan outlines a specific community relations program designed to address these interests and concerns. The initial plan was prepared in February 1989 and revised in 1996, 1998, 2002, and 2003. The revisions reflect the most recent information obtained relating to the communities interests, concerns, and informational needs related to the ongoing environmental investigations and cleanup process at Alameda Point.

3.1 Restoration Advisory Board

A Restoration Advisory Board (RAB) was established for Alameda Point to give community members an opportunity to participate in environmental restoration activities at the DON facilities. The Board is co-chaired by a community member and a representative from the DON. Other Board members include representatives from the EPA, San Francisco Regional Water Quality Control Board (RWQCB), DTSC, the general public, and the Sierra Club.

RAB meetings are held monthly in Alameda, are open to the public, and are advertised in local newspapers. They are scheduled in the evening after normal working hours at Building 1, Room 140, at 950 West Mall Square at Alameda Point. They are devoted to environmental restoration activities throughout Alameda Point. A number of RAB meetings have had discussions devoted to investigation activities at Site 17 (see Table 3-1). Copies of RAB meeting minutes as well as the collection of reports and historical documents used by the Base Realignment and Closure (BRAC) Cleanup Team (BCT) in the selection of cleanup and environmental management alternatives are available in the AR file.

Table 3-1. Summary of Public Involvement Related to Site 17

Date	Type Of Public Involvement	Availability/Access
August 3, 1999	RAB Meeting	Open to the Public
September 5, 2000	RAB Meeting	Open to the Public
April 3, 2001	RAB Meeting	Open to the Public
September 4, 2001	RAB Meeting	Open to the Public
July 2003	Alameda Point Focus Environmental Newsletter	Distributed to the Alameda Point Mailing List
June 2004	Remedial Investigation Report (Battelle et al., 2004)	Mailed to Information Repositories/Open to the Public
January 6, 2005	RAB Meeting	Open to the Public
July 2005	Feasibility Study Report (Battelle, 2005)	Mailed to Information Repositories/Open to the Public
February 17, 2006	Proposed Plan (Battelle, 2006)	Distributed to the Alameda Point Mailing List and Information Repositories
February 17 to March 17, 2006	Proposed Plan Public Comment Period	Mailed to Information Repositories/Open to the Public
March 1, 2006	Public Meeting	Open to the Public

The AR file provides a record of decisions and actions by the DON for Site 17. A site-specific AR index is included as Attachment A. The AR file for Site 17 is available for public review at Naval Facilities Engineering Command, Southwest Division, 937 North Harbor Drive, Building 1, Third Floor, San Diego, CA 92132-5190. To arrange a time to review documents contact Diane Silva, Administrative Records Manager (619) 532-3676. Community members can also find key supporting documents that pertain to Site 17, and a complete index of all DON Alameda Point AR documents, at the Information Repository located at Alameda Point, 950 West Mall Square, Building 1, Rooms 240 and 241.

3.2 Public Mailings

Alameda Point Focus Newsletters are distributed to approximately 400 households, businesses, public officials, and agencies around Alameda Point in an effort to reach as many community members as possible. The newsletters regularly:

- Identify the information repository locations
- Identify upcoming proposed plans which will be available for public comment
- Notify the community of upcoming RAB Meetings and of any news relating to the RAB
- List the DON's Alameda Point website and a contact for additional information.

In addition to the regular newsletters, proposed plans are prepared for each site prior to completion of the ROD. Proposed plans provide an overview of environmental investigation results (including ecological risk assessment and human health risk assessment results), present remedial alternatives for a site or group of sites, and present the preferred alternative to the public. The Proposed Plan for Site 17 was distributed to the Alameda Point mailing list recipients on February 17, 2006 (Battelle, 2006).

3.3 Community Participation for Site 17

The public has had opportunities to review and comment on the Draft RI Report, finalized in June 2004 (Battelle et al., 2004a); the Draft FS, finalized in July 2005 (Battelle, 2005); and the Proposed Plan, finalized and distributed to the public on February 17, 2006 (Battelle, 2006). These documents were also made available at the information repositories and at the AR location.

A 30-day public comment period extended from February 17, 2006 to March 17, 2006. A public meeting was also held on March 1, 2006 to solicit public comments on the proposed remedial alternatives. The notices of availability of the Proposed Plan and the public meeting announcement were published in the Alameda Journal on February 17, 2006 and in the Oakland Tribune on February 22, 2006 (Attachment B).

At the public meeting, the public had the opportunity to view presentations on the conditions at Site 17 and the preferred remedial alternative for cleanup of contaminated sediment at the site. Representatives from the DON and environmental regulatory agencies were available to answer questions. A court reporter prepared a transcript of the meeting (Attachment C). Public comments received on the Proposed Plan are included in Attachment D and the DON's responses to public comments received during the public meeting and the Proposed Plan comment period are included in the Responsiveness Summary (Attachment E).

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4.0 SCOPE AND ROLE OF OPERABLE UNIT AND RESPONSE ACTION

Responses associated with this ROD include the remediation of sediment in the northwest and northeast corners of Site 17 under CERCLA. Based on the results of the RI and FS, these areas have been found to pose an unacceptable risk to human health and the environment and therefore, the DON, together with the BCT, have determined that they require a remedial action. Once the remedial response is complete, the site will allow for unrestricted use with no institutional controls required.

As shown in Figure 4-1, Site 17 is located within OU 4B at Alameda Point. The remedies for the other IR sites at Alameda Point will be, or have been, addressed in separate RODs.

Site 17, Seaplane Lagoon, is located in the southeastern quadrant of the former NAS facility. The storm sewer system at Alameda Point, designated as IR Site 18, served as a primary transport route for chemicals from industrial operations and for surface water runoff to reach the offshore sites. In 1975, the direct discharge of industrial wastewater through the storm sewer network was terminated and since that time, a stormwater pollution prevention program has been in place at Alameda Point to ensure that only surface runoff is carried into the lagoon. In 1991, the Navy initiated several removal actions, designed to remove residual contaminated sediments from the sewer lines. The effectiveness of these actions was documented through closed circuit television surveys, and the Navy issued a technical memorandum in February 2000 that removed Site 18 as a specific IR site (TtEMI, 2000). Additional investigations and remediation of potential residual contamination in the sewer lines leading to Site 17 are planned to be conducted prior to the initiation of remedial activity at Site 17.

The role of the response action is to protect people and the environment from health risks posed by exposure to the contaminated sediments located in the lagoon. This action is being conducted in preparation of utilizing the area for future commercial and recreational usage.

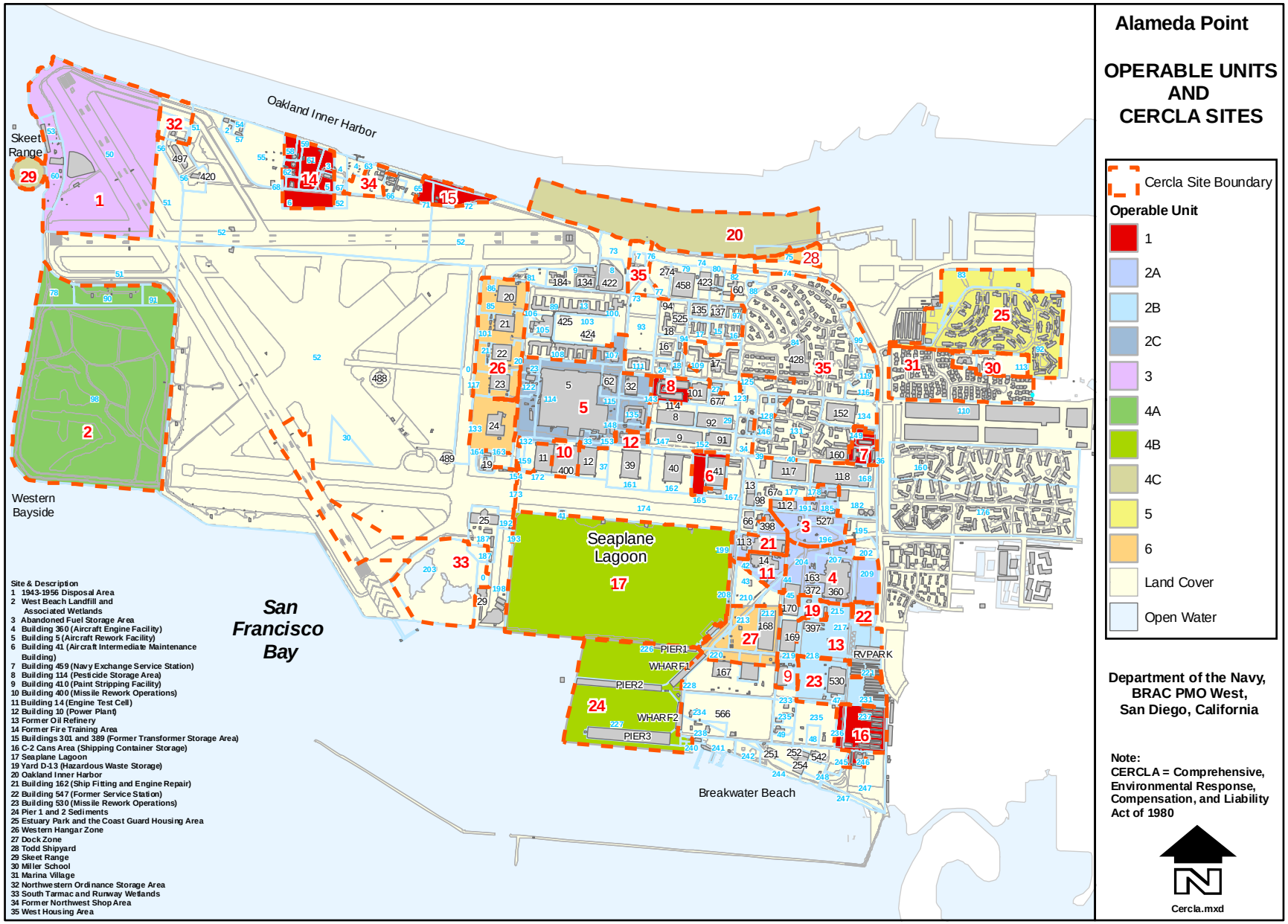

Figure 4-1. Installation Restoration Sites at Alameda Point

5.0 SITE CHARACTERISTICS

This section provides a detailed description of the physical setting of Site 17, including the geology, hydrogeology, and ecology. A discussion on the nature and extent of contamination in sediments is provided, followed by the conceptual site models (CSMs) on which the risk assessments and response action are based. A complete analysis including sampling locations, chemicals detected, nature and extent of contamination, fate and transport and human and ecological risk assessments can be found in the Site 17 RI Report (Battelle et al., 2004a).

5.1 Hydrodynamic Setting

The majority of the former NAS Alameda was created by filling shallow mudflats, marshlands, and sloughs with material dredged from San Francisco Bay. Site 17 was constructed in an area originally occupied by a tidal flat. The interior of the lagoon was historically dredged to a depth of approximately 20 ft and is currently approximately 12 to 20 ft deep (Figure 5-1). A localized depression (approximately 25 to 30 ft deep) in the southeast corner of the lagoon was formed from an excavation created for a diving facility (BERC, 1999). Sandy sediment is exposed in the northeast and northwest corners of the lagoon and along the northern seawall at low tide.

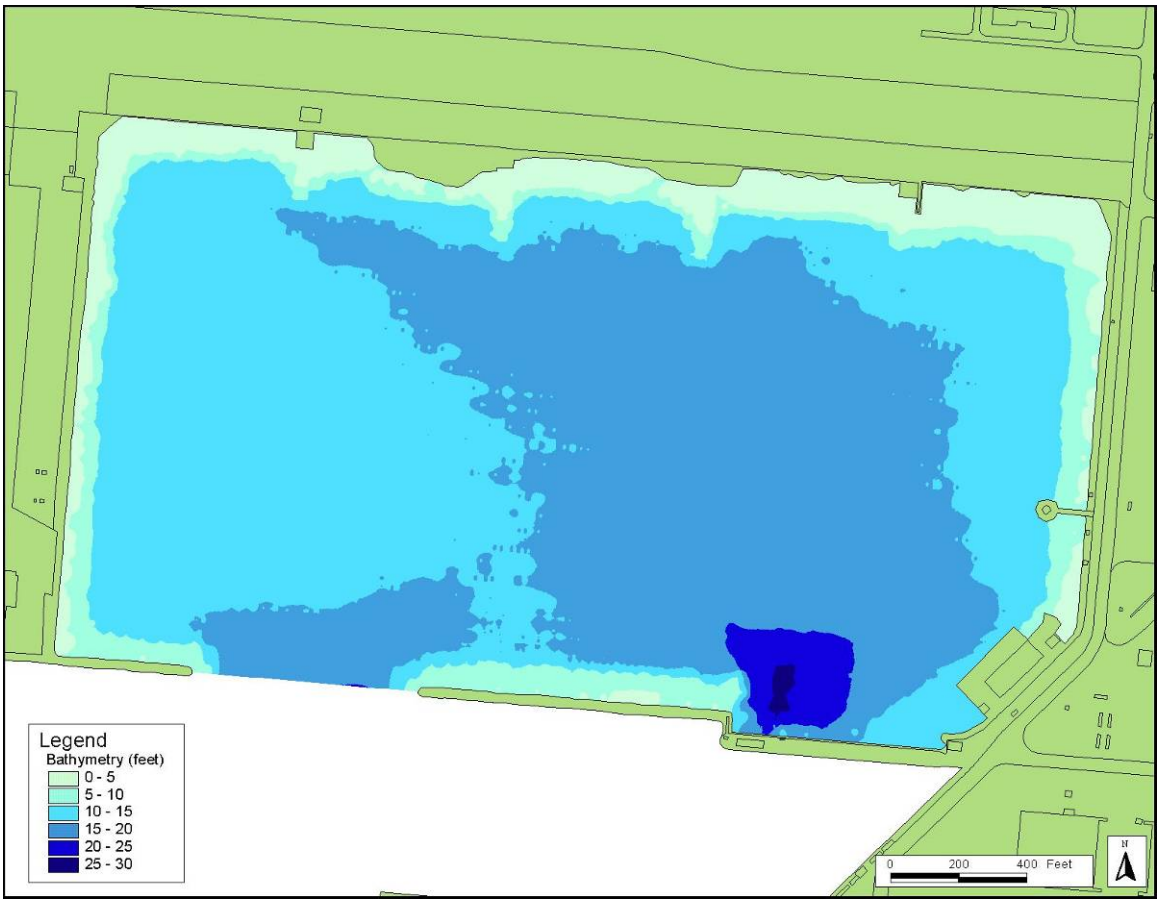

Figure 5-1. Bathymetry at Site 17 (ft MLLW), 2001

Tides in Site 17 are mixed semidiurnally (i.e., two high and two low tides of variable heights in a 24-hr period) and range from approximately −1 to +8 ft mean lower low water (MLLW). Tidal currents are fastest where seawater enters and exits the opening in the breakwater and are lower in the interior of the enclosed basin. The lagoon is protected from large wind-generated waves because it is enclosed on three sides and the fourth side contains a series of breakwaters; however, localized wind-driven circulation may occur. There is minimal freshwater inflow, with the exception of precipitation and stormwater that collects in the storm sewer system and discharges to the lagoon through outfalls. Water from the lagoon is not used for any domestic purposes.

Most sediment transported into the lagoon is likely to be suspended sediments that settle out as current velocities become slower inside the lagoon. Significant erosion of adjacent upland areas is unlikely due to the flat topography and impervious surfaces (i.e., pavement) over most of the surrounding land surface. An evaluation of sediment accumulation within the lagoon suggests that the net sediment accumulation rate prior to 1963 was approximately 0.7 to 0.8 inches/year (in/yr) (1.7 to 2 centimeters per year (cm/yr)) (BERC, 1999). Recent investigations have determined sediment accumulation rates since 1963 have been approximately 0.4 in/yr (1 cm/yr) (BERC, 1999).

Fine-grained sediments can be resuspended by waves, currents, ship wakes and propeller wash, dredging activities, and biological processes. Little erosion of the bottom sediments is expected from tidal or wind-generated currents except near the entrance, where current velocities are higher. Ship use is currently heavily restricted, and biological activity is likely the dominant process controlling sediment resuspension in most of the lagoon. Given the proposed future use (i.e., as a commercial marina), boat traffic and activities associated with marina use could become controlling forces of sediment transport in the lagoon.

5.2 Geology

Generally, the geologic units encountered in Site 17 from the ground surface down are as follows:

- Artificial Fill
- Bay Sediments (Young Bay Mud or Recent Deposits)
- The Merritt Sand
- The San Antonio Formation

Bay sediment within the lagoon is largely absent, having been removed during dredging to form the lagoon itself. The existing sediments consist of recent deposits of dark gray to black, very soft, silty clays overlying the Merritt Sand, which is a firm, well-sorted, orange-brown, clayey and silty-fine to medium sand that was deposited in a subareal aeolian (i.e., wind-driven) environment. The thickness of the recent sediment deposits ranges from about 0.5 to 6.5 ft (with an average of about 4 ft); the thickest accumulations are found on the western side and in the northeast corner of the lagoon (BERC, 1999).

The 1999 BERC study concluded that the consolidation characteristics of the recent sediments in the top 3 ft are similar to the range of published values for recent fine-grained marine deposits. The organic content ranged from 3 to 12 percent, which is typical of these sediments.

5.3 Hydrogeology

Three water-bearing zones are found in the upland area adjacent to Site 17:

- The first water-bearing zone (FWBZ)

- The second water-bearing zone (SWBZ)
- The first Merritt Sand (FMS) aquifer [PRC Environmental Management Inc. (PRC), 1997].

The FWBZ is found approximately 5 ft below ground surface (bgs) in the artificial fill used to create former NAS Alameda. The FWBZ is approximately 20 to 40 ft thick and is underlain by the Holocene Bay Sediment, which prevents water movement. The SWBZ occurs in Pliocene/Pleistocene undifferentiated deposits that underlie the Holocene Bay Sediment. The FMS aquifer occurs in the southeastern part of Alameda Point and appears to be hydraulically connected with the SWBZ.

The hydraulic gradient in the artificial fill surrounding the lagoon (i.e., the FWBZ) is generally toward the lagoon. The sheet pile wall along the northern edge of the lagoon appears to act as a barrier to horizontal groundwater flow, resulting in higher water levels along this boundary during wet months and potentially affecting flow conditions in the northern corners of the lagoon. In the Merritt Sand, groundwater flow appears to be primarily horizontal towards the deep-water channel south of Site 17 (BERC, 1999). Groundwater elevations in piezometers and monitoring wells in the SWBZ and FMS aquifers generally show evidence of tidal influence; groundwater gradients are towards Site 17 in the southeastern part of Alameda Point, with steeper gradients at low tide (PRC, 1997).

5.4 Ecology

As part of the initial assessment activities, an ecological assessment was performed at Alameda Point in 1994 that described the composition of the biotic community in and around the lagoon (PRC, 1994). Other habitat assessments from nearby areas, including the Port of Oakland (Golden Gate Audubon Society [GGAS], 1994; ENTRIX, Inc., 1997), also were reviewed to provide additional ecological characterization information. The invertebrate community predominantly consists of molluscs, which comprise around 75% of the benthic biota found at historical monitoring stations. The three species responsible for these high numbers and biomass were the clams *Gemma gemma, Musculista senhousia,* and *Theora fragilis*. Based on the physical characteristics and the proximity of Alameda Point to the Oakland estuary, fish species present in the lagoon are likely to include various flatfish, surfperch, gobies, sculpin, silversides, pipefish, white croaker, sharks, and rays. Northern anchovies (*Engraulis mordax*), occur year-round and serve as an important food source for salmon, jacksmelt, pelicans, terns, and grebes. Pacific herring are also an important forage food. Herring enter the San Francisco estuary in the winter and early spring to spawn, particularly in rocky areas, along aquatic vegetative covered substrates, on pilings, and along sandy beaches. Surfperch also occur in the area, generally feeding on small crustaceans, mollusks, and polychaete worms. Among the surfperch species are shiner (*Cymatogaster aggregate*) and pile (*Damalichthy vacca*) (ENTRIX, Inc., 1997). In shallow subtidal areas sampled in the Oakland estuary in the spring, summer, and fall of 1997, English sole, starry flounder, Bay goby, Northern anchovy, and shiner perch were the dominant species (ENTRIX, Inc., 1997).

In bird surveys conducted in the Central Bay area in 1997 by ENTRIX, Inc. and the Biological Field Service, a total of 43 bird taxa were sighted in winter, mostly over open water, and included various diving ducks and grebes. The endangered California least terns (*Sterna antillarum browni*) were not seen in the winter surveys, most likely because the surveys ended in April, before this migratory species is generally seen in the San Francisco Bay (ENTRIX, Inc., 1997). Twenty-seven bird taxa were observed during the summer, including western gull (*Larus occidentalis*), western sandpiper (*Calidris mauri*), double-crested cormorant (*Phalacrocorax auritus*), and least tern (ENTRIX, Inc., 1997).

Based on historical observations and known activity patterns for marine mammals in San Francisco Bay (GGAS, 1994), it is possible that both California sea lions (*Zalophus californicus californianus*) and harbor seals (*Phoca vitulina*) forage in the vicinity of Alameda Point. Although the presence of either of

these species has not been documented, harbor seal foraging activities and haulouts have been observed along and near the breakwaters along the southern side of Alameda Point. However, available radiotelemetry data for seals in San Francisco Bay suggest that none of the seven discrete feeding stations typically frequented by seals within the bay is in the immediate vicinity of Alameda Point (Harvey and Torok, 1994).

Special status species (including species that are identified as threatened or endangered) known to occur in the Central Bay area include winter-run Chinook salmon (*Oncorhynchus tshawytscha*), central California steelhead (*Oncorhynchus mykiss*), double-crested cormorant, California least tern, California brown pelican (*Pelecanus occidentalis californicus*), western snowy plover (*Charadrius alexandrinus nivosus*), American peregrine falcon (*Falco peregrinus anatum*), California sea lion, and harbor seal (ENTRIX, Inc., 1997). None of these species is known to nest or breed in Site 17, although several species are known to use adjacent areas for nesting and/or forage activities.

5.5 Nature and Extent of Contamination in Sediment

Activities associated with known or potential contaminant releases at Site 17 were identified, and environmental investigations were conducted to identify and assess the nature and extent of contaminants in sediments (Section 2.2). Chemicals detected in sediments included metals, PAHs, Total PCBs, and pesticides. Site-specific data were evaluated in comparison to data from ambient or reference data, defined as being from areas that are not impacted by Navy operations at Alameda Point. Where available, data collected by the Bay Area Protection and Toxic Hotspot Cleanup Program (BPTCP) and San Francisco Estuary Initiative's (SFEI) Regional Monitoring Program (RMP) were used to represent ambient conditions in San Francisco Bay. For chemicals that were not analyzed by the RMP or BPTCP, ambient data collected at ten San Francisco Bay reference sites during the 1998 field sampling effort (Tetra Tech EM, Inc. [TtEMI], 1998) and the 2001 Hunters Point Shipyard Parcel F validation study (Battelle et al., 2004b) were used (see Table 5-1).

A number of inorganic and organic constituents were found to be elevated in surface sediments relative to available data from other areas within San Francisco Bay. For example, cadmium, chromium, copper, lead, mercury, silver, tin and zinc were found to be present in sediments at concentrations higher than ambient levels for San Francisco Bay. The concentrations of most inorganic constituents are highest in the northeast and northwest corners of the lagoon, and tended to be higher in the middle depth interval (0.3 to 2 ft). The pattern of distribution for several organic chemicals, including 4,4′-dichlorodipheny-ltrichlor-ethane (DDT) and Total PCBs, was similar to that observed for metals, with the highest concentrations located in the northern corners in the middle depth interval.

Radiological constituents associated with the application and removal of radioluminaescent paints, containing Ra-226, to aircraft instruments were discharged at Outfall F in Site 17 (Figure 2-1). Therefore, in 1996, PRC/TtEMI performed several investigations to define the nature and extent of radioactive contamination at the lagoon. Radioisotopes were detected in the northwest and northeast corners and at Station SPL34, north of the breakwall (Figure 2-2). In general, concentrations of these compounds were close to the method detection limits and the distribution was consistent with the pattern shown for metals in sediments. Concentrations in the middle depth intervals (i.e., 0.3 to 2 ft and 2 to 5 ft) were generally similar to those observed in surface sediments (i.e., 0 to 0.3 ft). The highest radium concentration (3.92 picoCuries per gram [pCi/g]) was measured in the 2 to 2.5 ft depth interval in the northwest corner of the lagoon. Based on these data, the RI concluded that there was no unacceptable risk to human health or the environment associated with radium in sediments. EPA concurred with that assessment (see EPA comment letter dated June 29, 2004). Additional radium data collected by the UCB in 2002 as part of an investigation to evaluate depositional history within the lagoon indicated one sediment core (BERC-13; Figure 2-2) with concentrations of 7 pCi/g at approximately 3 ft; concentrations at all other cores

evaluated were comparable to the data evaluated in the RI (a summary of these data is provided in Appendix B of the FS).

Table 5-1. Statistical Summary of Chemicals in Surface Sediment

Analyte	Units	Number of Samples			Detected Range	Threshold Values			
		Total	Non-Detect	Detected		Ecological Screen[a]	Ambient[b]	ER-M[c]	PRG Industrial[d]
Arsenic	mg/kg	76	0	76	1.5-15.4	8.2	15.3	70	0.25
Cadmium	mg/kg	76	2	74	0.19-57.3	1.2	0.33	9.6	450
Chromium	mg/kg	76	0	76	34.2-495	81	112	370	450
Copper	mg/kg	76	0	76	7-291	34	68.1	270	64
Lead	mg/kg	76	0	76	3.4-619	46.7	43.2	218	800
Magnesium	mg/kg	49	0	49	2980-17900	NA	NA	NA	NA
Mercury	mg/kg	76	0	76	0.07-1.8	0.15	0.43	0.71	62
Molybdenum	mg/kg	49	32	17	0.43-9.3	NA	NA	NA	5100
Nickel	mg/kg	76	0	76	29.2-128	20.9	112	51.6	20000
Selenium	mg/kg	76	44	32	0.2083-1.35	0.7[e]	0.64	1.4	5100
Silver	mg/kg	76	14	62	0.4-11.7	1	0.58	3.7	5100
Thallium	mg/kg	56	46	10	0.08-0.3	NA	NA	NA	67
Tin	mg/kg	10	0	10	3-8	NA	NA	NA	100000
Zinc	mg/kg	76	1	75	101.5-514	150	158	410	100000
Total PCB	µg/kg	77	10	67	18-2535	22.7	200[f]	180	NA
Total 4,4-DDX	µg/kg	77	20	57	2.4-202.1	1.58	7	46.1	NA
Total HPAH	µg/kg	77	15	62	120-36380	1700	3060	9600	NA
Total LPAH (6)	µg/kg	77	42	35	87.18-6768	552	434	3160	NA
alpha-Chlordane	µg/kg	77	48	29	0.1251-17	0.5[e]	NA	6	6.5
Dieldrin	µg/kg	77	50	27	0.1688-12.45	0.02[e]	0.44	8	0.11
Endrin	µg/kg	69	63	6	0.07217-28	0.02[e]	NA	45	180
Endrin Aldehyde	µg/kg	67	65	2	3.6-4.6	NA	NA	NA	NA
gamma-Chlordane	µg/kg	67	51	16	0.08243-27	0.5[e]	NA	6	6.5
Dibutyltin	mg/kg	57	38	19	3.625-145	25.1[g]	NA	NA	NA
Monobutyltin	mg/kg	45	36	9	4-61	25.1[g]	NA	NA	NA
Tetrabutyltin	mg/kg	57	53	4	2-6	25.1[g]	NA	NA	NA
Tributyltin	mg/kg	77	60	17	3.125-185	25.1[g]	NA	25.1	NA

NA = not applicable

[a] Conservative ecological sediment screening benchmarks protective of benthic invertebrates and fish. Values represent the Effects Range-Low (ER-L) from Long et al. 1995, unless otherwise noted.

[b] Ambient values reflect data from the Bay Protection and Toxic Hotspot Cleanup Program (BPTCP), the SFEI RMP, and data from reference locations collected by Tetra Tech during the 1998 field sampling and by Battelle during 2001 sampling conducted for Hunters Point, unless otherwise noted.

[c] Effects Range-Median (ER-M) from Long et al., 1995.

[d] Preliminary remediation goals (PRG) reported by EPA (2004a), based on human health exposures to soil under an industrial exposure scenario.

[e] ER-L reported by Long and Morgan, 1991.

[f] Upper-bound estimate of nearshore ambient as recommended by EPA, 2004b.

[g] Value reported by EPA, 1996.

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6.0 CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

This section discusses the current and reasonably anticipated future land uses at Site 17. This information was incorporated into the development of exposure scenarios for the risk assessments.

6.1 Land Uses

Currently, the site is not used for any human-related activities, except limited boat use. Under the Alameda Point General Plan, as amended in 2003, Chapter 9, Figure 9-2 (City of Alameda, 2003; shown here in Figure 6-1), the proposed land use of the site includes development of a commercial marina which would involve construction of docks along the shoreline to provide boat access (Alameda Reuse and Redevelopment Authority [ARRA], 1996). The presence of these docks will likely reduce direct exposure to the sediments by physically covering areas exposed during low tide. Under the proposed reuse plan, the area surrounding Site 17 will be developed as a mixed-use marina-related district consisting of marina housing of 32 acres, industrial park of 19 acres, recreational/commercial area of 10 acres, and marina waterfront of 47 acres (see Figure 6-1). Marina-related uses (including private and public boating, boating clubs, ferry service, deep draft yacht facilities, boat repair, waterfront dry storage for boats, and sailing training facilities) would be incorporated (ARRA, 1996). The piers located at the southeastern-most edge of the lagoon may be reused for docking of large scale ships such as cruise ships or historical landmark vessels.

The receptors and exposure scenarios associated with future use do not differ significantly from those evaluated under the current use assessment, with the exception that direct exposures to sediments may be reduced in the future as a result of the construction of docks along the shoreline. If the area were opened as a commercial marina, the primary exposure pathway for both humans and ecological receptors is expected to remain from direct contact with the sediment and from consumption of fish and shellfish harvested within the lagoon.

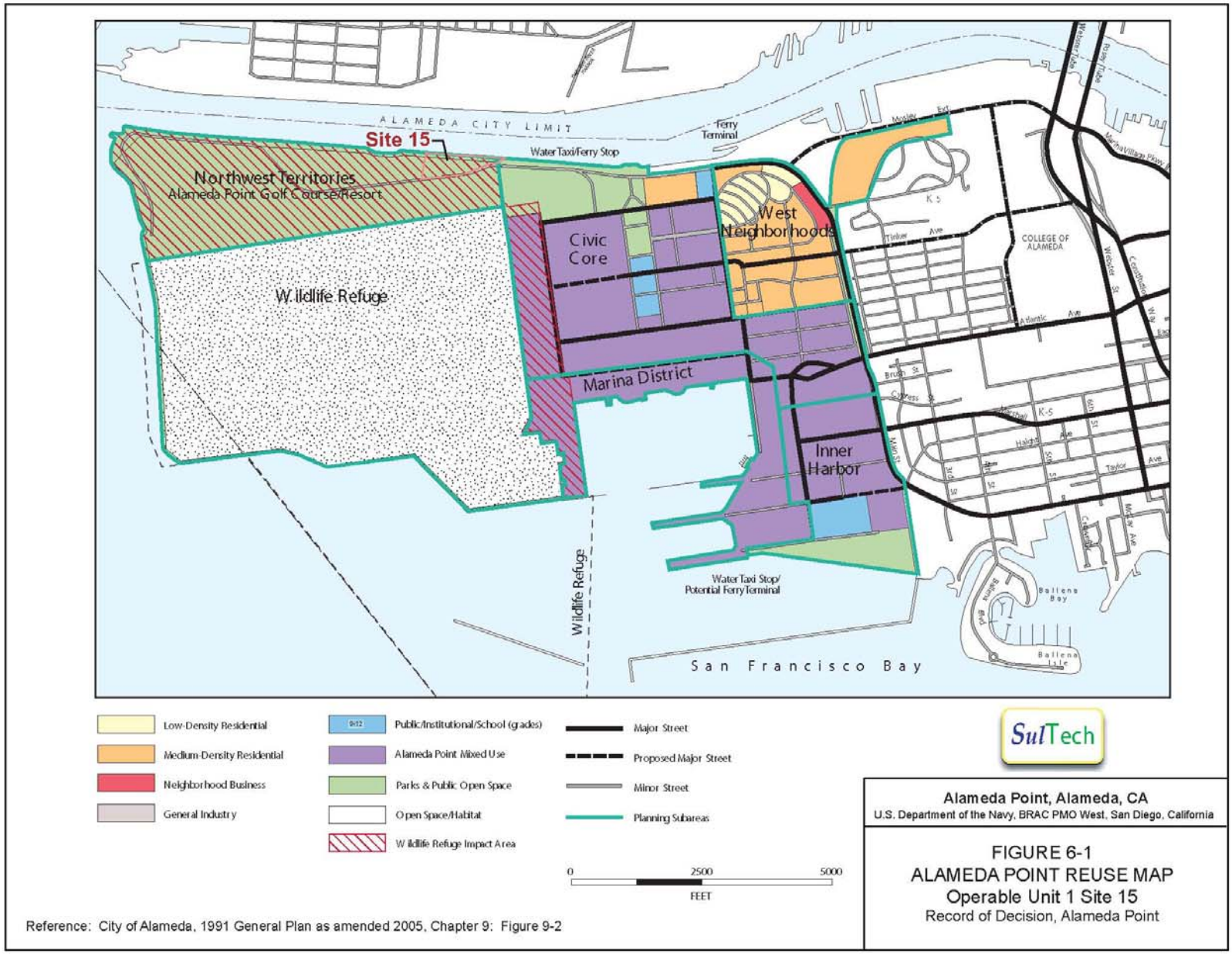


Figure 6-1. Alameda Point Reuse Map

7.0 SUMMARY OF SITE RISKS

As part of the RI, ecological and human health risk assessments were conducted in accordance with EPA and DON guidelines to evaluate risks to human health and the environment associated with exposure to contaminants in Site 17 sediments. Risk assessments provide evaluations of the potential threats to human health and the environment in the absence of any remedial action. They form the basis for determining whether remedial actions are necessary and the justification for performing remedial actions (EPA, 1988; 2005). Based on the risk assessments for this site, the response action selected in this ROD is necessary to protect public health, welfare, and the environment from actual or threatened releases of hazardous substances. A summary of the risk assessments is provided below.

Based on evaluation of the site characteristics, CSMs were developed for the human health and ecological risk assessments. CSMs provide a framework for relating potential receptors to contaminated media and determining the potential significance of exposure pathways. An exposure pathway analysis links the source, location, and type of environmental release with population location and activity patterns to determine the primary pathways of exposure. If potentially complete and significant exposure pathways exist between contaminants and receptors, an assessment of potential effects and exposure is conducted. Only those potentially complete exposure pathways likely to contribute to the total exposure were quantitatively evaluated. All other potentially complete exposure pathways which likely provide *de minimus* or minor exposures were not quantitatively evaluated in the RI.

The human health CSM is presented in Figure 7-1. The shoreline at Site 17 consists primarily of bulkheads that limit human access to the water. In addition, the existing boat ramps are in disrepair. The majority of the lagoon is submerged; however, limited shallow, intertidal areas in the northern corners are accessible during periods of low tide. A main access road runs along the eastern boundary of the lagoon and commercial/industrial tenants occupy the surrounding buildings and the Navy currently restricts access to the area around the lagoon. Conservatively the human health CSM assumes that the primary exposures to sediments would be associated with the consumption of fish and shellfish. It was also assumed that individuals harvesting shellfish would be exposed to sediments through dermal contact and incidental ingestion. Direct contact with surface water is expected to be low because activities associated with shellfish collection would occur at low tide. In addition, the contaminants of concern (COCs) are persistent, hydrophobic chemicals primarily associated with the sediments. As a result, both water concentrations of COCs and exposure to COCs via surface water are negligible compared to sediment concentrations and potential exposure from sediments.

The California Office of Environmental Health Hazard Assessment has issued an interim fishing advisory for all of San Francisco Bay and Delta Region (http://www.oehha.ca.gov/fish/general/sfbaydelta.html). This advisory was issued because of elevated concentrations of mercury, PCBs and other chemicals in fish tissue throughout the Bay. Signs are also posted around the lagoon advising people not to eat fish collected there. Although the Site 17 remedial activity is expected to reduce the bioaccumulation of contaminants from sediments within the lagoon, there are numerous other sources throughout the Bay area, and a fish consumption advisory will likely remain in place until more of these sources have been addressed.

As depicted in Figure 7-2, the main exposure medium by which ecological receptors may be exposed to COCs at Site 17 is through surface sediment/porewater. Surface water was not identified as a significant exposure medium due to tidal action and San Francisco Bay currents, which result in rapid dilution and/or transport of constituents out of the lagoon.

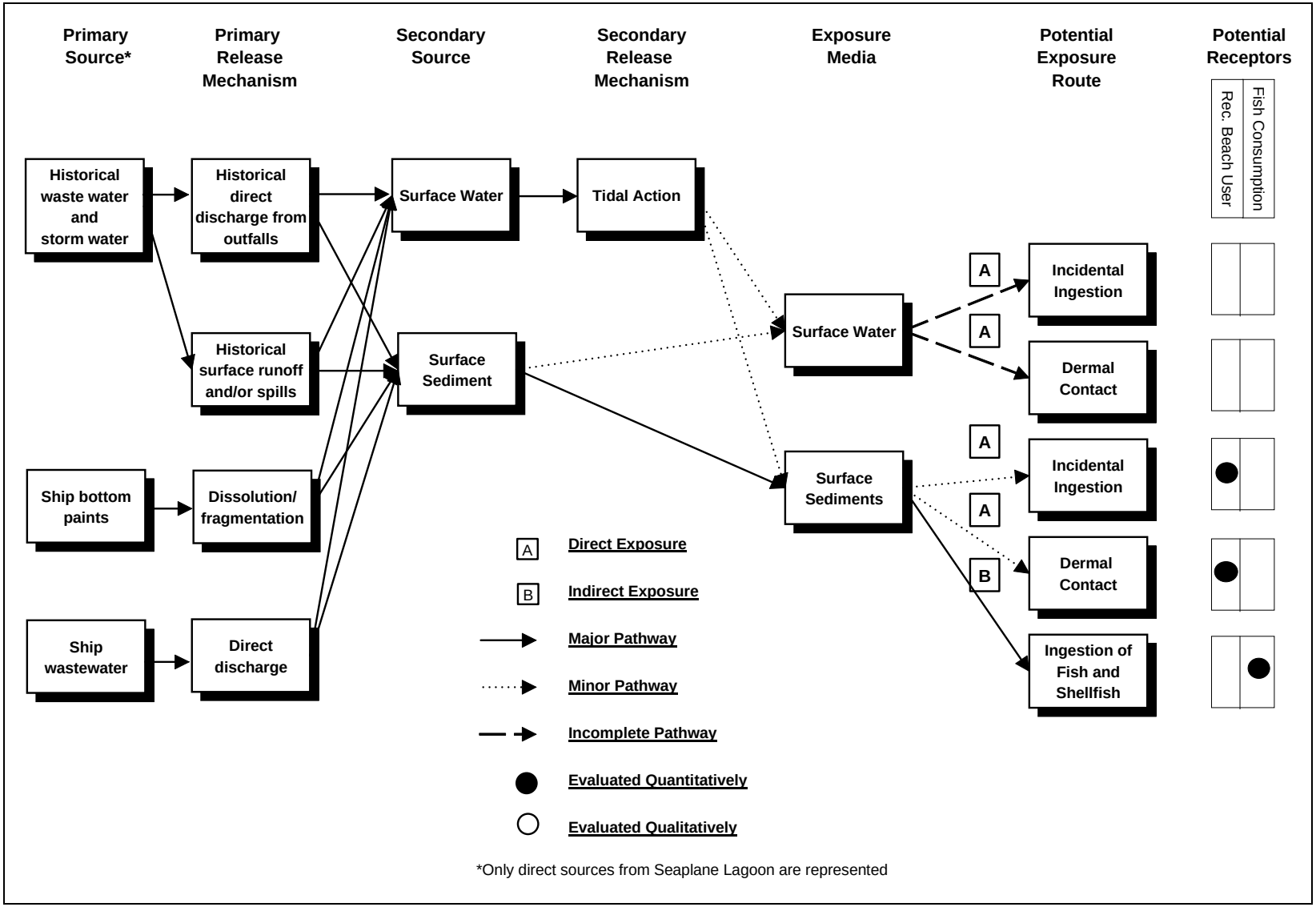
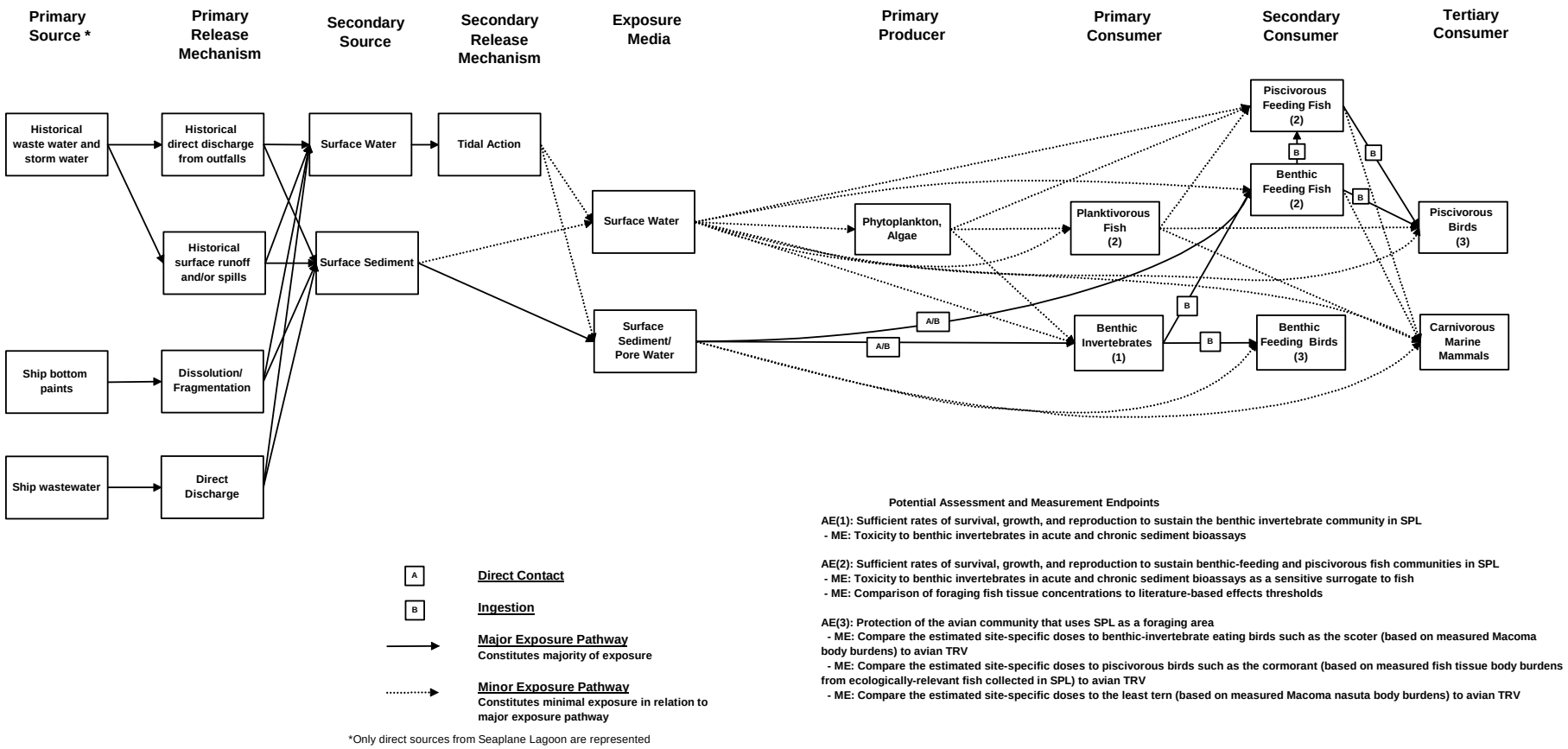


Figure 7-1. Human Health Conceptual Site Model for Site 17



Potential Assessment and Measurement Endpoints

AE(1): Sufficient rates of survival, growth, and reproduction to sustain the benthic invertebrate community in SPL
- **ME: Toxicity to benthic invertebrates in acute and chronic sediment bioassays**

AE(2): Sufficient rates of survival, growth, and reproduction to sustain benthic-feeding and piscivorous fish communities in SPL
- **ME: Toxicity to benthic invertebrates in acute and chronic sediment bioassays as a sensitive surrogate to fish**
- **ME: Comparison of foraging fish tissue concentrations to literature-based effects thresholds**

AE(3): Protection of the avian community that uses SPL as a foraging area
- **ME: Compare the estimated site-specific doses to benthic-invertebrate eating birds such as the scoter (based on measured Macoma body burdens) to avian TRV**
- **ME: Compare the estimated site-specific doses to piscivorous birds such as the cormorant (based on measured fish tissue body burdens from ecologically-relevant fish collected in SPL) to avian TRV**
- **ME: Compare the estimated site-specific doses to the least tern (based on measured Macoma nasuta body burdens) to avian TRV**

A — **Direct Contact**

B — **Ingestion**

Major Exposure Pathway
Constitutes majority of exposure

Minor Exposure Pathway
Constitutes minimal exposure in relation to major exposure pathway

*Only direct sources from Seaplane Lagoon are represented

Figure 7-2. Ecological Conceptual Site Model for Site 17

7.1 Summary of Human Health Risk Assessment

The human health risk assessment conducted for Site 17 identified chemicals of potential concern (COPC) in sediment, evaluated exposure scenarios based on possible future land uses, assessed toxicity, and characterized cancer and noncancer health risks based on conservative assumptions. Calculated risks were then compared with federally established risks ranges and COPCs were identified. Details of the human health risk assessment methodology are provided in Section 6.1 and Appendix F of the RI report (Battelle et al., 2004a).

7.1.1 Identification of Chemicals of Potential Concern

The methodology used to identify COPCs and evaluate risk is consistent with the EPA Risk Assessment Guidance (EPA, 1989; 1991). All chemicals detected in at least one sample, except for the essential human nutrients (iron, calcium, potassium, magnesium, sodium) were included as COPCs. COPCs evaluated included metals, Total PCBs, SVOCs, pesticides, and radionuclides.

7.1.2 Exposure Assessment

An exposure assessment identifies the populations at potential risk and the mechanisms by which members of these populations could be exposed to COPCs. It is also a process by which the chemical concentrations at the point of exposure and the chemical doses are calculated.

As recommended by EPA, the 95% upper confidence limit (95% UCL) of the mean was used to represent the potential exposure point concentrations (EPC) in sediment and tissue for both the reasonable maximum exposure (RME) and central tendency exposure (CTE). The data sets were initially tested using the Shapiro-Wilks (Gilbert, 1987) goodness-of-fit test to determine if the underlying distributions were normal or lognormal. When the concentration distribution was found to be normally distributed, a Student's t-statistic was used to estimate the 95% UCL. For lognormally distributed data, the Land method based on the H-statistic was used to estimate the EPC. Data with large lognormal variances were corrected using the Chebyshev inequality.

As described in the human health CSM, it was assumed that the primary exposures to sediments under both current and future land use conditions would be associated with the collection and consumption of fish and shellfish. In addition, it was assumed that individuals harvesting shellfish would also be exposed to sediments through dermal contact and incidental ingestion. Therefore, the only pathways quantitatively evaluated were consumption of fish and shellfish and direct exposures to sediments. In accordance with EPA guidance (1989, 1992), two types of exposure scenarios were evaluated: a RME based on conservative values to estimate the maximum exposure that is reasonably likely to occur; and the CTE which evaluates a more typical or "average" exposure, using average values. The exposure assumptions for each of these scenarios are summarized in Table 7-1.

7.1.3 Toxicity Assessment

The toxicity assessment determines the relationship between the magnitude of exposure to a chemical of concern and the nature and magnitude of adverse health effects that may result from such exposure. Cancer and non-cancer toxicity values derived by both EPA (EPA 2002a,b) and DTSC (DTSC, 2002) were compiled and used to develop risk estimates. A complete summary of the toxicity values applied can be found in Table 6-3 of the RI report (Battelle et al., 2004a).

Table 7-1. Exposure Parameters for the Human Health Risk Assessment

Exposure Parameters	Units	CTE	RME	Reference
Ingestion rate				
Fish (IR_{tissue})	kilograms (kg)/day	0.016	0.108	SFEI, 2002
Shellfish (IR_{tissue})	kg/day	0.008	0.054	SFEI, 2002
Sediment (IR_{sed})	milligrams (mg)/day	50	100	U.S. EPA, 1991 and 2002a
Fraction ingested (FI)	unitless	0.5	1	Prof. Judgment
Exposure frequency (EF)	days/year	13	26	Prof. Judgment
Exposure duration (ED)	years	9	30	U.S. EPA, 1989
Skin surface area (SA)	cm^2/day	5,700	5,700	U.S. EPA, 2002a
Adherence factor (AF)	mg/cm^2	0.07	0.07	U.S. EPA, 2002a
Dermal absorption factor (DAF)	unitless	Chemical-specific	Chemical-specific	DTSC, 1994
Body weight (BW)	kg	70	70	U.S. EPA, 2002a
Averaging time–cancer (AT_c)	days	25,550	25,550	U.S. EPA, 1989, 2002a
Averaging time–noncancer (AT_{nc})	days	3,285	10,950	U.S. EPA, 1989, 2002a
Gamma shielding factor (GS)	percent	0.40	0.40	U.S. EPA, 2000b
Exposure time percentage (ET)	percent	1.2	2.4	Prof. Judgment

7.1.4 Risk Characterization

The final step in the human health risk assessment is the characterization of the potential risks associated with exposure to detected chemicals. Risk characterization combines the exposure and toxicity assessments to produce quantitative estimates of risk from COPCs. Both cancer and non-cancer risks are estimated. The results for cancer risks are probabilities, usually expressed in scientific notation (e.g., 1 x 10^{-6} or 1.00E-06). For instance, a carcinogenic risk of 1 x 10^{-6} indicates that a person has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. EPA considers an excess cancer risk level of 10^{-6} as the point of departure for considering when to implement remedial measures at a site. Cancer risks above a risk level of 10^{-4} generally require remediation. The range between 10^{-6} and 10^{-4} is often referred to as the "risk management range," (EPA, 1990) and sites having cancer risks that fall into this range may, or may not, require remediation, based upon the nature and extent of contamination, potential exposure, and other site-specific factors. For noncarcinogens, risks are expressed as a hazard quotient (HQ). An HQ less than one indicates that a person's dose of a single contaminant is less than the non-cancer toxicity value, or reference dose (RfD) and that toxic effects are unlikely. In addition to individual chemical risks, cumulative risks and hazards are calculated by summing individual risks.

Cumulative risks and hazards based on the more conservative of the toxicity values evaluated at Site 17 are listed in Table 7-2. In general, total cumulative risks across all exposure scenarios at Site 17 were comparable (i.e., within the same order of magnitude) to risks at reference areas or within the risk management range. However, risks associated with ingestion of fish were elevated above the acceptable range and reference. An evaluation of the risks and hazards associated with individual chemicals (see Appendix F of the RI report) indicates that Total PCBs are the only chemical for which the risk estimates exceed both the acceptable range and reference. Risks evaluated with radium were evaluated in the RI

and determined to be acceptable. Based on this information, Total PCBs were determined to be the primary COPC, or risk driver, for human health at Site 17.

Table 7-2. Total Cumulative Risks and Hazards at Site 17 and Reference Stations Based on Combined EPA and DTSC Toxicity Values

Risk Scenario	Site 17 Stations				Reference Stations			
	Risk		Hazard		Risk		Hazard	
	CTE	RME	CTE	RME	CTE	RME	CTE	RME
Sediment	1.34E-07	3.27E-06	3.81E-03	2.71E-02	6.27E-08	1.54E-06	2.35E-03	1.71E-02
Ingestion of fish	5.40E-05	2.43E-03	3.10E+00	4.18E+01	1.55E-05	6.97E-04	1.15E+00	1.56E+01
Ingestion of shellfish	6.31E-05	2.84E-03	1.38E+00	1.86E+01	5.15E-05	2.32E-03	1.02E+00	1.38E+01
Total risk	1.17E-04	5.27E-03	4.48E+00	6.05E+01	6.71E-05	3.02E-03	2.17E+00	2.93E+01

7.2 Ecological Risk Assessment

The objective of the ecological risk assessment was to evaluate the potential for adverse effects to ecological receptors through exposure to contaminants at Site 17 under current conditions. A tiered process was used that encompasses the eight steps consistent with EPA and DON guidelines (EPA, 1997; Chief of Naval Operations, 1999). In the first tier, a screening-level risk assessment (SLERA) was conducted. This included developing a CSM (Figure 7-2); identifying chemicals of potential ecological concern (COPECs), assessment endpoints, and measurement endpoints; and estimating contaminant doses to selected receptors using conservative screening parameters.

7.2.1 Identification of COPECs

The Tier 1 COPEC selection process included the assessment of all COPECs analyzed in surface sediments. A total of 165 analytes were examined. Chemicals were retained as COPEC based primarily on the following considerations:

- The maximum concentration exceeded available conservative sediment screening benchmarks
- The chemical was listed on the Region 9 bioaccumulators list
- Analyte was detected, has no benchmark, and can be reasonably linked to Navy operations.

Other issues evaluated were the frequency of detection and the magnitude of exceedance of screening benchmarks.

The Tier 1 sediment COPEC screen identified 79 constituents as COPECs at Site 17, 20 inorganic and 59 organic. Additionally, eight radioisotopes were identified as COPECs based on past activities at Alameda Point and detections in the sediment.

7.2.2 Exposure Assessment

Figure 7-2 summarizes the CSM for Site 17. The CSM indicates that benthic invertebrates may be exposed to COPECs through ingestion of and direct contact with surface sediments. A review of major exposure pathways to higher trophic levels at Site 17 indicates that there are potentially complete exposure pathways to benthic feeding and piscivorous fish and birds. Exposure to these secondary and tertiary trophic consumers is through ingestion of prey that has had exposure to COPECs at Site 17 as well as incidental ingestion of surface sediments. Based on this CSM, the ecological risk assessment focused on three assessment endpoints or exposure pathways:

- Risks to benthic invertebrates
- Risks to benthic feeding and piscivorous fish
- Risks to the avian community, including a benthic feeding bird (surf scoter), a piscivorous bird (cormorant), and an endangered species (least tern).

For the purpose of the SLERA, the first two assessment endpoints (benthic invertebrates and fish) were evaluated based on the results of the Tier 1 COPEC screen. The risks to the avian community were evaluated based on a preliminary dose assessment using conservative exposure parameters.

7.2.3 Screening-Level Ecological Risk Assessment Results

The screening-level ecological risk assessment (SLERA) encompassed the identification of the complete and significant exposure pathways, the preliminary COPEC screen and a preliminary dose assessment for upper trophic level species. The Tier 1 COPEC screen identified 79 COPECs, including 20 inorganic and 59 organic chemicals. Results from the screening-level dose assessment also identified a number of COPECs (i.e., cadmium, lead, Total 4’4’-DDx, and Total PCBs) that indicated a potential for adverse effects to upper trophic level birds when conservative exposure parameters were used.

7.2.4 Baseline Ecological Risk Assessment

In the BERA, the preliminary assessment conducted for the SLERA was refined. For example, the Tier 1 COPEC screen was focused by comparing the COPEC sediment concentrations to ambient concentrations. Only those chemicals with distributions statistically elevated above ambient conditions were retained as COPECs. In addition, the results of biological assays such as toxicity and bioaccumulation tests were also evaluated. Risks to fish were evaluated by comparing measured tissue concentrations to available effects-based critical body residues. Finally, a dose assessment was conducted based on less conservative exposure parameters than those used in the SLERA. Table 7-3 provides a summary of the BERA steps and the results. In general, the results for assessment endpoint 1 (benthic invertebrates) indicate that there is a low probability of risk to benthic invertebrates at Site 17. With respect to assessment endpoint 2 (fish), the evaluation of potential risks to fish indicate that cadmium is the only COPEC that potentially poses a risk to forage fish in Site 17. Similarly, the results for assessment endpoint 3 (avian community) indicate that little risk is posed to benthic feeding birds (e.g., surf scoter) or to piscivorous birds (e.g., cormorant). However, results for the least tern based on consumption of fish indicate the potential for toxicity associated with concentrations of chromium, lead, mercury, zinc, Total 4,4’-DDx and Total PCBs. Of these chemicals, only chromium, lead, Total DDx and Total PCBs have significant incremental risk above reference conditions. Therefore, mercury and zinc were not identified as risk drivers.

Table 7-3. Summary of the Baseline Ecological Risk Assessment Results

Assessment Endpoint	Summary of Risk Characterization
Benthic Invertebrate Community	Results of the historical and present toxicity tests indicate that there is a low probability of risk to the benthic community at Site 17.
Fish Community	Cadmium is the only contaminants of potential ecological concern (COPEC) that poses risk to forage fish at Site 17.
Avian Community–Least Tern	Results of the baseline ecological risk assessment (BERA) for the least tern based on forage fish consumption indicate that there is potential for toxicity from Tier 2 COPECs at a site use factor (SUF) based on site-specific foraging data (SUF-0.094) for chromium, lead, mercury, zinc, Total 4,4'-DDx, and Total PCBs.

7.3 Risk Assessment Conclusions

The results of the human health and ecological risk assessments identified the following risk drivers:

- Human health: Total PCBs were the only chemicals for which risks were elevated above both the risk range and reference conditions
- Ecological: Total PCBs, cadmium, chromium, lead, and Total DDx were the risk drivers identified for ecological receptors.

For all of these chemicals, risks were primarily associated with concentrations in the northeastern and northwestern corners. The response action selected in this ROD is necessary to protect public health or welfare and the environment from these exposures.

8.0 REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are medium-specific (sediment, soil, groundwater, air) goals established to allow selection of remedial alternatives that achieve protection of human health and the environment and are consistent with anticipated future use. RAOs include remediation goals (RGs) for COCs (Table 8-1) which are a quantifiable means of identifying areas where remediation is necessary. Determination of RAOs included consideration of site-specific risks and ARARs in accordance with CERCLA, as amended by SARA of 1986, 42 USC Section 9601, et seq. and the NCP. The RAOs as defined in the FS (Battelle, 2005) for Site 17 are as follows:

- Protection of fish-eating birds from exposure to cadmium, Total PCBs, Total DDx, lead, and chromium through the consumption of contaminated prey
- Protection of fish from exposure to cadmium in sediments
- Reduction of potential biomagnification of Total PCBs in organisms higher in the food chain to reduce potential human health risks from the consumption of fish.

The RAOs will be addressed primarily through achieving numerical sediment RGs for the primary risk drivers identified in the ecological risk assessment—cadmium, Total PCBs, and Total DDx (Table 8-1). As discussed in Section 7 of the RI (Battelle et al., 2004a), and below, a human health RG was not calculated because of the uncertainties associated with the fish consumption pathway; therefore, mitigation of these risks will be addressed qualitatively. Specifically, consideration was given to achieving an area-wide average Total PCB concentration that is consistent with the upper bound nearshore ambient concentration for Total PCBs (i.e., 200 parts per billion [ppb]). Section 12.2 provides more detail on the initial remedial action sampling which will include analysis of RA-226 to enable proper, safe handling and segregation of sediment within the dredged area and to support waste characterization and disposal.

Table 8-1. Remediation Goals for Site 17

COC	RG (mg/kg)
Cadmium	24.4
Total PCBs	1.13
Total DDx	0.13

8.1 Derivation of Remediation Goals

Remediation goals (RGs) were selected using exposure assumptions for the California least tern, which was determined to be the most sensitive ecological receptor evaluated in the ecological risk assessment; therefore, developing a safe sediment concentration for that species should protect other bird species feeding in the lagoon. A detailed discussion of the methods used to derive the RGs is provided in Section 7 of the RI (Battelle et al., 2004a). The RGs were developed using a food web model designed to derive 'safe' sediment concentrations for the least tern, based on the following specific exposure assumptions:

Cadmium: For cadmium, RGs are based on the bioaccumulation factor (BAF) developed from *M. nasuta* data. Because cadmium did not accumulate in the tissues of fish to the same degree as in *M. nasuta* tissue, and because cadmium concentrations in least tern prey are likely to be lower than in *M. nasuta*, RGs based on *M. nasuta* BAFs are considered to be conservative. RGs for the least tern ranged from 2.44 mg/kg dry weight at a site use factor (SUF) of 1 to

244 mg/kg dry weight at a SUF of 0.01. Based on site-specific foraging data collected over a 10 year period for the least tern, the average SUF for the tern at Seaplane Lagoon is approximately 10%. Therefore, the RG in sediment for cadmium is 24.40 mg/kg dry weight based on 10% SUF.

Total DDx: For Total DDx, RGs are based on the BAF developed from *M. nasuta* data. Although RGs based on a BAF developed from forage fish tissue are lower, the incremental reduction in risk based on forage fish tissue is slight. However, a RG based on a reduction in *M. nasuta* tissue concentrations would result in a significant decrease in risk to the tern (assuming that *M. nasuta* tissue is reasonably representative of the silverside diet to the tern). RGs for the least tern ranged from 0.01 mg/kg dry weight at a SUF of 1 to 1.34 mg/kg dry weight at a SUF of 0.01. Applying the same SUF described above for cadmium (10%), the RG in sediment for Total DDx is 0.13 mg/kg dry wt.

Total PCBs: For Total PCBs, RGs are based on the BAF developed from forage fish data. This approach is based on the most sensitive receptor, the adult least tern, using the most conservative BAF based on forage fish tissue. In the case of Total PCBs (as contrasted with Total DDx), a reduction in forage fish tissue concentrations would result in a meaningful decrease in incremental risk. RGs for the least tern ranged from 0.11 mg/kg dry weight at a SUF of 1 to 11.86 mg/kg dry weight at a SUF of 0.01. Applying the SUF described above for cadmium (10%), the RG in sediment for Total PCBs is 1.13 mg/kg dry wt.

Numerical RGs for chromium and lead were not developed for several reasons: (1) literature-based toxicity reference values for lead are currently being reviewed and may potentially be revised by EPA in the future; (2) sufficient toxicity reference values for chromium do not exist; and, (3) exposure to reference conditions for both lead and chromium resulted in potential risk to avian receptors. Due to the uncertainty associated with both the bioavailability and toxicity of these compounds, they will be dealt with qualitatively. A review of the spatial distribution of both compounds indicates that they co-occur with the other COCs. Because the concentration distribution of lead and chromium follows the distribution of cadmium, Total PCBs, and Total DDx, achieving the RGs should also address risks associated with chromium and lead.

With respect to human health, Total PCBs were the only risk driver present at concentrations exceeding reference concentrations. The only pathway for which risks were elevated was the consumption of fish. There are significant uncertainties associated with this pathway, such as the use of whole body concentrations rather than fillet and the difficulty in linking tissue concentrations in larger sport fish to site-specific sediment concentrations. As a result, as previously discussed, RGs were not developed for human health and a qualitative evaluation was conducted to evaluate whether or not achieving the RGs developed for ecological exposures would address human health risks. Based on the available data, it was determined that the area-weighted average Total PCB concentrations within the lagoon following remediation will be comparable to the upper bound estimate (i.e., 200 ppb) of the nearshore ambient concentration calculated for the San Francisco Bay area.

As previously discussed, radium was not identified as a risk driver in the ecological or human health risk assessment. However, as discussed in Section 5.5, data collected in 2002 indicates that there may be slightly elevated concentrations (i.e., up to 7 pCi/g) at isolated locations in the northwestern corner. Because these elevated concentrations are isolated within the remediation areas, any potential risks will be addressed through the remedial activity of sediment removal and off-site disposal. This will be verified through confirmation sampling.

8.2 Remediation Areas

Remediation areas are shown in Figure 8-1. Based on previous sampling results, sample stations with concentrations of cadmium, Total PCBs, or Total DDx above the RG are included in the remediation areas. Such exceedances were generally confined to the northeast and northwest corners of the lagoon. The maximum chemical concentrations are generally found at depths between 0.3 and 2 ft below the sediment surface.

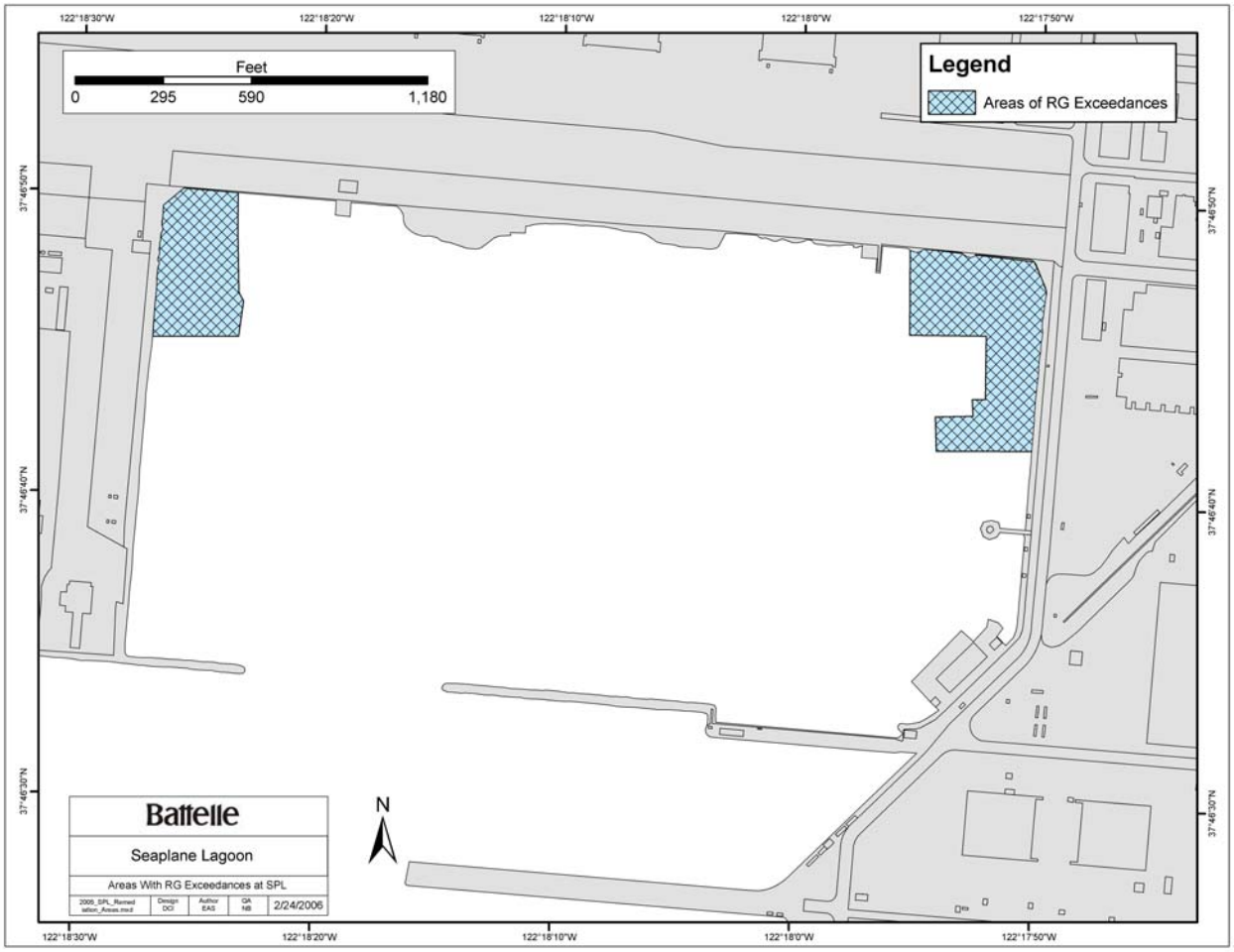


Figure 8-1. Remediation Areas in Site 17

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9.0 DESCRIPTION OF ALTERNATIVES

The development of alternatives for sediment cleanup at Site 17 followed the requirements identified in CERCLA, as amended by SARA of 1986, 42 USC Section 9601, et seq. and the NCP. Seven potential alternatives were considered at Site 17 (presented below). The complete analysis of these alternatives was presented in the Final FS Report for Site 17 (Battelle, 2005). The evaluation of the remedial technologies and the complete screening process is also included in the Final FS.

The alternatives, which are described in the following sections include:

- Alternative 1 - No Action
- Alternative 2 - Monitored Natural Recovery with Institutional Controls
- Alternative 3 - Isolation Capping with Monitoring and Institutional Controls
- Alternative 4 - Thin Layer Capping with Monitoring and Institutional Controls
- Alternative 5 - Dredging, Dewatering and Upland Disposal at a Permitted Off-Site Waste Disposal Facility
- Alternative 6 - Focused Dredging, Dewatering and Upland Disposal at a Permitted Off-Site Waste Disposal Facility
- Alternative 7 - Focused Dredging with Ex Situ Treatment and Reuse.

9.1 Alternative 1 - No Action

In accordance with the requirements of the NCP, the No Action alternative was carried though the entire FS process to serve as the baseline against which to compare other alternatives. This alternative would entail no active remediation of COC-impacted sediments at Site 17. Natural recovery processes, institutional controls, and long-term monitoring are not components of this alternative. There are no costs associated with this alternative.

9.2 Alternative 2 - Monitored Natural Recovery with Institutional Controls

Alternative 2 involves using monitored natural recovery which relies on naturally occurring processes such as biological degradation and burial by sediment deposition to reduce potential exposures to COCs in sediments. Institutional controls would be necessary to ensure that sediments would not be disturbed. Institutional controls are legal and administrative mechanisms used to implement restrictions on land use or access for the future land owner(s) or user(s) of a property in order to ensure that the integrity of a remedial action is maintained until RGs have been met. In addition, a detailed monitoring plan to track effectiveness and overall progress would be required.

9.3 Alternative 3 - Isolation Capping with Monitoring and Institutional Controls

Alternative 3 entails installing approximately 3 ft of clean cap material over the remediation areas (Figure 8-1). Institutional controls such as deed restrictions, recreational use restrictions, and operational restrictions would be implemented to restrict future dredging and/or construction that could damage the cap and re-expose contaminated sediment. Monitoring would be required to ensure the long-term integrity of the cap.

9.4 Alternative 4 - Thin Layer Capping with Monitoring and Institutional Controls

Alternative 4 consists of the placement of a thin layer of clean cap material (6 to 12 inches thick) over the remediation areas to accelerate natural recovery processes and reduce contact between contaminated sediment and marine organisms. Institutional controls such as deed restrictions, recreational use restrictions, and operational restrictions would be implemented to restrict future dredging and/or construction that could damage the cap and re-expose contaminated sediment. Monitoring would be required to ensure the long-term integrity of the cap.

9.5 Alternative 5 - Dredging, Dewatering and Upland Disposal at a Permitted Off-Site Waste Disposal Facility

Alternative 5 entails dredging the remediation areas (Figure 8-1) to a uniform depth of 4 ft, removing approximately 63,000 cubic yards (cy) of sediment. The dredged sediment would be dewatered on-site and disposed of in a permitted off-site commercial landfill. Removal of contaminated sediment would be verified through confirmation sampling.

9.6 Alternative 6 - Focused Dredging, Dewatering and Upland Disposal at a Permitted Off-Site Waste Disposal Facility

Alternative 6 entails using focused dredging within the remediation areas to depths of between 2 ft to 4 ft below the sediment surface to remove sediment with chemical concentrations above the RGs. Approximately 52,000 cy of contaminated sediment would be removed. A backfill layer would be required to cover areas with other potential COCs. The dredged sediment would be dewatered on-site and disposed of in a permitted off-site commercial landfill. Removal of contaminated sediment would be verified through confirmation sampling.

9.7 Alternative 7 - Focused Dredging with Ex Situ Treatment and Reuse

Alternative 7 entails using focused dredging within the remediation areas to depths of between 2 ft to 4 ft below the sediment surface to remove sediment with chemical concentrations above the RGs. On-site incineration would be used to destroy Total PCBs and Total DDx in sediment, and stabilization would potentially be needed to address metals. Approximately 30,000 cy of sediment would require treatment. On-site dewatering, air emissions control, and residual waste disposal would be required. Treated material would be used for beneficial purposes such as construction fill or landfill cover. Confirmation sampling would be required.

10.0 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section summarizes the comparative analysis that was conducted during the FS process to evaluate the seven remedial alternatives in relation to the nine criteria outlined in CERCLA Section 121 (b), as amended. The analysis was performed in order to identify the advantages and disadvantages of each of the proposed alternatives relative to one another. The seven preliminary alternatives were first evaluated in the technology assessment and preliminary screening phase of the FS where the basic technologies involved in each alternative (including but not limited to institutional controls, natural recovery, monitoring, capping, dredging, dewatering, treatment, and disposal options) were screened on the basis of three of the CERCLA criteria: effectiveness, implementability, and cost. Alternatives 2, 4, and 7 were rejected based on this analysis (for the complete summary see Section 4, Table 4-1 of the FS [Battelle, 2005]).

Alternatives 1, 3, 5, and 6 were retained for further screening (see Sections 5.3 and 5.4 of the FS [Battelle, 2005]). The evaluation criteria were based on requirements promulgated in the NCP. As stated in the NCP (40 CFR 300.430[f]), the evaluation criteria are arranged in a hierarchal manner that is then used to select a remedy for the site based on the following categories (see Table 10-1 for a summary of the Primary Balancing Criteria for Alternatives 1, 3, 5 and 6):

- Threshold Criteria
  - Overall protection of human health and the environment
  - Compliance with ARARs
- Primary Balancing Criteria
  - Long-term effectiveness and permanence
  - Reduction of toxicity, mobility, or volume through treatment
  - Short-term effectiveness
  - Implementability
  - Cost-effectiveness
- Modifying Criteria
  - State acceptance
  - Community acceptance

10.1 Overall Protection of Human Health and the Environment

Alternative 1 would not be protective of human health and the environment as it would not address contaminated sediment in any way. Alternative 3 would protect human health and the environment by isolating contamination from ecological or human receptors. However, sediments containing contaminants would not be removed and/or treated and residual risk, although controlled through the execution of institutional controls, would remain at Site 17. Alternatives 5 and 6 would meet the threshold criteria for overall protection of human health and the environment by removing sediment containing contaminants exceeding RGs and disposing of them in a permitted off-site landfill following dewatering.

Table 10-1. Comparative Analysis of Remedial Alternatives by Balancing Criteria

Alternative	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility, and Volume through Treatment	Short-Term Effectiveness	Implementability	Cost-Effectiveness
Description of Evaluation Criteria	Parameters considered: The risk likely to be present at the site after response actions have been employed; The extent and effectiveness of controls that may be required to manage residual risk posed by treated residuals and/or untreated contamination; and, The magnitude of residual risk and the adequacy and reliability of controls.	Parameters considered: Treatment processes used; The amount of contaminated sediment destroyed, recycled, or treated; The degree of expected reduction in toxicity, mobility, or volume of contaminated sediments; and, Any residual contamination left in place following the remedial action.	Parameters considered: Potential impacts to the community; Potential impacts to site workers; Potential impacts to the environment; and, Time required to achieve short-term protection.	Parameters considered: Technical and administrative feasibility; and, Availability of equipment and labor.	Parameters considered: Capital costs; Operation and maintenance (O&M) costs; Costs for long-term monitoring; Costs for developing and maintaining institutional controls; and, Net present value.
Alternative 1 - No Action	Low	Low	Low	High	High
	RAOs and RGs could possibly be met in the long-term but there is no ability to monitor effectiveness.	No treatment performed and no means to evaluate any reduction in toxicity, mobility or volume.	No implementation time or short-term risks; however, there is no ability to monitor effectiveness.	Easy to implement; however, no ability to monitor effectiveness.	No costs associated with this alternative.

Table 10-1. Comparative Analysis of Remedial Alternatives by Balancing Criteria, Continued

Alternative	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility, and Volume through Treatment	Short-Term Effectiveness	Implementability	Cost-Effectiveness
Alternative 3 – Isolation Capping with Monitoring and Institutional Controls	Moderate	Low	High	High	Moderate to High
	Sediments could be re-exposed if cap were damaged or disturbed. Long term institutional controls would be required.	Would not reduce toxicity or volume through treatment, although natural biological processes could potentially reduce in sediments left in place over time.	Highly effective in meeting RGs at the completion of the cap. Short term impact is limited.	Capping technologies are well established and the necessary equipment, materials and contractors should be readily available.	$5.3 million. This alternative has the lowest present worth cost of the remaining alternatives.
Alternative 5 – Dredging, Dewatering and Upland Disposal at a Permitted Off-Site Waste Disposal Facility	High	Moderate	Moderate	High	Low
	Would remove all sediments exceeding RGs as well as sediments having other COCs (i.e., chromium or lead) or radionuclides present.	Would not reduce the toxicity or volume through treatment, but would remove areas above risk-based RGs. Mobility would be reduced by removing the contaminated sediments and putting them in an off-site permitted landfill.	RGs would be met at completion; however, there would be some short-term risks and environmental impacts.	Technologies associated with Alternative 5 are well established and the necessary equipment, materials and contractors should be readily available.	$24.6 million, Alternative 5 has the highest present worth cost of the remaining alternatives.

Table 10-1. Comparative Analysis of Remedial Alternatives by Balancing Criteria, Continued

Alternative	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility, and Volume through Treatment	Short-Term Effectiveness	Implementability	Cost-Effectiveness
Alternative 6 – Focused Dredging, Dewatering and Upland Disposal at a Permitted Off-Site Waste Disposal Facility	Moderate to High	Low to Moderate	Moderate to High	High	Moderate
	Would remove all sediments exceeding RGs but would require a backfill layer if sediments having other COCs (i.e., chromium or lead) or radionuclides were exposed by dredging.	Would not reduce the toxicity or volume through treatment, but would remove areas above risk-based RGs. Mobility would be reduced by moving the contaminated sediments off-site into a permitted landfill. A backfill layer may be required if sediments having other COCs or radionuclides were exposed by dredging.	RGs would be met at completion, however, there would be some short-term risks and environmental impacts associated with this alternative. Because less volume of sediment would be removed, dewatered, and disposed, less time and therefore, lower short-term risks than Alternative 5.	Technologies associated with Alternative 6 are well established and the necessary equipment, materials and contractors should be readily available.	$7.6 million, total present worth cost.

10.2 Compliance with ARARs

ARARs are not applicable to Alternative 1. Alternatives 3, 5, and 6 would be designed to meet the threshold criteria of compliance with ARARs (see Section 13.2 for ARARs specific to Alternative 5).

10.3 Long-Term Effectiveness and Permanence

Alternative 1 received a rating of low in long-term effectiveness and permanence because although ongoing natural processes may improve sediment quality over time even if no action were taken, there would be no mechanism to verify the extent of recovery.

Alternative 3 rated moderate because institutional controls would be required to protect against cap disruption and would provide protection for humans against contaminant exposure.

Alternative 5 rated high for long-term effectiveness and Alternative 6 rated moderate to high. Both alternatives would likely provide the greatest long-term effectiveness by removing all sediments with contaminants exceeding RGs, addressing other co-located COCs, and reducing potential human health exposures to Total PCBs by achieving an area-wide average concentration of Total PCBs that is consistent with the upper bound nearshore ambient concentration for Total PCBs. Alternative 5 also would remove chromium, lead, and radionuclides present in the remediation areas, thus eliminating possible exposures.

10.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1 and 3 rated lowest in reduction of toxicity, mobility, or volume through treatment. Alternative 1 would not address toxicity, mobility, or volume of contamination in any way since no action would be taken. Alternative 3 would not actively reduce the toxicity or volume of contaminants, because sediments containing Total PCBs, Total DDx, and cadmium exceeding RGs (as well as other COCs) would remain in place. However, for both Alternatives 1 and 3, natural biological processes could potentially reduce long-term toxicity and/or contaminant volume in situ.

Alternative 5 rated moderate because it would reduce the mobility of contamination at Site 17 by removing sediments containing Total PCBs, Total DDx, and cadmium exceeding RGs (and other COCs) from the lagoon but would not provide active treatment to the sediments. Overall the toxicity and volume of dredged contaminants would not be reduced, but rather transferred to a properly designed, permitted, and monitored disposal facility. Alternative 6 rated low to moderate because although sediments containing contaminants above RGs would be removed, a backfill layer may be required to limit exposure to residual COCs. There would be no net reduction in toxicity or volume of contamination under Alternatives 5 and 6, but the mobility of the contaminants in the environment would be greatly reduced. Alternative 5 likely would achieve the greatest reduction in toxicity, mobility, and volume of contamination at Site 17.

10.5 Short-Term Effectiveness

Under Alternative 1 no remedial action would be undertaken, thus there would be no implementation time and no short-term risks to the community, the environment, and/or site workers. However, the time required to reach RAOs within the specific context of Alternative 1 (i.e., without considering natural recovery processes) would be theoretically infinite. As such, overall the short-term effectiveness of Alternative 1 could be considered low.

Alternative 3 rated high for short-term effectiveness. It would likely require a few months to implement, and would be characterized by minimal short-term risk to the community or to workers engaged in implementing Alternative 3. Effects to the environment during the completion of the cap would be temporary, and the ecosystem would be expected to fully recover over time, likely to a more healthy state due to the isolation of sediment contaminants and the creation of a cleaner, healthier benthic environment. Alternative 3 would not likely affect the migration, mating, or survival of migratory or sensitive species.

Alternative 5 rated moderate for short-term effectiveness and Alternative 6 rated moderate to high. Both alternatives would likely require several months to implement (including dewatering and disposal) and have similar short-term risks, however, because less volume of sediment would be removed, dewatered, and disposed during Alternative 6, this alternative likely would require fewer labor hours and less overall activity than Alternative 5. As such, the potential short-term risks associated with Alternative 6 would be lower than Alternative 5.

Environmental impacts during execution of Alternative 5 or 6 potentially would include suspension of contaminated sediments during dredging and deposition on the sediment surface. Contaminated sediments suspended in the water column could affect fish and other aquatic species at Site 17, however, such environmental impacts likely would be short term (lasting only hours within the dredged area and only days within the lagoon itself).

10.6 Implementability

By definition, Alternative 1 would be the most implementable alternative, as no operations or administrative resources would be required. However, there are no means to monitor effectiveness.

Given the maturity of the technology associated with Alternatives 3, 5, and 6, and the availability and reliability of the equipment, materials, and contractors needed, all three alternatives likely would be highly implementable; however, Alternative 3 would reasonably be characterized as the most implementable because, although potential difficulties exist with implementing and enforcing institutional controls and uncertainties related to sediment stability, it generally has the least operational and administrative uncertainties.

10.7 Cost-Effectiveness

Alternative 1 would receive the highest rating for cost because it has the lowest total costs, as there would be no capital, permitting, monitoring, or O&M costs associated with this option. Alternative 3 would be the next most cost-effective alternative, followed by Alternative 6. Alternative 5 would be the most costly alternative.

The cost for the preferred remedy, Alternative 5, would ultimately depend on the final volume of sediment dredged, the methods ultimately chosen in the final remedial design for dredging and dewatering, the need for water management from the sediment dewatering, and the cost for transportation and disposal in an off-site landfill.

10.8 State Acceptance

The State of California has indicated its concurrence with the DON's selected remedial alternative (Alternative 5).

10.9 Community Acceptance

The Proposed Plan was presented to the community and discussed at the public meeting (see Section 3 of this ROD for more detail on public involvement in the screening process). The responsiveness summary of this ROD (Attachment E) addresses the public's comments on the Final Proposed Plan for Site 17 and on this ROD.

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11.0 PRINCIPAL THREAT WASTES

Principal threat wastes are source materials considered to be highly toxic, highly mobile, or those that would present a significant risk to human health or the environment should exposure occur. No principal threat wastes were identified at Site 17.

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12.0 SELECTED REMEDY

Based on the RI Report (Battelle et al., 2004a), the FS Report (Battelle, 2005), and the AR (see Attachment A) for Site 17, as well as comments received on the Proposed Plan (Battelle, 2006); the DON, along with the BCT, has selected Alternative 5 as the selected remedy because it satisfies the statutory requirements to the maximum extent practicable (see Section 13).

Alternative 5 has the following components:

- Initial remedial action sampling to enable proper and safe handling, segregation, and disposal of sediment to be dredged
- Dredging
- Quality control sampling and confirmation testing
- Dewatering
- Upland disposal at a permitted off-site waste disposal facility.

Alternative 5 meets the threshold criteria and provides the best balance of tradeoffs among the alternatives evaluated in detail with respect to the balancing criteria. This selected remedy would be expected to fully comply with the statutory requirements set by CERCLA. Additionally, this alternative would likely accommodate the planned redevelopment of Site 17 into a commercial marina. The total present worth cost would be $24.6 million (see Table 12-1 for a summary of estimated costs).

As discussed in Section 5.5, although not identified as a risk driver, it is possible that radium concentrations may be high enough in some portions of the dredged material to preclude disposal at a Class II landfill. For cost-estimating purposes the site-specific background concentration of radium for Site 17 is assumed to be 0.36 pCi/g; therefore it is assumed that sediments with concentrations up to 1.36 pCi/g (i.e., background + 1) will be acceptable for Class II disposal. As described in Section 12.2, additional sampling will be conducted during the remediation for the purpose of characterizing the material for disposal. Based on the data currently available, a cost estimate was generated conservatively assuming that up to 38% of the total volume of material dredged would not be suitable for Class II landfill disposal.

The Site 17 debris piles will be addressed separately prior to the beginning of the Site 17 sediment remediation. Remaining storm sewer evaluation and remediation for the lines leading to the lagoon are planned to be conducted prior to the Site 17 sediment remediation.

Table 12-1. Cost Estimate Summary for Alternative 5[a]

Cost Category	Capital Costs
Design/Work Plan, Initial Remedial Action Sampling, Quality Control Testing, and Confirmation Sampling	$0.6 million
Mobilization, Setup, Dredging, and Dewatering	$2.6 million
Debris Removal from Sediment, Waste Characterization, Transportation, and Class II Landfill Disposal[b]	$14.1 million[b]
Engineering Design, Management, and Contingencies	$7.3 million
Total Capital Costs	$24.6 million

[a] The information in this cost estimate summary table is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in cost elements may occur as a result of new information and data collected during the engineering design of the remedial alternative. This is an order of magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

[b] Assumes that approximately 38% of the dewatered dredged material will contain levels of Ra-226 or other chemical constituents that preclude disposal at a Class II landfill. Concentrations of Ra-226 of 1.36 pCi/g and below were assumed acceptable for Class II disposal.

12.1 Dredging

A detailed design, summarizing sampling locations and frequency, chemical analyses, and data quality objectives of the confirmation sampling will be completed during the remedial design phase following issuance of this ROD, and before any remedial action would take place. In addition to defining dredge prisms and the volume of material to be dredged, the design would incorporate information about the construction and current structural stability of the lagoon walls. The structural stability of the walls, the stability of the terrestrial foundation adjacent to the walls, and the need for additional supports during dredging will need to be evaluated to ensure lagoon stability during the remedial action. Radium will be sampled during the initial remedial action sampling within the remediation areas, which include the Outfall F area. If elevated levels of radium are found, appropriate measures, as outlined in the remedial design work plan and in accordance with Multi-Agency Radiation Survey and Site Manual (MARSSIM) guidelines (EPA, 2000a), will be taken. Measures may include the use of silt curtains during dredging, health and safety monitoring of workers, and decontamination and radiological clearance of equipment. Appropriate guidelines will also be followed regarding dewatering and disposal as well as additional sampling and dredged material disposal characterization. All of these decisions will be documented in a remedial design work plan that will be submitted for BCT review.

Data available from the RI and previous sampling events indicates that the primary areas with RG exceedances are located in sediments 1 to 4 ft below the sediment/water interface in the northeast and northwest corners of the lagoon (see the remediation areas identified in Figure 8-1). Based on these data, the 4-ft dredge depth plus a 1 ft overdredge allowance would remove all COCs above the RGs. In addition, the remedial action would remove other COCs addressed qualitatively (i.e., chromium and lead) as well as possible localized concentrations of Ra-226. Based on calculations conducted in the FS report (Battelle, 2000), this action will also result in an area-wide average Total PCB concentration of approximately 200 ppb, which is consistent with the upper bound estimate of nearshore ambient concentrations in San Francisco Bay. A uniform 4-ft depth was considered adequately conservative; however, dredging to greater depths in the vicinity of perimeter cores S03, SPL05, BERC13, and S04 (see Figure 2-2) and at the remediation area boundaries may occur, depending on the results of the remedial action sampling (see description of remedial action sampling in Section 12.2). This could result in increased costs. In addition, based on available radiological data, concentrations of Ra-226 are very low

with the exception of one isolated location in the lagoon. If the initial remedial action sampling indicates that radium concentrations (or concentrations of other chemical constituents) are high enough to preclude Class II landfill disposal, remediation cost could also increase significantly.

The volume estimates for this alternative are based on dredging to 5 ft. Based on these assumptions, approximately 63,000 cy of contaminated sediment would be removed from the northeast and northwest corners of the lagoon (39,000 cy in the northeast corner, and 24,000 cy in the northwest corner).

Selection of the dredging method will be determined during the detailed design phase, and will likely involve input from dredge contractors. The final selection will be based on the method that best satisfies performance criteria developed for the site, which will likely include criteria pertaining to surface sediment residuals, limitations on dredging resuspension, and dewatering requirements. MARSSIM guidance (EPA, 2000a) will be utilized to obtain radiological clearance of the dredged areas if and as necessary. For the purposes of the cost estimate presented in this ROD, mechanical dredging was assumed. The need for silt curtains will be determined during the remedial design.

The assumed production rate of 400 cy per day is based on loading (and decontaminating) six trucks per hour, with a capacity of 10 *in situ* cy per truck, over an effective time of 7 hours per day. The actual dredging rate potentially will be higher if a larger truck or barge is used for transportation of the dredged material, or if dredged material can be deposited directly into the dewatering process without intermediary transportation.

12.2 Remedial Action Sampling

The sampling program associated with Alternative 5 will have two primary components: initial remedial action sampling and quality control/confirmation sampling. Initial remedial action sampling will be conducted prior to performing the dredging. This sampling will be presented in the remedial design/remedial action work plan and is expected to include bathymetry as well as the collection of surface sediments and sediment cores for the analysis of grain size distribution and concentrations of the primary risk drivers (Total PCBs, Total DDx, and cadmium), chromium, lead, Ra-226 and TOC. The purpose of this sampling is to enable proper, safe handling and segregation of sediment within the area to be dredged prior to mobilization of the dredging equipment and to support waste characterization and disposal.

Quality control sampling and analysis will be conducted during the dredging activities and confirmation sampling and analysis will be conducted to verify completion of dredging. Quality control sampling will be presented in the remedial design/remedial action work plan and is expected to include turbidity and dissolved oxygen monitoring within and around the perimeter of the dredge area to monitor for potential suspension of sediments and related water column impacts. Confirmation sampling would include bathymetric surveys to confirm that sediment was removed to the required depths, and surface sediment sampling would evaluate the potential for residual contamination at the new sediment surface. Residual contamination may be the result of the following:

- Contaminant concentrations may be deeper than estimated from pre-remediation sampling data, due to uncertainties associated with interpolation between sampling locations
- During dredging, a small percentage of sediment may escape capture
- During dredging, a small percentage of sediment may become suspended and resettle on the dredged surface.

After dredging, confirmation sediment samples would be collected to determine residual surface sediment concentrations. Statistical analysis would be conducted to ensure that the post-dredged concentrations were below RGs. If results were to show areas of elevated concentrations, then additional dredging may be required.

12.3 Dewatering

After sediment removal and transport to shore, the dredged material would likely be too wet to be transported or placed directly at a disposal facility. Dewatering would reduce the weight and volume of dredged material designated for disposal, and would reduce transportation controls, restrictions, and costs. Dewatering technologies include passive drying beds, mechanical drying, and the use of additives that enhance dewaterability. The use of on-site passive drying beds will likely be the most cost-effective method to dewater the dredged material removed and is the assumed approach for costing and comparative purposes. The time required for dewatering will depend on site conditions, including weather, but is expected to take several months.

Results from initial remedial action sampling will allow the sediment to be dewatered, staged, transported, and disposed in a segregated fashion consistent with defined characteristics. This initial sampling will enable construction of sediment dewatering and staging facilities and water storage/treatment facilities in a manner consistent with the RCRA or non-RCRA nature of particular volumes of dredged sediment. If the initial remedial action sampling confirms that all dredged sediment is not RCRA hazardous, then all dewatering facilities could be constructed without adherence to RCRA requirements. Alternatively if some proportion of the sediment to be dredged is determined to be RCRA hazardous through the initial remedial action sampling, discrete, RCRA-compliant handling facilities would be constructed to accommodate those materials while the remainder of the dredged sediment found to be non-RCRA hazardous could be handled without adherence to RCRA requirements. The water produced during dewatering will be tested and treated as necessary prior to being released back into the lagoon. Specific testing and discharge requirements will be provided in the remedial design. Separated sediments will be stockpiled and transported off-site for disposal. In the event that elevated concentrations of radium are identified in the sediment or supernatant, all areas and equipment that are utilized for dewatering radiologically-impacted spoils as well as the transportation routes utilized will require radiological clearance upon project completion.

12.4 Upland Disposal at a Permitted Off-Site Waste Disposal Facility

Remedial action sampling data will be used to support waste characterization determinations and ultimate waste disposal actions. If necessary, final classification of waste material will be conducted after dewatering and prior to disposal. Depending on the results of the initial remedial action sampling, radionuclide levels may need to be tested to ensure that sediments will not exceed background levels at the designated landfill. Some material may not pass Class II landfill criteria due to radiological contamination. After dewatering dredged sediments, material acceptable for a Class II landfill will be transported and disposed at an appropriate local San Francisco Bay area landfill such as Keller Canyon Landfill (Pittsburg, CA), Altamont Landfill (Livermore, CA), and Forward Landfill (Manteca, CA). Disposal of material not suited for a Class II landfill due to radiological contamination is expected to be handled by the United States Army Corps of Engineers (USACE).

Whereas it is anticipated that most of the sediments would be classified as “designated waste” for disposal in a Class II landfill, portions of the material removed from the site may not be contaminated and may be designated as “nonhazardous solid” or “inert” waste suitable for Class III disposal. Nonhazardous or inert wastes might include some debris or uncontaminated dredged sediment. Uncontaminated sediment might include sediment along the immediate boundary of the lagoon that has existed since the lagoon’s

construction; material from uncontaminated areas dredged to meet project-related construction or navigational needs; clean material removed to access contaminated material.

For the purpose of completing the cost estimate (Table 12-1), it was assumed that 62% of the dredged material would be classified as a "designated waste", and cost estimates for that portion of the material are based on disposal in a Class II landfill. Costs for disposal at the Class II landfill include truck transportation to the disposal facility and volumetric (i.e., per ton) disposal costs. Based on available sediment data, it was conservatively estimated that 38% of the material may exceed the 1.36 pCi/g concentration of Ra 226 and/or other chemical constituents present in the dredged sediment may preclude their disposal at a Class II disposal site. The cost estimate for this material was based on disposal through the USACE at a licensed radiological waste disposal facility. The facility may be outside of California due to the State's moratorium on radiological disposal.

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13.0 STATUTORY DETERMINATION

The DON's primary responsibility in regard to CERCLA is to undertake remedial actions that achieve statutory requirements for adequate protection of human health and the environment. In addition, Section 121 of CERCLA establishes several statutory requirements and preferences. These require that remedial actions meet Federal or State (if more stringent) environmental standards, requirements, criteria, or limitations that are determined to be ARARs unless a statutory waiver is justified. The selected remedy also must be cost-effective and use permanent solutions and alternate treatment technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that, as their principal element, permanently and significantly reduce the volume, toxicity, and mobility of contamination through treatment. The following sections discuss how the selected remedy addresses these statutory requirements and preferences. Complete discussions are found in the FS Report for Site 17 (Battelle, 2005).

13.1 Protection of Human Health and the Environment

The project RAOs largely deal with protecting ecological receptors from potential adverse effects associated with contact with or ingestion of contaminants, as well as protecting human health against potential negative impacts associated with consumption of contaminated fish from the lagoon.

Alternative 5 would protect human health and the environment by removing sediment containing contaminants exceeding RGs and consolidating the contamination in a properly designed, permitted, and monitored upland disposal facility following dewatering. Alternative 5 would result in over-excavation of the area beyond that required to meet the RGs, which would also remove chromium, lead and radionuclides. Based on calculations in the FS Report (Battelle, 2005), Alternative 5 would also result in an area-wide average Total PCB concentration of approximately 200 ppb which is consistent with the upper bound estimate of nearshore ambient concentrations in San Francisco Bay. These results would be confirmed through confirmation sampling conducted during the remedial action (as outlined in Section 12.2).

13.2 Compliance with ARARs

The selected remedial action will comply with the substantive provisions of ARARs under Federal and State laws unless a statutory waiver is justified. Section 121(e) of CERCLA, 42 USC Section 9621(e), states that no Federal, State, or local permit is required for remedial actions selected and carried out in compliance with §121 of CERCLA and conducted entirely on-site. Any action that takes place off site is subject to the full requirements of the Federal, State, and local regulations. See the FS report (Battelle, 2005) for more detailed descriptions of the ARARs.

13.2.1 Chemical-Specific ARARs

Chemical-specific ARARs (Table 13-1) are health- or risk-based numerical values or methodologies that, when applied to site-specific conditions, establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment. Sediment is the only medium of concern at Site 17. However, since the remedial action includes dredging, ARARs include requirements for other media that may be affected by the dredging action. The substantive provisions of the following requirements are Federal and State chemical-specific ARARs for the Site 17 remedial action:

- Water Quality Standards at 40 CFR Sections 131.36(b) and 131.38 for dewatering effluent discharge to surface water
- National Ambient Water Quality Criteria (AWQC) for cadmium, specifically 33 USC Chapter 26, Section 1314(a) and 42 USC Chapter 103, Section 9621(d)(2) 64 FR 19,781 (22 April 1999), 65FR31682
- Effluent limitations that meet technology-based requirements, including best conventional pollution control technology (BCPCT) and best available technology (BAT) economically achievable, specifically, 33 USC Chapter 26, Section 1311(b) (CWA Section 301[b])
- RCRA Hazardous waste definition at Cal. Code Regs. tit. 22, §§ 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100; and 66261.22(a)(3) and (4); 66261.24(a)(2)–(a)(8); 66261.101; 66261.3(a)(2)(C) or 66261.3(a)(2)(F) for characterizing sediment prior to off-site disposal. In addition, Ra-226 will be evaluated as part of the waste characterization to ensure that the material meets all relevant landfill requirements
- Cal. Code Regs. tit. 22, §§ 66268.40 and 66268.48 for treatment standards for water prior to discharge back to the lagoon if water is determined to be a hazardous waste
- San Francisco Basin Plan, Chapter 2 Beneficial Uses designated for the Site 17, Chapter 3 Water Quality Objectives (WQOs) for turbidity, dissolved oxygen (DO), and suspended sediment with the exception for nuisance (to protect beneficial uses)
- State Water Resources Control Board (SWRCB) Resolution (Res.) No. 68-16 for new discharges associated with the dredging and dewatering effluent. SWRCB Res. No. 68-16 is not a chemical-specific ARAR for setting sediment cleanup levels (see below for DON and State positions and agreement on Res. 68-16)
- Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP), Section 1.3 and 1.4 for dewatering effluent discharge to the Bay. Not an ARAR for setting sediment cleanup levels or dredging discharges (see below for Navy and State positions and agreement on the SIP)
- State definitions of waste at Cal. Code Regs. tit. 27, §§ 20210, 20220(a), and 20230(a) and the definitions of state regulated non-RCRA hazardous waste at Cal. Code Regs. tit. 22, §§ 66261.22(a)(3) and (4); 66261.24(a)(2)–(a)(8); 66261.101; 66261.3(a)(2)(C) or 66261.3(a)(2)(F) are applicable for characterizing sediment prior to off-site disposal
- Bay Area Air Quality Management District (BAAQMD) Regulation 6-1-301, 11-1-301 and 11-1-302 requirements for visible emissions and lead emissions during handling prior to off-site transportation
- Nuclear Regulatory Commission (NRC) use limits at 10 CFR § 20.1402, § 20.1403(a), and § 20.1403(b) levels for determining restricted land use
- Uranium Mill Tailings Radiation Control Act (UMTRCA) unrestricted use dose levels for Ra-226 at 40 CFR § 192.12(a)(1), 192.32(b)(2), and 192.41(a).

The DON Position Regarding SWRCB Resolutions 92-49 and 68-16

The DON and the State of California have not agreed whether the SWRCB Res. 92-49 and Res. 68-16 are ARARs for the remedial action at Site 17. Therefore, this ROD documents each party's position but does not attempt to resolve the issue.

The DON has also determined that SWRCB Res. 68-16 is not a chemical-specific ARAR for determining remedial action goals. However, SWRCB Res. 68-16 is a potential action-specific ARAR for regulating new discharges such as discharges to surface water during dredging and dewatering activities. The DON has determined that potential migration of sediment is not a discharge governed by the language in Res. 68-16. More specifically, the language of SWRCB Res. 68-16 indicates that it is prospective in intent, applying to new discharges in order to maintain existing high-quality waters. It is not intended to apply to restoration of waters that are already degraded.

The substantive provisions of SWRCB Res. 92-49 at Section III.G. state that the Regional Water Board shall "ensure that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality, or the best water quality which is reasonable if background levels of water quality cannot be restored." Surface water is not a medium of concern addressed by this remedial action for the sediments of Site 17. Therefore, Res. 92-49 is not a potential ARAR; however, the cleanup levels agreed to by the DON and oversight Agencies/Trustees, including the RWQCB, are consistent with the requirements of SWRCB Res. 92-49.

State of California's Position Regarding SWRCB Resolutions 92-49 and 68-16

The State does not agree with the DON determination that SWRCB Res. 92-49 and Res. 68-16 are not ARARs for this response action. SWRCB has interpreted the term "discharges" in the CWC to include the movement of waste from soils to groundwater and from contaminated to uncontaminated water (SWRCB 1994). The RWQCB asserts that SWRCB Res. 68-16 and 92-49 is an ARAR for determining sediment cleanup levels. However, the State agrees that the remedial action would comply with SWRCB Res. 92-49 and Res. 68-16.

Whereas the DON and the State of California have not agreed on whether SWRCB Res. 92-49 and Res. 68-16 are ARARs for this response action, this ROD documents each of the parties' positions on the resolutions but does not attempt to resolve the issue.

The DON and State Positions Regarding the SIP

The State asserts that their Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, 2005 (SIP) is applicable for setting sediment cleanup levels. The substantive requirements for determining whether an effluent limitation is required and the methodology for calculating the effluent limitation found in Sections 1.3 and 1.4 of the Inland Surface Waters Plan are potentially applicable state ARARs for discharges that cause, have a reasonable potential to cause, or contribute to an excursion above an applicable priority pollutant criterion or objective into inland surface waters, and enclosed bays and estuaries (non-ocean surface waters). Because the Inland Surface Waters Plan is intended to apply to calculating effluent limits for point-source discharges only, it is not a potential ARAR for non-point discharges of contaminants to surface waters, such as the discharge from sediment excavation activities. With respect to non-point sources, the policy states that only Section 5.1 applies**.** This section is not substantive and is not a potential ARAR. However, removal of sediments from IR Site 17 AOECs will comply with the intent of the SWRCB policy for non-point source discharges to have self-implemented management practices through the implementation of engineering controls.

Use Criteria for Radioactive Waste

Due to the history of discharges from a radioactive waste source to the site and detection of radium in the sediment at 7 pCi/g at one location, radioactive waste requirements have been evaluated. Neither the NRC requirements nor EPA requirements under UMTRCA are potentially applicable because the site is not a regulated site under either. However, because radium is regulated by both sets of requirements, substantive provisions of the use criteria levels at 10 CFR § 20.1402, § 20.1403(a), and § 20.1403(b) and

40 CFR § 192.12(a)(1), 192.32(b)(2), and 192.41(a) have been determined to be relevant and appropriate for radium in the sediment. In general, the NRC requirements are dose-based and allow 25 millirems of radioactivity above background and reduction to as low as reasonably achievable (ALARA) for unrestricted use. The NRC requirements are not for underwater sediment but they may be used for characterizing Site 17 sediment for the purpose of disposal. The UMTRCA requirements are concentration based and require no more than 5 pCi/g over 100 square meters. The UMTRCA requirement is for surface exposure for soil but may be used for characterizing Site 17 sediment for the purposes of disposal. Sediment waste characterization will be based on remedial action sampling and will include analyses for potential radionuclides (e.g. radium).

13.2.2 Location-Specific ARARs

Location-specific ARARs are restrictions on the concentrations of hazardous substances or on conducting activities solely because they are in specific locations. Specific locations include floodplains, wetlands, historic places, and sensitive ecosystems or habitats. The selected remedial action can be implemented to comply with location-specific ARARs. Location-specific ARARs for the selected alternative are also summarized in Table 13-2. The substantive provisions of the following requirements are the potential Federal and State location specific ARARs for the Site 17 remedial action:

- Based on the presence or potential presence of threatened and/or endangered species, migratory birds, and marine mammals, the requirements of the Endangered Species Act 16 USC Section 1536(a), (h)(1)(B) and Section 1538(a); 16 USC Section 662 to take action to prevent the loss of or damage to fish and wildlife; the Migratory Bird Treaty Act of 1972 Section 703; Marine Mammal Protection Act Section 1372(a)(2); and the Rivers and Harbors Act of 1899 (33 USC Section 403) because dredging could affect navigable waters
- California Endangered Species Act Section 3005(a) prohibits the taking of birds and mammals, including the taking by poison. Sections 5650(a) and (f) and Section 5651 prohibit the passage of enumerated substances or materials into waters of the State that are deleterious to fish, plant life, or birds
- Coastal Zone Management Act 16 USC Section 1456(c) and 15 CFR Section 930 because Site 17 is on the coast. Activities will be conducted in a manner consistent with approved State management programs
- California Coastal Act of 1976, California Public Resources Code (CPRC) Sections 30000-30900; Cal. Code Regs. tit. 14, § 13001-13666.4 because Site 17 is within the California coastal zone.

13.2.3 Action-Specific ARARs

Action-specific ARARs are technology- or activity-based requirements or limitations for remedial activities. These requirements are triggered by the particular remedial activities conducted at the site. Action-specific ARARs for the selected alternative are summarized in Table 13-3.

The substantive RCRA onsite waste generation characterization requirements at Cal. Code Regs. tit. 22, §§ 66262.10(a), 66262.11, and 66264.13(a) and (b) were identified as ARARs for characterizing waste prior to off-site disposal. Sediment waste characterization will be based on remedial action sampling, and if necessary, the dredged sediment will be stored as hazardous waste during dewatering. Depending on the waste characteristics determined through sampling, the sediment will be placed in containers, tanks and/or miscellaneous units during dewatering. Once sediment is not flowing, it will be placed in staging piles. The water will be tested and treated as necessary to comply with chemical-specific ARARs prior to

discharge back into the lagoon Therefore, the substantive provisions of the following RCRA storage and handling requirements are ARARs for this action:

- Cal. Code Regs. tit. 22, §§ 66264.171, .172, .173, .174, .175(a) and (b) and .178 for container storage
- Cal. Code Regs. tit. 22, §§ 66264.192(a), (b), (c), (e), (f), and (g), .193 (b), (c), (d), (e), and (f), .194(a) and (b), .195(a), (b), and (c), .196(b) except (b)(5) and (b)(7), and .197(a) and (b) for tank systems
- Cal. Code Regs. tit. 22, §§ 66264.601(b), (c) and (d) for miscellaneous units
- Cal. Code Regs. tit. 22, §§ 66264.553 (b), (d), (e), and (f) for temporary unit alternatives for containers and tanks
- 40 CFR §§ 264.554(d)(1)(i-ii) and (d)(2), (e), (f), (h), (i), (j), and (k) staging piles
- Cal. Code Regs. tit. 22, §§ 66264.258(a) and 66264.111 for closure of staging piles
- 40 CFR § 122.44(h)(2) and (4) for best management practices for storm water control
- 40 CFR § 125.3 for technology-based treatment requirements for the dewatering effluent.

Monitoring requirements were identified for discharges to surface water that are expected to occur during dredging and/or dewatering. Substantive provisions of 40 CFR 122.44(i)(1)(i-iv) monitoring requirements were identified as applicable for the discharge of dewatering effluent back to the Bay. These requirements require monitoring the mass of each pollutant and volume of the discharge and require the use of 40 CFR Part 136 methods for pollutants with approved methods.

No Federal action-specific requirements for radioactive waste were identified as potentially applicable. As previously discussed, radium levels measured throughout Site 17 are very low, with the exception of one location within the remediation areas, where concentrations were only slightly elevated. As a result, radium was not identified as a COC for the site. However, radium analyses will be included in the characterization of waste for off-site disposal to ensure that the material meets all applicable off-site disposal requirements. Off-site disposal is not an on-site activity addressed by CERCLA ARARs. Therefore, the offsite disposal will comply with all applicable of regulations.

Table 13-1. Chemical-Specific ARARs[a]

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
Clean Water Act of 1977 (CWA), as Amended (33 USC Chapter 26, Sections 1251–1387)[c]				
Water Quality Standards, National Toxics Rule (NTR) and California Toxics Standards (CTR)	Discharges to waters of the United States	40 CFR Section 131.36(b) and 131.38	Applicable	Substantive provisions are applicable to the discharge to surface water during dredging and dewatering activities.
National AWQC	Discharges to waters of the United States	33 USC Chapter 26, Section 1314(a) and 42 USC Chapter 103, Section 9621(d)(2) 64 FR 19781 (22 April 1999) 65FR31682	Relevant and appropriate	Substantive provisions are applicable for cadmium to the discharge to surface water expected during dredging and dewatering activities.
Effluent limitations that meet technology-based requirements, including best conventional pollution control technology (BCPCT) and best available technology (BAT) economically achievable. Control pollutants contained in direct discharges beyond BCT/BAT equivalents when necessary to meet applicable water quality standards.	Discharges to waters of the United States	33 USC Chapter 26, Section 1311(b) (CWA Section 301[b])	Relevant and appropriate	Substantive provisions are potentially relevant and appropriate for the discharge of dewatering effluent to the lagoon. Specific discharge requirements will be provided in the remedial design. The applicable water quality standards have been identified as potential ARARs in the two rows above.
RCRA (42 USC Chapter 82, Sections 6901–6991[i])[c]				
Defines RCRA hazardous waste.	Waste	Cal. Code Regs. tit. 22, §§ 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100	Applicable	Sediment will be sampled and characterized to determine if it is classified as RCRA hazardous waste.

Table 13-1. Chemical-Specific ARARs[a], Continued

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
RCRA (42 USC Chapter 82, Sections 6901–6991[i])[c], Continued				
Treatment standards including technology requirements before hazardous waste can be disposed to land.	Hazardous waste land disposal.	Cal. Code Regs. tit. 22, § 66268.40	Applicable	Substantive provisions are applicable if water is determined to be a hazardous waste. Not an ARAR unless water is determined to be hazardous waste.
Universal Treatment Standards used to comply with treatment standards.	Hazardous waste land disposal.	Cal. Code Regs. tit. 22, § 66268.48	Applicable	Substantive provisions are applicable if water is determined to be a hazardous waste. Not an ARAR unless water is determined to be hazardous waste.
SWRCB and RWQCB[c]				
Describes the water basins in San Francisco Bay, establishes beneficial uses of groundwater and surface water, establishes WQOs, including narrative and numerical standards, establishes implementation plans to meet WQOs and protect beneficial uses, and incorporates statewide water quality control plans and policies.		Comprehensive Water Quality Control Plan for the San Francisco Bay (Basin Plan) CWC Section 13240 Chapter 2 Beneficial Uses for Seaplane Lagoon Chapter 3 WQOs for turbidity, DO, and suspended sediment with the exception of nuisance	Applicable	Substantive requirements pertaining to beneficial uses for the lagoon and WQOs for turbidity, DO, and suspended sediment with the exception for nuisance, are potentially applicable for surface water during dredging and dewatering activities.
Establishes the policy that high-quality waters of the State "shall be maintained to the maximum extent possible" consistent with the "maximum benefit to the people of the State." Provides that when existing quality of water is better than required by applicable water quality policies, the existing high-quality will be maintained until it is demonstrated that any change will be		Statement of Policy With Respect to Maintaining High Quality of Waters in California, SWRCB Res. No. 68-16	Applicable	Not an ARAR for setting sediment cleanup levels. Substantive requirements are applicable for surface water during dredging and dewatering activities. See Section 13.2.1 for discussion of Navy and State positions and agreement regarding this requirement.

Table 13-1. Chemical-Specific ARARs[a], Continued

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
SWRCB and RWQCB[c], Continued				
consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial use of such water, and will not result in water quality less than that prescribed in the policies. States that any activity that produces or may produce a waste or increased volume or concentration of waste and that discharges or proposes to discharge to existing high-quality waters will be required to meet waste-discharge requirements that will result in the best practicable treatment or control of the discharge.				
Describes requirements for RWQCB oversight of investigation and cleanup and abatement activities resulting from discharges of hazardous substances. RWQCB may decide on cleanup and abatement goals and objectives for the protection of water quality and beneficial uses of water within each region. Establishes criteria for "containment zones" where cleanup to established water-quality goals is not economically or technically practicable.		Policies and procedures for investigation and cleanup and abatement of discharges under CWC Section 13304, SWRCB Res. No. 92-49	Not an ARAR	Not an ARAR for sediment cleanup. See Section 13.2.1 for discussion of Navy and State positions and agreement regarding this requirement.
Requires analysis for each priority pollutant to determine if water-quality-based effluent limitation is required. Provides effluent limitation development methodology.	Discharges of toxic priority pollutants into inland surface waters, bays, or estuaries.	Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP)(SWRCB 2000), §§1.3 and 1.4	Applicable	Substantive provisions are applicable for discharges to surface water from dewatering effluent for determining whether effluent limitations are required and the method for calculating the effluent limits. This requirement complements the Federal Water Quality Standard requirements at 40 CFR Parts 131.36 and 131.38. Not an ARAR for setting sediment cleanup levels.

Table 13-1. Chemical-Specific ARARs[a], Continued

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
SWRCB and RWQCB[c], Continued				
Definitions of designated waste, nonhazardous waste, and inert waste.		Cal. Code Regs. tit. 27, §§ 20210, 20220(a), and 20230(a)	Applicable	Substantive provisions are applicable for characterizing sediment. Not an ARAR for setting sediment cleanup levels.
Cal-EPA DTSC[c]				
Definition of "non-RCRA hazardous waste."	Waste	Cal. Code Regs. tit. 22, §§ 66261.22(a)(3) and (4); 66261.24(a)(2) – (a)(8); 66261.101; 66261.3(a)(2)(C) or 66261.3(a)(2)(F)	Applicable	Substantive provisions are applicable for determining whether sediment is a non-RCRA hazardous waste.
BAAQMD				
A person shall not emit from any source for a period or periods aggregating more than three minutes in any hour, a visible emission which is as dark or darker than No. 1 on the Ringelmann Chart, or of such opacity as to obscure an observer's view to an equivalent or greater degree.		BAAQMD 6-1-301	Applicable	Substantive provisions are applicable for handling sediment prior to transportation off site.
A person shall not discharge any emission of lead, or compound of lead calculated as lead, from any emission point in excess of 6.75 kg (15 lbs) per day.		BAAQMD Rule 11-1-301	Applicable	Substantive provisions are applicable for handling sediment prior to transportation off site.
A person shall not discharge any emission of lead, or compound of lead calculated as lead, that will result in ground level concentrations in excess of 1.0 ug/m3 averaged over 24 hours.		BAAQMD Rule 11-1-302	Applicable	For handling sediment prior to transportation off site.

Table 13-1. Chemical-Specific ARARs[a], Continued

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
Nuclear Regulatory Commission Standards for Protection of Radiation[c]				
A site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in total effective dose equivalent (TEDE) to an average member of the critical group that does not exceed 25 millirems per year, including that from groundwater sources of drinking water, and that the residual radioactivity level has been reduced to ALARA.	Existing NRC-licensed radiologically contaminated site	10 CFR § 20.1402	Relevant and appropriate	Substantive provisions are relevant and appropriate for an unrestricted land-use scenario after sediment removal if radioactive waste is detected.
As a condition for license termination with restricted site use, the licensee must demonstrate that further reductions in residual radioactivity necessary to comply with the provisions of 10 USC. § 20.1402 would result in net public or environmental harm or were not being made because the residual levels associated with restricted conditions are ALARA.	Existing NRC-licensed radiologically contaminated site	10 CFR § 20.1403(a)	Relevant and appropriate	Substantive provisions are relevant and appropriate for an unrestricted land-use scenario after sediment removal if radioactive waste is detected.
As a condition for license termination with restricted site use, the licensee must make provisions for legally enforceable institutional controls that provide reasonable assurance that the TEDE from residual radioactivity distinguishable from background to the average member of the critical group will not exceed 25 millirems per year.	Existing NRC-licensed radiologically contaminated site	10 CFR § 20.1403(b)	Relevant and appropriate	Substantive provisions are relevant and appropriate for an unrestricted land-use scenario after sediment removal if radioactive waste is detected.

Table 13-1. Chemical-Specific ARARs[a], Continued

Requirement	Prerequisite	Citation[b]	ARAR Determination	Comments
UMTRCA[c]				
Standards for Cleanup of Land and Buildings Contaminated with Ra-226, Ra-228, and Thorium from Inactive Uranium Processing Sites. As a result of residual radiological materials from any designated processing site: (a) The concentration of Ra-226 in land averaged over any area of 100 square meters shall not exceed the background level by more than: (b) 5 pCi/g, averaged over the first 15 cm of soil below the surface	UMTRCA sites	40 CFR § 192.12(a)(1), 192.32(b)(2), and 192.41(a)	Relevant and appropriate	Substantive provisions are relevant and appropriate only for an unrestricted land-use scenario. Sets dose limits for radium-226 in soil.

[a] Many potential action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARAR tables.
[b] Only the substantive provisions of the requirements cited in this table are potential ARARs.
[c] Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only pertinent substantive requirements of specific citations are considered potential ARARs.

Table 13-2. Location-Specific ARARs[a]

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Fish and Wildlife Coordination Act (16 USC Sections 661–666c)[b]					
Area affecting stream or other water body	Action taken should protect fish or wildlife.	Diversion, channeling, or other activity that modifies a stream or other water body and affects fish or wildlife.	16 USC Section 662	Applicable	Substantive provisions are applicable for dredging, that would modify Site 17 or affect fish or wildlife.
Rivers and Harbors Act of 1899 (33 USC Sections 401 – 413)[b]					
Navigable waters	Permits required for structures or work affecting navigable waters	Activities affecting navigable waters	33 USC Section 403	Applicable	Substantive provisions are applicable for dredging that could affect navigable waters.
Endangered Species Act of 1973 (16 USC Sections 1531–1543)[b]					
Habitat upon which endangered species or threatened species depend	Federal agencies may not jeopardize the continued existence of any listed species or cause the destruction or adverse modification of critical habitat. The Endangered Species Committee may grant an exemption for agency action if reasonable mitigation and enhancement measures such as propagation, transplantation, and habitat acquisition and improvement are implemented. Prohibits take of listed species.	Determination of effect upon endangered or threatened species or its habitat. Critical habitat upon which endangered species or threatened species depend.	16 USC Section 1536(a), (h)(1)(B) and Section 1538(a); 16 USC Section 662	Applicable	Substantive provisions are applicable because threatened and/or endangered species are known to occur in the areas around Site 17.

Table 13-2. Location-Specific ARARs[a], Continued

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
Marine Mammal Protection Act (16 USC Sections 1361–1421h)[b]					
Marine mammal area	Protects any marine mammal in the U.S. except as provided by international treaties from unregulated "take."	Presence of marine mammals.	16 USC Section 1372 (a)(2)	Applicable	Because marine mammals are known to be present near Site 17, substantive provisions are applicable for dredging that may affect mammals. Measures will be taken to avoid taking mammals during the dredging
Migratory Bird Treaty Act of 1972 (16 USC Sections 703-712)[b]					
Migratory bird area	Protects almost all species of native birds in the U.S. from unregulated "take," which can include poisoning at hazardous waste sites.	Presence of migratory birds.	16 USC Section 703	Relevant and appropriate	Because migratory birds are known to be present near Site 17, substantive provisions are relevant and appropriate.
Coastal Zone Management Act (16 USC Sections 1451–1464)[b]					
Within coastal zone	Conduct activities in a manner consistent with approved State management programs.	Activities affecting the coastal zone including lands thereunder and adjacent shore land.	16 USC Section 1456(c) 15 CFR Section 930	Relevant and appropriate	Substantive provisions are relevant and appropriate because Site 17 is on the coast.
California Endangered Species Act (California Fish and Game Code [CFGC] Sections 2050-2116)[b]					
Endangered Species	Prohibits the passage of enumerated substances or materials into waters of the State deleterious to fish, plant life, or birds.	Discharge to waters of the State.	CFGC Sections 5650(a) and (f); Section 5651	Relevant and appropriate	Substantive provisions are relevant and appropriate for potential discharges during dredging. Measures will be taken to avoid passage of deleterious substances into the water.

Table 13-2. Location-Specific ARARs[a], Continued

Location	Requirement	Prerequisite	Citation[a]	ARAR Determination	Comments
California Endangered Species Act (California Fish and Game Code [CFGC] Sections 2050-2116)[b] Continued					
	Prohibits the taking of birds and mammals, including the taking by poison.	Potential to take birds and mammals	CFGC Section 3005(a)	Relevant and appropriate	Substantive provisions are relevant and appropriate for dredging. Care will be taken to avoid taking of birds and mammals during the remedial action.
California Coastal Act of 1976[b]					
Coast	Regulates activities associated with development to control direct significant impacts on coastal waters and to protect State and national interests in California coastal resources.	Any activity that could impact coastal waters and resources	CPRC Sections 30000-30900; Cal. Code Regs. tit. 14, §§ 13001-13666.4	Relevant and appropriate	Substantive provisions are relevant and appropriate because Site 17 is within the California coastal zone.

[a] Only the substantive provisions of the requirements cited in this table are potential ARARs.

[b] Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader; listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered potential ARARs.

Table 13-3. Action-Specific ARARs

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
RCRA (42 USC Sections 6901–6991[i])[a]					
Onsite waste generation	Person who generates waste shall determine if that waste is a hazardous waste.	Generator of waste.	Cal. Code Regs. tit. 22, §§ 66262.10 (a) and 66262.11	Applicable	Substantive provisions are applicable for any operation where hazardous waste is generated. Sediment waste characterization will be conducted prior to stockpiling, storage or disposal.
	Requirements for analyzing waste for determining whether waste is hazardous.	Generator of waste.	Cal. Code Regs. tit. 22, §§ 66264.13 (a) and (b)	Applicable	Sediment waste characterization will be conducted prior to stockpiling, storage or disposal.
Container storage	Containers of RCRA hazardous waste must be: • maintained in good condition, • compatible with hazardous waste to be stored, and closed during storage except to add or remove waste.	Storage of RCRA hazardous waste not meeting small-quantity generator criteria before treatment, disposal, or storage elsewhere, in a container.	Cal. Code Regs. tit. 22, §§ 66264.171, .172, .173	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in containers, or relevant and appropriate if waste is similar to hazardous waste.
	• Inspect container storage areas weekly for deterioration.		Cal. Code Regs. tit. 22, § 66264.174	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in containers, or relevant and appropriate if waste is similar to hazardous waste.
	• Place containers on a sloped, crack-free base, and protect from contact with accumulated liquid. Provide containment system with a capacity of 10 percent of the volume of containers of free liquids. Remove spilled or leaked waste in a timely manner to prevent overflow of the containment system.	Storage in a container of RCRA hazardous waste not meeting small-quantity generator criteria before treatment, disposal, or storage elsewhere.	Cal. Code Regs. tit. 22, §§ 66264.175(a) and (b)	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in containers, or relevant and appropriate if waste is similar to hazardous waste.

Table 13-3. Action-Specific ARARs, Continued

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
RCRA (42 USC Sections 6901–6991[i])[a] continued					
	At closure, remove all hazardous waste and residues from the containment system, and decontaminate or remove all containers and liners.		Cal. Code Regs. tit. 22, § 66264.178	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in containers, or relevant and appropriate if waste is similar to hazardous waste.
Tank Systems	Requirements for the design and installation of new tank systems including strength, tightness testing, damage control, support, corrosion control, etc.	Tank systems for transferring, storing, or treating hazardous waste.	Cal. Code Regs. tit. 22, §§ 66264.192(a), (b), (c), (e), (f), and (g)	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in tanks, or relevant and appropriate if waste is similar to hazardous waste.
	Requirements for secondary containment of tank systems.	Tank systems for transferring, storing, or treating hazardous waste.	Cal. Code Regs. tit. 22, §§ 66264.193(b), (c), (d), (e), and (f)	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in tanks, or relevant and appropriate if waste is similar to hazardous waste.
	Requirements for operation of tank systems including spill prevention and prohibitions of material that could cause failure.	Tank systems for transferring, storing, or treating hazardous waste.	Cal. Code Regs. tit. 22, §§ 66264.194(a) and (b)	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in tanks, or relevant and appropriate if waste is similar to hazardous waste.
	Requirements for inspection of tank systems including inspection of overflow protection, corrosion, release, detection equipment, and cathodic protection.	Tank systems for transferring, storing, or treating hazardous waste.	Cal. Code Regs. tit. 22, §§ 66264.195(a), (b), and (c)	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in tanks, or relevant and appropriate if waste is similar to hazardous waste.

Table 13-3. Action-Specific ARARs, Continued

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
RCRA (42 USC Sections 6901–6991[i])[a] continued					
	Requirements for response to leaks and spills from tank systems including removal of system from use if appropriate, containment, cleanup, emergency procedures, etc.	Tank systems for transferring, storing, or treating hazardous waste.	Cal. Code Regs. tit. 22, §§ 66264.196(b) except (b)(5) and (b)(7)	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in tanks, or relevant and appropriate if waste is similar to hazardous waste.
	Requirements for closure and postclosure care of tank systems decontamination, clean closure and leaving waste in place at closure.	Tank systems for transferring, storing, or treating hazardous waste.	Cal. Code Regs. tit. 22, §§ 66264.197(a) and (b)	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored in tanks, or relevant and appropriate if waste is similar to hazardous waste.
Miscellane-ous Unit	Design and operating standards for unit in which hazardous waste is stored or treated.	Storage and treatment of hazardous waste in a unit.	Cal. Code Regs. tit. 22, § 66264.601 (b), (c), and (d)	Applicable	Substantive provisions are applicable if waste is determined to be hazardous and stored or treated in a miscellaneous unit, or relevant and appropriate if waste is similar to hazardous waste.
Temporary Unit	Alternative requirements that are protective of human health or the environment may replace design, operating, or closure standards for temporary tanks and container storage areas.	RCRA hazardous waste, noncontainerized accumulation of solid, nonflammable hazardous waste that is used for treatment or storage.	Cal. Code Regs. tit. 22, §§ 66264.553 (b), (d), (e), and (f)	Applicable	Substantive requirements are applicable if waste is hazardous waste stored in containers or tanks. Temporary units offer relief from more stringent LDRs. Sediment waste characterization will be conducted prior to disposal.

Table 13.3. Action-Specific ARARs, Continued

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
RCRA (42 USC Sections 6901–6991[i]) [a] **continued**					
Staging pile	Allows generators to accumulate solid remediation waste in a EPA-designated pile for storage only, up to 2 years, during remedial operations without triggering LDRs.	Hazardous remediation waste temporarily stored in piles	40 CFR Sections 264.554(d)(l) (i-ii) and (d) (2), (e), (f), (h), (i), (j), and (k)	Applicable	Substantive provisions are applicable if wastes are hazardous and stored in piles. Sediment waste characterization will be conducted prior to disposal. Relevant and appropriate if wastes are not hazardous but similar to hazardous waste. State requirements at Cal. Code Regs. tit 22, § 66264.552(f) refer to the Federal requirements at 40 CFR § 264.554 and the State requirements are no more stringent.
Staging pile closure	At closure, owner shall remove or decontaminate all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste. If waste is left on-site, perform postclosure care in accordance with the closure and postclosure care requirements that apply to landfills.	Waste pile used to store hazardous waste.	Cal. Code Regs. tit. 22, § 66264.258(a)	Applicable	Substantive provisions are applicable for closure of staging piles if wastes are hazardous and stored in staging piles. Sediment waste characterization will be conducted prior to disposal. Relevant and appropriate if wastes are not hazardous but similar to hazardous waste.
	Minimize the need for further maintenance controls and minimize or eliminate, to the extent necessary to protect human health and the environment, postclosure escape of hazardous waste, hazardous constituents, leachate, contaminated rainfall or runoff, or waste decomposition products to groundwater or surface water or to the atmosphere.	Hazardous waste management facility.	Cal. Code Regs. tit. 22, § 66264.111	Applicable	Substantive provisions are applicable for closure of staging piles if wastes are hazardous and stored in staging piles. Sediment waste characterization will be conducted prior to disposal. Relevant and appropriate if wastes are not hazardous but similar to hazardous waste.

Table 13.3. Action-Specific ARARs, Continued

Action	Requirement	Prerequisite	Citation	ARAR Determination	Comments
Clean Water Act of 1977 (CWA), as Amended (33 USC Chapter 26, Sections 1251–1387) [a]					
Land disturbance	Stormwater plan and best management practice requirements.	Construction projects that disturb over an acre or more of soil	40 CFR § 122.44(k)(2) and (4)	Applicable	Substantive provisions are applicable for the proposed construction. The remedial design will include a storm water plan with best management practices for storm water pollution prevention.
Discharge to Surface water	Monitor the mass for each pollutant limited in the permit; the volume of effluent discharged from each outfall. Monitor according to test procedures approved under 40 CFR part 136 for the analyses of pollutants having approved methods	Permit requirements under CWA 301(b)	40 CFR §122.44(i)(1)(i-iv)	Applicable	Substantive provisions are relevant and appropriate for the discharge of dewatering effluent to the lagoon. Specific discharge requirements will be provided in the remedial design.
	Technology-based treatment requirements for permits.	Permit requirements under CWA 301(b)	40 CFR §125.3	Applicable	Substantive provisions are relevant and appropriate for the discharge of dewatering effluent to the lagoon. Specific discharge requirements will be provided in the remedial design.

[a] Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader. Listing the statutes and policies does not indicate that the DON accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of specific citations are considered potential ARARs.

13.3 Cost-Effectiveness

In the DON's judgment, the selected remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" (NCP §300.430(f)(1)(ii)(D)). This was accomplished by evaluating the overall effectiveness of those alternatives that satisfied the threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Alternatives 3, 5 and 6 remained once the threshold criteria were analyzed. Cost-effectiveness was determined by evaluating the overall effectiveness compared to costs. The relationship of the overall effectiveness of Alternative 5 was determined to be proportional to its costs and hence this alternative represents a reasonable value for the money to be spent. The estimated present worth cost of the Selected Remedy is $24.6 million (see Table 12-1 for a breakdown of costs). Although Alternatives 3 and 6 are less expensive, Alternative 5 was the only alternative that would remove all of the cadmium, Total PCBs and Total DDx as well as any remaining COCs or radiological contamination from the site. In addition, it achieves an area-wide average Total PCB concentration of approximately 200 ppb which is consistent with the upper bound estimate of nearshore ambient concentrations in San Francisco Bay, thus mitigating concerns about human health exposures. Therefore the remedy is the most effective overall at removing the contaminated sediments from the site.

13.4 Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

The DON has determined that the selected remedy represents the maximum extent practicable to which permanent solutions and alternative treatment technologies can be utilized in a cost-effective manner for Site 17. Of all the alternatives that are protective of human health and the environment and comply with ARARs, the DON has concluded that the selected remedy would provide the best balance of trade-offs with respect to the balancing criteria set out in the NCP Section 300.430 (f)(1)(i)(B). The selected remedy is expected to be permanent and effective over the long-term use of the site.

13.5 Preference for Treatment as a Principal Element

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action and is cost-effective. It uses permanent solutions and alternative treatment technologies to the maximum extent practicable for this site. It was determined that in situ treatment technologies (e.g., activated carbon amendment, nanoscale iron amendment, bioaugmentation, and stabilization) are insufficiently mature, making their effectiveness and implementability uncertain for the volume of material that would be necessary to treat at Site 17. Also, no single technology has been proven to address all of the Site 17 contaminants. Therefore, in situ remediation technologies were not carried forward into detailed analysis of alternatives.

All of the ex situ treatment technologies (e.g., thermal desorption, incineration, sediment washing, and biological treatment) would require bench-scale or pilot-scale testing and the effectiveness is uncertain given the high water content of Site 17 sediments and the presence of multiple contaminants including organic and inorganic constituents. Incineration and stabilization are relatively well established technologies for addressing organic and inorganic contamination, respectively; however, the significantly high cost makes less feasible.

13.6 Five-Year Review Requirements

Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a five-year review is not required for this remedial action.

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14.0 DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for Site 17 was released for public comment on February 17, 2006 (Battelle, 2006). The Proposed Plan identified further action to include dredging contaminated sediment within the remediation areas in the northeast and northwest corners of the lagoon to a uniform depth of 4 ft (plus a 1-ft overdredge allowance to ensure that the design thickness is achieved. Approximately 63,000 cy of contaminated sediment will be removed. The dredged sediment will be dewatered on-site in temporary drying beds and disposed of at a permitted off-site commercial landfill. The removal of contaminated sediment from the lagoon will be verified through confirmation sampling. The DON has reviewed all written and verbal comments submitted during the public comment period and determined that no significant changes to the preferred alternative were necessary or appropriate.

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15.0 REFERENCES

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Attachment A

Site-Specific Administrative Record Index

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ALAMEDA POINT NAS

DRAFT ADMINISTRATIVE RECORD FILE INDEX - UPDATE (SORTED BY RECORD DATE/RECORD NUMBER)

DOCUMENTS RELATED TO SITE 17 THROUGH MAY 2006

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
N00236 / 000198 RPT NONE 00000	11-24-1999 **04-01-1983** NONE 00.0	NEESA	INITIAL ASSESSMENT STUDY (IAS)	ADMIN RECORD	IAS	001 002 003 004 005 006 007 008 009 010 011 012 017	SOUTHWEST DIVISION - BLDG. 1 181-03-0179 10 OF 46 BOX 10 OF 46 - CHECKED OUT BY L. O'CAMPO ON 9/22/04 (X 2-0969) 41074200
N00236 / 000142 EFAW SER 1142E CORRESP NONE 00006	11-24-1999 **05-05-1986** NONE 00.0	NAVFAC - EFA WEST A. DONG CRWQCB D. MISHEK	PROPOSED SAMPLING, TESTING AND DREDGING AT THE SEAPLANE LAGOON (W/ ENCLOSURES)	ADMIN RECORD INFO REPOSITORY	DREDGING	017	CHOICE IMAGING SOLUTIONS 181-03-0179 8 OF 46 SW060123-02 41074200

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N00236 / 000545 CMNT NONE 00000	11-24-1999 **02-20-1991** NONE 00.0	RWQCB	COMMENTS ON THE SAMPLNG PLAN (SP) FOR SEAPLANE LAGOON AND ESTUARY SITE	ADMIN RECORD	SP	017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 16 OF 46 BOX 16 - 02/09/06 41074200
N00236 / 000646 TC.A021.10075 MM N68711-00-D-0005 00004	06-13-2003 **04-02-1993** DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	02 APRIL 1993 MONTHLY PROGRESS REVIEW MEETING MINUTES FOR THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS)	ADMIN RECORD INFO REPOSITORY	MTG MINS	001 002 004 007A 007B 009 011 017 PHASE 1 PHASE 2A PHASE 2B PHASE 3 PHASE 5 PHASE 6	CHOICE IMAGING SOLUTIONS 181-03-0188 14 OF 17 SW060629-02 41031858
N00236 / 001331 NONE RPT N62474-94-D-7430 00500	11-24-1999 **08-01-1996** DO 04 00.0	BERKELEY ENV. RESTORATION CENT W. MABEY NAVFAC - EFA WEST	DRAFT TREATABILITY STUDY (TS) WORK PLAN (WP), INTRINSIC SEDIMENT PROCESSES STUDY (PORTION OF THE EMERGENCY LIST AND PORTION OF ONE CURRICULUM VITAE IS CONFIDENTIAL) [SEE AR #1330 - EFA WEST TRANSMITTAL LETTER BY K. SPIELMAN]	ADMIN RECORD CONFIDENTIAL	SEDIMENT TS WP	002 017	CHOICE IMAGING SOLUTIONS 181-03-0179 35 OF 46 SW060420-01 41074200

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N00236 / 001325 CMNT NONE 00007	11-24-1999 **08-09-1996** NONE 00.0	ARC HACK, KAREN NAVY GARIBALDI, CAMIL	COMMENTS ON THE FINAL HUMAN HEALTH RISK-BASED PETROLEUM SCREENING LEVELS TECHNICAL MEMORANDUM (TM), AND THE CHARACTERIZATION OF SEAPLANE LAGOON DRAFT WORK PLAN (W	ADMIN RECORD	PETROLEUM TM WP	017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 35 OF 46 BOX 35 - 03/15/06 41074200
N00236 / 001330 EFAW SER 1831.4KS/L6361 CORRESP NONE 00002	11-24-1999 **09-03-1996** NONE 00.0	NAVFAC - EFA WEST K. SPIELMAN DISTRIBUTION	SUBMISSION OF THE DRAFT TREATABILITY STUDY (TS) WORK PLAN (WP), INTRINSIC SEDIMENT PROCESSES STUDY (W/ OUT ENCLOSURE) [SEE AR #1331 - DRAFT WORK PLAN]	ADMIN RECORD	SEDIMENT TS WP	002 017	CHOICE IMAGING SOLUTIONS 181-03-0179 35 OF 46 SW060420-01 41074200
N00236 / 000679 TC.A021.10075 MM N68711-00-D-0005 00009	06-16-2003 **09-17-1996** DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	17 SEPTEMBER 1996 MONTHLY TRACKING MEETING MINUTES FOR ENVIRONMENTAL ACTIONS (INCLUDES ATTENDANCE LIST AND AGENDA) [MISSING ATTACHMENT C]	ADMIN RECORD INFO REPOSITORY	MTG MINS RAB	002 003 005 007 010 013 014 016 017 018 022	CHOICE IMAGING SOLUTIONS 181-03-0188 14 OF 17 SW060629-02 41031858
N00236 / 000019 NONE COMMENTS N62474-94-D-7420 00030	08-31-2000 **10-22-1996** DO 04	VARIOUS AGENCIES NAVFAC - WESTERN DIVISION	COMPILED COMMENTS ON DRAFT TREATABILITY STUDY WORKPLAN, INTRINSIC SEDIMENT PROCESSES STUDY (INCLUDES COMMENTS ON DRAFT SITE SPECIFIC HEALTH & SAFETY PLAN)	ADMIN RECORD	METALS PAH PCB SITE SOIL SVOC VOC	002 017	CHOICE IMAGING SOLUTIONS 181-03-0179 1 OF 46 SW060123-01 41074200

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N00236 / 001468 EFAW SER 1831.4/L7049 COMMENTS N62474-94-D-7430 00037	11-24-1999 **12-12-1996** DO 004 00.0	NAVFAC - EFA WEST K. SPIELMAN BERKELEY ENV. RESTORATION CENT J. HUNT	COMMENTS ON THE DRAFT INTRINSIC SEDIMENT PROCESSES STUDY AT SITES 2 AND 17 WORK PLAN (W/ ENCLOSURES)	ADMIN RECORD	COMMENTS SEDIMENT WP	002 017	CHOICE IMAGING SOLUTIONS 181-03-0179 38 OF 46 SW060420-01 41074200
N00236 / 001394 RPT N62474-94-D-7430 01000	11-24-1999 **02-01-1997** 00004 00.0	BERC MABEY, WILLIAM NAVY SPIELMAN, KEN	FINAL TREATABILITY STUDY (TS) WORK PLAN (WP), INTRINSIC SEDIMENT PROCESSES STUDY, SITES 2 AND 17 - REVISION 1	ADMIN RECORD	SEDIMENT TS WP	002 017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 37 OF 46 BOX 37 - 03/28/06 41074200
N00236 / 000682 TC.A021.10075 MM N68711-00-D-0005 00010	06-16-2003 **02-18-1997** DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	18 FEBRUARY 1997 MONTHLY TRACKING MEETING MINUTES FOR ENVIRONMENTAL ACTIONS (INCLUDES ATTENDANCE LIST AND AGENDA)	ADMIN RECORD INFO REPOSITORY	MTG MINS TPH	002 003 005 007 014 017 022	CHOICE IMAGING SOLUTIONS 181-03-0188 14 OF 17 SW060629-02 41031858
N00236 / 001469 LTR N62474-94-D-7430 00001	11-24-1999 **03-25-1997** 00004 00.0	NAVY SPIELMAN, KEN BERC HUNT, JAMES	ACCEPTANCE OF THE INTRINSIC SEDIMENT PROCESSES STUDY AT SITE 2 AND 17 WORK PLAN (WP)	ADMIN RECORD	SEDIMENT WP	002 017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 38 OF 46 BOX 38 - 03/28/06 41074200

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N00236 / 001401 RESP N62474-88-D-5086 00100	11-24-1999 **04-29-1997** 00107 00.0	PRC NAVY BERNHARD, TERESA	RESPONSE TO COMMENTS FOR THE DRAFT REVISED 02 OPERABLE UNIT 4 (OU 4) ECOLOGICAL RISK ASSESSMENT (ERA) AND DRAFT OU 4 FOLLOW-ON ECOLOGICAL ASSESSMENT (EA) WORK PLAN/	ADMIN RECORD	EA ERA SP WP	017 020 OU 4	SOUTHWEST DIVISION - BLDG. 1
N00236 / 001381 RESP NONE 00003	11-24-1999 **04-30-1997** NONE 00.0	NAVY BERNHARD, TERESA DTSC LANPHAR, THOMAS	RESPONSE TO COMMENTS FOR THE DRAFT REVISED 02 OPERABLE UNIT 4 (OU 4) ECOLOGICAL ASSESSMENT (EA) AND DRAFT OPERABLE UNIT 4 (OU 4) FOLLOW-ON ECOLOGICAL ASSESSMENT (EA)	INFO REPOSITORY	EA SP WP	017 020 OU 4	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 36 OF 46 BOX 36 - 03/15/06 41074200
N00236 / 001400 EFAW SER 18311TB/7015 CORRESP NONE 00003	11-24-1999 **04-30-1997** NONE 00.0	NAVFAC - EFA WEST T. BERNHARD DISTRIBUTION	SUBMISSION OF THE RESPONSE TO COMMENTS FOR THE DRAFT REVISED 02 OPERABLE UNIT (OU) 4 ECOLOGICAL ASSESSMENT (EA) AND DRAFT OPERABLE UNIT (OU) 4 FOLLOW-ON ECOLOGICAL ASSESSMENT WORK PLAN/FIELD SAMPLING PLAN (W/OUT ENCLOSURE)	ADMIN RECORD	EA ERA SP WP	017 020 OU 4	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 37 OF 46 BOX 37 - 03/28/06 41074200
N00236 / 001481 PROJECT NO. USN97-032 RPT NONE 00500	11-24-1999 **02-01-1998** NONE 00.0	NEW WORLD TECHNOLOGY NAVFAC - EFA WEST	FINAL REPORT, RADIOLOGICAL CHARACTERIZATION SURVEY OF STORM DRAINS (SEE AR #1480 - EFA WEST TRANSMITTAL LETTER BY G. KIKUGAWA)	ADMIN RECORD	RADIOLOGICAL	017	CHOICE IMAGING SOLUTIONS 181-03-0179 38 OF 46 SW060504-01 41074200

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N00236 / 001567 NONE PLAN N62474-94-D-7609 00200	11-24-1999 **08-01-1998** 00147 00.0	TETRA TECH NAVFAC - EFA WEST G. KIKUGAWA	FINAL RADIOLOGICAL REMOVAL ACTION (RM) FOR IR SITES 1, 2, 5, 10, AND STORM DRAIN LINE F, IMPLEMENTATION WORK PLAN (WP) TECHNICAL SPECIFICATIONS (SEE AR #1566 - EFA WEST TRANSMITTAL LETTER BY G. KIKUGAWA)	ADMIN RECORD	RADIOLOGICAL RM SPECS WP	001 002 005 010 017	CHOICE IMAGING SOLUTIONS 181-03-0179 40 OF 46 SW060504-02 41074200
N00236 / 001568 NONE RPT N62474-94-D-7609 00008	11-24-1999 **08-01-1998** 00147 00.0	TETRA TECH EM INC. NAVFAC - EFA WEST G. KIKUGAWA	FINAL RADIOLOGICAL REMOVAL ACTION (RM) FOR IR SITES 1, 2, 5, 10, AND STORM DRAIN LINE F, IMPLEMENTATION WORK PLAN (WP) DRAWINGS (SEE AR #1566 - EFA WEST TRANSMITTAL LETTER BY G. KIKUGAWA)	ADMIN RECORD	PLANS RADIOLOGICAL RM WP	001 002 005 010 017	CHOICE IMAGING SOLUTIONS 181-03-0179 40 OF 46 SW060504-02 41074200
N00236 / 000036 NONE PLAN N62474-94-D-7609 00050	11-20-2000 **08-06-1998** 00124	TETRA TECH EM INC. P. BOUCHER NAVFAC - WESTERN DIVISION	DRAFT ECOLOGICAL RISK ASSESSMENT, QUALITY ASSURANCE PROJECT PLAN - BREAKWATER BEACH, PIER AREA AND THE SEAPLANE LAGOON	ADMIN RECORD INFO REPOSITORY	DQO ERA QAPP	017 020 024 OU 4	SOUTHWEST DIVISION - BLDG. 110 BX-001
N00236 / 001593 LTR NONE 00002	11-24-1999 **12-28-1998** NONE 00.0	BERC HUNT, JAMES DTSC CASSA, MARY ROSE	DRAFT TECHNICAL REPORTS, INTRINSIC SEDIMENT PROCESSES STUDY, SITES 2 AND 17; BERKELEY ENVIRONMENTAL RESTORATION CENTER'S (BERC) LETTER TO REVIEWERS	ADMIN RECORD	SEDIMENTS	002 017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 42 OF 46 BOX 42 - 04/05/06 41074200

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N00236 / 001592 LTR NONE 00001	11-24-1999 **12-29-1998** NONE 00.0	NAVY YEE, RONALD DTSC CASSA, MARY ROSE	SUBMISSION OF THE DRAFT TECHNICAL REPORTS, INTRINSIC SEDIMENT PROCESSES STUDY, SITES 2 AND 17; (1) BERC LETTER TO REVIEWERS, (2) APPENDIX B, (3) APPENDIX C, (4) A	ADMIN RECORD	BERC SEDIMENT	002 017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 42 OF 46 BOX 42 - 04/05/06 41074200
N00236 / 001594 RPT NONE 00250	11-24-1999 **12-29-1998** NONE 00.0	BERC HUNT, JAMES DTSC CASSA, MARY ROSE	DRAFT TECHNICAL REPORTS, INTRINSIC SEDIMENT PROCESSES STUDY, SITES 2 AND 17; (1) APPENDICES B-E, H, AND I	ADMIN RECORD	BERC SEDIMENT	002 017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 42 OF 46 BOX 42 - 04/05/06 41074200
N00236 / 001596 LTR NONE 00001	11-24-1999 **01-29-1999** NONE 00.0	NAVY YEE, RONALD DTSC CASSA, MARY ROSE	SUBMISSION OF THE DRAFT TECHNICAL REPORTS FOR THE INTRINSIC SEDIMENT PROCESSES STUDY, SITES 2 AND 17; (1) SAMPLING LOCATIONS IN SEAPLANE LAGOON, (2) APPENDIX A, (	ADMIN RECORD	SEDIMENT	002 017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 42 OF 46 BOX 42 - 04/05/06 41074200
N00236 / 001597 RPT NONE 00100	11-24-1999 **01-29-1999** NONE 00.0	BERC HUNT, JAMES DTSC CASSA, MARY ROSE	DRAFT TECHNICAL REPORTS FOR THE INTRINSIC SEDIMENT PROCESSES STUDY, SITES 2 AND 17; (1) SAMPLING LOCATIONS IN SEAPLANE LAGOON, (2) APPENDIX A, (3) APPENDIX F, AND	ADMIN RECORD	SEDIMENT	002 017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 42 OF 46 BOX 42 - 04/05/06 41074200

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N00236 / 001600 ROD N62474-94-D-7430 00035	11-24-1999 **02-08-1999** 00004 00.0	BERC HUNT, JAMES DTSC YEE, RONALD	PRELIMINARY DRAFT FINAL TREATABILITY STUDY (TS) REPORT, INTRINSIC SEDIMENTS PROCESSES STUDY AT WEST BEACH LANDFILL WETLANDS (SITE 2) AND SEAPLANE LAGOON (SITE 17)	ADMIN RECORD	LANDFILL SEDIMENTS TS	002 017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 42 OF 46 BOX 42 - 04/05/06 41074200
N00236 / 001599 LTR N62474-94-D-7430 00002	11-24-1999 **02-12-1999** 00004 00.0	NAVY YEE, RONALD DTSC CASSA, MARY ROSE	SUBMISSION OF THE PRELIMINARY DRAFT FINAL TREATABILITY STUDY (TS) REPORT, INTRINSIC SEDIMENTS PROCESSES STUDY AT WEST BEACH LANDFILL WETLANDS (SITE 2) AND SEAPLAN	ADMIN RECORD	LANDFILL SEDIMENTS TS	002 017	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 42 OF 46 BOX 42 - 04/05/06 41074200
N00236 / 001680 NONE MM NONE 00050	01-21-2000 **07-06-1999** NONE 10.4	NAVFAC - WESTERN DIVISION NAVFAC - WESTERN DIVISION	06 JULY 1999 DRAFT RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY (INCLUDES AGENDA, HANDOUTS AND SIGN-IN SHEETS) [PORTION OF THE SIGN-IN SHEET IS CONFIDENTIAL]	ADMIN RECORD CONFIDENTIAL	FS RAB RI TECH MEMO TPH UST	001 002 006 007 008 015 016 017 025 BLDG. 400 BLDG. 5 OU 1 OU 2 OU 3 OU 4	CHOICE IMAGING SOLUTIONS 181-03-0179 45 OF 46 SW060504-02 41074200

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N00236 / 001679 NONE MM NONE 00015	01-21-2000 **08-03-1999** NONE 10.4	NAVFAC - WESTERN DIVISION NAVFAC - WESTERN DIVISION	3 AUGUST 1999 RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY (INCLUDES AGENDA, HANDOUTS AND SIGN-IN SHEETS) [PORTION OF THE SIGN-IN SHEET IS CONFIDENTIAL]	ADMIN RECORD CONFIDENTIAL	FS PCB RAB RI UXO	001 002 003 004 005 009 010 013 014 017 019 020 021 022 023 024 025 1112 360 400 410 BLDG. 14 BLDG. 162 BLDG. 5 OU 1 OU 2 OU 3 OU 4	CHOICE IMAGING SOLUTIONS 181-03-0179 45 OF 46 SW060504-02 41074200

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N00236 / 001676 NONE MM NONE 00030	01-21-2000 **11-11-1999** NONE 10.4	NAVFAC - SOUTHWEST DIVISION NAVFAC - SOUTHWEST DIVISION	DRAFT RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY OF 11 NOVEMBER 1999 (INCLUDES 11/2/99 AGENDA, HANDOUTS AND SIGN-IN SHEETS)	ADMIN RECORD	EBS EIS FFA FOSET FOST GW PCB RAB UXO VOC	001 002 004 006 007 008 010 012 015 016 017 018 020 024 025 BLDG. 400 BLDG. 5 OU 1 OU 2 OU 3 OU 4	SOUTHWEST DIVISION - BLDG. 110 181-03-0179 45 OF 46 BOX 45 - 04/05/06 41074200
N00236 / 000589 TC.A021.10074 MM N68711-00-D-0005 00007	06-11-2003 **09-05-2000** DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	05 SEPTEMBER 2000 RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY	ADMIN RECORD	MTG MINS PAH RAB	001 002 003 005 010 011 012 014 017 024 027 OU 3	CHOICE IMAGING SOLUTIONS 181-03-0188 13 OF 17 SW060629-01 41031858

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N00236 / 000596 TC.A021.10074 MM N68711-00-D-0005 00019	06-11-2003 **04-03-2001** DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	03 APRIL 2001 RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY (INCLUDES MEETING AGENDA AND SIGN-IN SHEETS)	ADMIN RECORD	DDT MTG MINS PAH RAB	014 015 017 024 025 OU 1 OU 2 OU 4	CHOICE IMAGING SOLUTIONS 181-03-0188 13 OF 17 SW060629-01 41031858
N00236 / 000081 G477703 & SWDIV SER 06CA.MM/0354 PLAN GS-10F-0275K 00200	04-09-2001 **04-04-2001** NONE	BATTELLE NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL WORK PLAN - SEAPLANE LAGOON FISH TISSUE EVALUATION - INCLUDES SWDIV TRANSMITTAL LETTER BY M. MCCLELLAND (PORTIONS OF THE MAILING LIST IS CONFIDENTIAL)	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	DQO PAH PCB SVOC TPH VOC WORK PLAN	017	CHOICE IMAGING SOLUTIONS 181-03-0179 3 OF 46 SW060123-01 41074200
N00236 / 000442 PROJECT NO. G477703 & SWDIV SER 06CA.MM\0353 MEMO GS-10F-0275K 00112	11-12-2002 **04-04-2001** NONE	BATTELLE NAVFAC - SOUTHWEST DIVISION	DRAFT SITE CHARACTERIZATION MEMORANDUM FOR THE SEAPLANE LAGOON - INCLUDES SWDIV TRANSMITTAL LETTER BY M. MCCLELLAND, DRAFT OUTLINE FOR REMEDIAL INVESTIGATION FOR SEAPLANE LAGOON AND PIER AREA & ELECTRONIC VERSION (PORTION OF MAILING LIST IS CONFIDENTIAL)	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	DDD DDE DDT PAH SVOC TPH VOC	017	CHOICE IMAGING SOLUTIONS 181-03-0188 6 OF 17 BOX 6 - 04/27/06 41031858
N00236 / 000185 G477703 & SWDIV SER 06CA.MM\0528 PLAN GS-10F-0275K 00100	07-05-2001 **05-18-2001** NONE	BATTELLE NAVFAC - SOUTHWEST DIVISION	DRAFT FINAL SEAPLANE LAGOON FISH TISSUE EVALUATION WORK PLAN - INCLUDES SWDIV TRANSMITTAL LETTER BY M. MCCLELLAND [PORTION OF THE MAILING LIST IS CONFIDENTIAL]	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	DQO PAH PCB SVOC TPH VOC WORK PLAN	017	CHOICE IMAGING SOLUTIONS 181-03-0179 9 OF 46 SW060223-01 41074200

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
N00236 / 000608 TC.A021.10074 MM N68711-00-D-0005 00014	06-11-2003 **09-04-2001** DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	04 SEPTEMBER 2001 RESTORATION ADVISORY BOARD (RAB) MEETING SUMMARY (INCLUDES MEETING AGENDA AND SIGN-IN SHEETS)	ADMIN RECORD	MTG MINS PAH RAB TPH	003 007 009 011 016 017 020 021 024 028 029	CHOICE IMAGING SOLUTIONS 181-03-0188 13 OF 17 SW060629-01 41031858

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N00236 / 000367 SWDIV SER 06CA.AD/0624 PLAN NONE 00035	06-18-2002 **06-14-2002** NONE	NAVFAC - SOUTHWEST DIVISION A. DICK US EPA - SAN FRANCISCO A. COOK	TRANSMITTAL OF THE DRAFT SITE MANAGEMENT PLAN AMENDMENT IN ACCORDANCE WITH THE FEDERAL FACILITIES AGREEMENT FOR ACTIVITY	ADMIN RECORD INFO REPOSITORY	BCT BRAC CHARACTERIZATI COMMENTS CRP FFA FS GW ORDNANCE RD RESPONSE RI ROD SEDIMENTS SMP SOIL TECH MEMO UXO WORK PLAN	001 002 006 007 008 009 013 014 015 016 017 019 020 022 023 024 025 026 027 028 029 AREA 1 AREA 2 AREA 3 OU 1 OU 2A OU 2B OU 2C OU 3 OU 4A OU 4B OU 4C OU 5 OU 6	SOUTHWEST DIVISION - BLDG. 110 181-03-0188 2 OF 17 BOX 2 - 04/21/06 41031858

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N00236 / 000409 PROJECT NO. G477703 RPT GS-10F-0275K 00250	08-28-2002 **08-14-2002** NONE	BATTELLE V. LAU NAVFAC - SOUTHWEST DIVISION	FINAL BREAKWATER BEACH/SEAPLANE LAGOON SUPPLEMENTAL AMPHIPOD TOXICITY STUDY SITE-SPECIFIC HEALTH AND SAFETY PLAN (PORTION OF THE EMERGENCY CONTACT LIST IS CONFIDENTIAL)	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	BTEX COPEC FSP METALS ORDNANCE PAH PCB SEDIMENTS SSHP TPH UXO	013 017 OU 2A	CHOICE IMAGING SOLUTIONS 181-03-0188 4 OF 17 SW060518-01 41031858

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N00236 / 000412 TC.0190.11423 - MOD. 2 RPT N62474-94-D-7609 00400	08-29-2002 **08-16-2002** 00190	TETRA TECH EM INC. G. FOULK NAVFAC - SOUTHWEST DIVISION	DRAFT SUPPLEMENTAL ENVIRONMENTAL BASELINE SURVEY (SEE AR #1054 - EBS)	ADMIN RECORD INFO REPOSITORY	ASBESTOS AST BCP BCT BGS BRAC CAA DDT EBS EIS EOD FOST FS GW HAZ WASTE LUST MEK NFA NPL ORDNANCE PAH PCB RCRA REMEDIAL ACTIO RFA RFI RI ROD SOIL SVOC SWMU TPH TSCA UST VOC	001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 019 020 021 022 023 024 025 026 027 028 029 OU 1 OU 2A OU 2B OU 2C OU 3 OU 4A OU 4B	SOUTHWEST DIVISION - BLDG. 1 181-03-0188 4 OF 17 BOX 4 OF 17 - CHECKED OUT BY L. O'CAMPO ON 9/22/04 (X 2-0969) 41031858

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					WATER	OU 4C OU 5 OU 6	
N00236 / 000470 SWDIV SER 06CA.AD/0357 RPT NONE 00030	02-06-2003 **01-16-2003** NONE	NAVFAC - SOUTHWEST DIVISION A. DICK U.S. EPA A. COOK	TRANSMITTAL OF SITE MANAGEMENT PLAN UPDATE (W/ ENCLOSURE)	ADMIN RECORD INFO REPOSITORY	PAH PESTICIDES	017 020 024 025 029 OU 1 OU 2A OU 2B OU 2C OU 3 OU 4A OU 4B OU 4C OU 5 OU 6	CHOICE IMAGING SOLUTIONS 181-03-0188 10 OF 17 SW060615-02 41031858
N00236 / 000995 TC.A021.10125 MM N68711-00-D-0005 00030	08-20-2003 **01-21-2003** DO 0021	TETRA TECH EM INC. NAVFAC - SOUTHWEST DIVISION	FINAL BASE REALIGNMENT AND CLOSURE (BRAC) CLEANUP TEAM (BCT) MONTHLY TRACKING MEETING MINUTES AFTER ACTION REPORT FOR THE 21 JANUARY 2003 - INCLUDES AGENDA, SIGN-IN SHEET, AND HANDOUT MATERIALS	ADMIN RECORD INFO REPOSITORY	MTG MINS PAH PCE TCE VC	001 005 007 009 011 013 014 015 016 017 020 021 027 028 029 OU 5	SOUTHWEST DIVISION - BLDG. 110 BX-001

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N00236 / 000269 PROJ. NO. G477703 RPT GS-10F-0275K 00500	02-06-2003 **01-28-2003** NONE	VARIOUS AGENCIES NAVFAC - SOUTHWEST DIVISION	DRAFT REMEDIAL INVESTIGATION REPORT FOR SEAPLANE LAGOON - INCLUDES ELECTRONIC APPENDICES	ADMIN RECORD INFO REPOSITORY	DDD DDE DDT HPAH LPAH PAH PCB SVOC TBT TOC TPH VOC	017	CHOICE IMAGING SOLUTIONS 181-03-0188 1 OF 17 SW060615-01 41031858
N00236 / 002411 FILE NO. 2199.9285(JCH) COMMENTS NONE 00003	08-21-2006 **05-27-2003** NONE	CRWQCB - OAKLAND J. HUANG NAVFAC - SOUTHWEST DIVISION A. DICK	LIMITED REVIEW AND COMMENTS ON REMEDIAL INVESTIGATION (RI) REPORT, SEAPLANE LAGOON	ADMIN RECORD	PCB RI TPH WATER	017	SOUTHWEST DIVISION - BLDG. 110 10/05/06

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N00236 / 000772 NONE PUB NOTICE NONE 00016	08-04-2003 **07-01-2003** NONE	NAVFAC - SOUTHWEST DIVISION M. MCCLELLAND PUBLIC INTEREST	ALAMEDA POINT FOCUS ENVIRONMENTAL JULY 2003 NEWSLETTER (PORTION OF PAGE 4 IS CONFIDENTIAL)	ADMIN RECORD CONFIDENTIAL		001 002 003 004 005 006 007 008 009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032	SOUTHWEST DIVISION - BLDG. 110 181-03-0188 16 OF 17 BOX 16 - 06/07/06 41031858

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N00236 / 001712 PROJ. NO. G477703 & SWDIV SER 06CA.AD/1263 MISC GS-10F-0275K 00300	09-19-2003 **09-08-2003** NONE	BATTELLE NAVFAC - SOUTHWEST DIVISION	RESPONSE TO COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION REPORT FOR SEAPLANE LAGOON - INCLUDES SWDIV TRANSMITTAL LETTER BY M. MCCLELLAND WITH CONFIDENTIAL DISTRIBUTION LIST	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS	017	SOUTHWEST DIVISION - BLDG. 110 BX-003
N00236 / 002453 NONE COMMENTS NONE 00009	08-23-2006 **10-08-2003** NONE	DTSC - BERKELEY M. LIAO NAVFAC - SOUTHWEST DIVISION A. DICK	REVIEW AND COMMENTS ON RESPONSE TO COMMENTS ON DRAFT REMEDIAL INVESTIGATION (RI) REPORT, SEAPLANE LAGOON (INCLUDES HERD COMMENTS BY J. POLISINI DATED 24 SEPTEMBER 2003)	ADMIN RECORD		017 OU 4B	SOUTHWEST DIVISION - BLDG. 110 10/05/06
N00236 / 002452 NONE COMMENTS NONE 00003	08-23-2006 **10-28-2003** NONE	CA DEPT. OF FISH AND GAME C. HUANG DTSC - BERKELEY M. LIAO	REIVEW AND COMMENTS ON DRAFT REMEMDIAL INVESTIGATION (RI) REPORT, SEAPLANE LAGOON AND RESPONSE TO COMMENTS ON DRAFT RI REPORT	ADMIN RECORD	RI WATER	017	SOUTHWEST DIVISION - BLDG. 110 10/05/06
N00236 / 001754 G477703 & SWDIV SER 06CA.GL/1546 CORRESP GS-10F-0275K 00022	01-14-2004 **12-04-2003** NONE	NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA U.S. EPA - SAN FRANCISCO A. COOK	ADDITIONAL RESPONSES TO COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION (RI) REPORTS FOR THE SEAPLANE LAGOON AND THE SKEET RANGE{PORTION OF MAILING LIST IS CONFIDENTIAL}	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS RI	017 029	SOUTHWEST DIVISION - BLDG. 110 06/07/06

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N00236 / 001768 SWDIV SER 06CA.DN/0125 CORRESP NONE 00012	03-01-2004 **12-10-2003** NONE	NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA U.S. EPA - SAN FRANCISCO A. COOK	10 DECEMBER 2003 MEETING MINUTES TO DISCUSS THE NAVY'S RESPONSE TO AGENCY COMMENTS (RTC) ON THE DRAFT SKEET RANGE REMEDIAL INVESTIGATION	ADMIN RECORD INFO REPOSITORY	COMMENTS MTG MINS RI	001 017 029	SOUTHWEST DIVISION - BLDG. 110 06/07/06
N00236 / 002537 NONE COMMENTS NONE 00003	09-19-2006 **01-12-2004** NONE	U.S. FISH AND WILDLIFE SERVICE D. HARLOW NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	REVIEW AND COMMENTS ON RESPONSE TO COMMENTS ON DRAFT REMEDIAL INVESTIGATION (RI) REPORT, SEAPLANE LAGOON	ADMIN RECORD	COPEC DDX PCB PRG RI RTC SUF TRV	017	SOUTHWEST DIVISION - BLDG. 110 10/05/06
N00236 / 001858 SWDIV SER. 06CA.DN/0572 LTR NONE 00003	08-16-2004 **05-27-2004** NONE	NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA U.S. EPA - SAN FRANCISCO A. COOK	CHANGES MADE TO THE DRAFT FINAL REMEDIAL INVESTIGATION REPORT FOR SEAPLANE LAGOON [PORTION OF MAILING LIST IS CONFIDENTIAL]	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	COMMENTS PCB	017	SOUTHWEST DIVISION - BLDG. 110 07/14/06
N00236 / 001860 SWDIV SER 06CA.DN\0685 & SER 06CA.DN\0572 RPT NONE 00200	08-16-2004 **06-01-2004** NONE	BATTELLE NAVFAC - SOUTHWEST DIVISION	FINAL REMEDIAL INVESTIGATION REPORT FOR THE SEAPLANE LAGOON [INCLUDES SWDIV TRANSMITTAL LETTER BY T. MACCHIARELLA] {PORTION OF THE MAILING LIST IS SENSITIVE, CD COPY OF APPENDICES A THROUGH I ENLCOSED}	ADMIN RECORD INFO REPOSITORY SENSITIVE		017	CHOICE IMAGING SOLUTIONS SW060814-02

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N00236 / 002099 NONE LTR NONE 00001	08-22-2005 **06-29-2004** NONE	U.S. FISH AND WILDLIFE SERVICE B. STANTON NAVFAC - SOUTHWEST DIVISION V. LAU	E-MAIL PROVIDING THE U.S. FISH AND WILDLIFE SERVICE CONCURRENCE WITH NO FURTHER ACTION (NFA) ON DRAFT FINAL REMEDIAL INVESTIGATION (RI) REPORTS FOR SEAPLANE LAGOON AND SKEET RANGE	ADMIN RECORD INFO REPOSITORY	NFA RI	017 029	CHOICE IMAGING SOLUTIONS SW060921-03
N00236 / 002439 NONE COMMENTS NONE 00004	08-22-2006 **02-01-2005** NONE	ALAMEDA REUSE & REDVPMT. AUTH. D. POTTER BRAC PMO WEST T. MACCHIARELLA	REVIEW AND COMMENTS ON DRAFT FEASIBILITY STUDY (FS) REPORT, SEAPLANE LAGOON	ADMIN RECORD INFO REPOSITORY	FS	017	SOUTHWEST DIVISION - BLDG. 110 10/05/06
N00236 / 002440 NONE COMMENTS NONE 00004	08-22-2006 **02-17-2005** NONE	RAB L. LOIZOS BRAC PMO WEST T. MACCHIARELLA	RESTORATION ADVISORY BOARD (RAB) COMMENTS ON DRAFT FEASIBILITY STUDY (FS) REPORT, SEAPLANE LAGOON	ADMIN RECORD INFO REPOSITORY	FS RAB	017	SOUTHWEST DIVISION - BLDG. 110 10/05/06
N00236 / 002445 FILE NO. 2199.9285(NLF) COMMENTS NONE 00003	08-22-2006 **03-02-2005** NONE	CRWQCB - OAKLAND N. FEGER NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	REVIEW AND COMMENTS ON DRAFT FEASIBILITY STUDY (FS) REPORT, SEAPLANE LAGOON	ADMIN RECORD INFO REPOSITORY	FS PCB	017	SOUTHWEST DIVISION - BLDG. 110 10/05/06

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UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
N00236 / 002533 NONE COMMENTS NONE 00014	09-19-2006 **03-15-2005** NONE	DTSC - SACRAMENTO M. LIAO BRAC PMO WEST T. MACCHIARELLA	REVIEW AND COMMENTS ON DRAFT FEASIBILITY STUDY (FS), SEAPLANE LAGOON (INCLUDES HERD COMMENTS BY J. POLISINI DATED 2 FEBRUARY 2005 AND DHS REVIEW AND NO COMMENTS BY D. BAILEY DATED 27 JANUARY 2005) [PORTION OF THE MAILING LIST IS SENSITIVE]	ADMIN RECORD INFO REPOSITORY SENSITIVE	DDT DDX FS PCB SOIL VOC	017	SOUTHWEST DIVISION - BLDG. 110 10/05/06
N00236 / 002116 NONE COMMENTS NONE 00002	09-12-2005 **07-06-2005** NONE	CRWQCB - SAN FRANCISCO J. HUANG NAVFAC - SOUTHWEST DIVISION T. MACCHIARELLA	COMMENTS ON DRAFT FINAL FEASIBILITY STUDY (FS) REPORT AT SEAPLANE LAGOON (PORTION OF THE MAILING LIST IS SENSITIVE)	ADMIN RECORD INFO REPOSITORY SENSITIVE	COMMENTS FS	017	CHOICE IMAGING SOLUTIONS SW060825-05
N00236 / 002044 GS-10F-0275K & BRAC SER BPMOW.DN/0764 RPT N47408-01-D-8207 00500	06-03-2005 **07-22-2005** NONE	BATTELLE BRAC PMO WEST	FINAL FEASIBILITY STUDY (FS) REPORT FOR SEAPLANE LAGOON (INCLUDES REPLACEMENT PAGES CONVERTING DRAFT FINAL DATED 5/27/05 TO FINAL AND BRAC PMO WEST TRANSMITTAL LETTER BY T. MACCHIARELLA) [PORTION OF MAILING LIST IS CONFIDENTIAL]	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	DDD DDE DDT FS HCI HDPE PAH PCB TBT TPH VOC	017	CHOICE IMAGING SOLUTIONS SW060825-05
N00236 / 002307 BRAC SER BPMOW.DN/0988 CORRESP NONE 00005	05-18-2006 **07-22-2005** NONE	BRAC PMO WEST T. MACCHIARELLA USEPA - SAN FRANCISCO A. COOK	TRANSMITTAL OF REPLACEMENT PAGES CONVERTING THE DRAFT FINAL DATED 27 MAY 2005 TO FINAL FEASIBILITY STUDY (FS) REPORT FOR SEAPLANE LAGOON (W/OUT ENCLOSURES) [SEE AR #2044 - FINAL FEASIBILITY STUDY REPORT] {REPLACEMENT PAGES WERE INSERTED IN THE DOCUMENT}	ADMIN RECORD CONFIDENTIAL INFO REPOSITORY	FS	017	SOUTHWEST DIVISION - BLDG. 110 08/15/06

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N00236 / 002117 NONE RESPONSE NONE 00002	09-12-2005 **08-26-2005** NONE	BRAC PMO WEST C. DOMINGO CRWQCB - SAN FRANCISCO J. HUANG	ELECTRONIC MAIL PROVIDING RESPONSE TO RWQCB COMMENTS ON DRAFT FINAL FEASIBILITY STUDY (FS) REPORT AT SEAPLANE LAGOON	ADMIN RECORD INFO REPOSITORY	FS RESPONSE	017	CHOICE IMAGING SOLUTIONS SW060825-05
N00236 / 002136 BRAC SER BPMOW.CD\1289 RPT NONE 00050	10-19-2005 **10-01-2005** NONE	BRAC NAVFAC - SOUTHWEST DIVISION	DRAFT PROPOSED PLAN FOR SEAPLANE LAGOON [INCLUDES BRAC TRANSMITTAL LETTER BY T.L. MACCHIARELLA)	ADMIN RECORD INFO REPOSITORY	BRAC CERCLA DDX ERA FS LEAD PCB WATER	017	SOUTHWEST DIVISION - BLDG. 110 09/06/06
N00236 / 002175 NONE COMMENTS NONE 00004	12-14-2005 **11-28-2005** NONE	CRWQCB - OAKLAND J. HUANG BRAC PMO WEST T. MACCHIARELLA	REVIEW AND COMMENTS ON THE DRAFT PROPOSED PLAN FOR THE SEAPLANE LAGOON	ADMIN RECORD	ARAR BRAC COMMENTS PCB ROD WATER	017	CHOICE IMAGING SOLUTIONS SW060921-04
N00236 / 002191 NONE COMMENTS NONE 00007	01-10-2006 **12-16-2005** NONE	DTSC - BERKELEY M. LIAO BRAC PMO WEST T. MACCHIARELLA	REVIEW AND COMMENTS ON THE DRAFT PROPOSED PLANS FOR SEAPLANE LAGOON (INCLUDES COMMENTS BY HERD DATED 11/18/05)	ADMIN RECORD	HERD PCB PRG TMDL	017	CHOICE IMAGING SOLUTIONS SW060921-04

This Administrative Record (AR) Index includes references to documents which cite bibliography sources. These bibliographic citations are considered to be part of this AR but may not be cited separately in the index.

UIC No. / Rec. No. Doc. Control No. Record Type Contr./Guid. No. Approx. # Pages	Prc. Date Record Date CTO No. EPA Cat. #	Author Affil. Author Recipient Affil. Recipient	Subject	Classification	Keywords	Sites	Location FRC Access. No. FRC/SWDIV Box No. FRC Warehouse Loc. CD No.
N00236 / 002231 BRAC SER BPMOW.TH/0039 CORRESP NONE 00003	03-10-2006 **01-18-2006** NONE	BRAC PMO WEST T. MACCHIARELLA VARIOUS AGENCIES	REQUEST FOR EXTENSION ON SUBMITTAL DATES FOR THE FOLLOWING DRAFT FINAL PROPOSED PLANS (PP): SITE 14, SITE 17, SITE 28, OPERABLE UNIT 1 AND OPERABLE UNIT 5	ADMIN RECORD	BRAC FFA PP	014 017 028 OU 1 OU 5	CHOICE IMAGING SOLUTIONS SW060921-04
N00236 / 002195 BRAC SER BPMOW.CD\0038 RPT NONE 00030	01-26-2006 **02-01-2006** NONE	BRAC VARIOUS AGENCIES	DRAFT FINAL PROPOSED PLAN FOR FORMER SEAPLANE LAGOON (INCLUDES BRAC TRANSMITTAL LETTER BY T. MACCHIARELLA AND SUMMARY OF COMMENTS RECEIVED AND RESPONSES)	ADMIN RECORD	ARAR EPRG FS GW PCB	017	SOUTHWEST DIVISION - BLDG. 110 09/06/06
N00236 / 002578 NONE RPT NONE 00017	10-26-2006 **02-17-2006** NONE	BRAC PMO PUBLIC	FINAL PROPOSED PLAN - SEAPLANE LAGOON (PER BEC, THIS RECORD IS THE FINAL - COVER PAGE STATES DRAFT FINAL - 10/26/2006) (DRAFT FINAL IS AR # 2195, DATED 1 FEB 2006)	ADMIN RECORD INFO REPOSITORY		017	SOUTHWEST DIVISION - BLDG. 1
N00236 / 002302 NONE COMMENTS NONE 00001	05-11-2006 **02-24-2006** NONE	PUBLIC COMMENT B. BAACK TO WHOM IT MAY CONCERN	COMMENTS ON THE PROPOSED PLAN (PP) FOR SEAPLANE LAGOON	ADMIN RECORD	BRAC COMMENTS PP	017	CHOICE IMAGING SOLUTIONS SW060921-05

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N00236 / 002293 NONE COMMENTS NONE 00002	05-03-2006 **02-28-2006** NONE	SAN QUENTIN STATE PRISON J. CASTRO BRAC PMO WEST T. MACCHIARELLA	COMMENTS ON THE PROPOSED PLAN (PP) FOR SEAPLANE LAGOON	ADMIN RECORD	BRAC PP	017	CHOICE IMAGING SOLUTIONS SW060921-05
N00236 / 002257 NONE COMMENTS NONE 00006	03-29-2006 **03-14-2006** NONE	RAB CO-CHAIR G. HUMPHREYS BRAC T. MACCHIARELLA	REVIEW AND COMMENTS ON THE DRAFT FINAL PROPOSED PLAN FOR SEAPLANE LAGOON (INCLUDES LIST OF REFERENCES, MAP OF OU-2B VOC PLUME IN GROUNDWATER AND MAP OF TOTAL CHLORINATED VOCS IN GROUNDWATER)	ADMIN RECORD	COMMENTS GW HHRA PCB VOC	017	SOUTHWEST DIVISION - BLDG. 110 09/13/06
N00236 / 002301 NONE COMMENTS NONE 00002	05-11-2006 **03-17-2006** NONE	PUBLIC COMMENT P. LYNCH BRAC PMO WEST T. MACCHIARELLA	E-MAILED PUBLIC COMMENTS ON THE PROPOSED PLAN (PP) FOR SEAPLANE LAGOON	ADMIN RECORD	BRAC COMMENTS PP	017	CHOICE IMAGING SOLUTIONS SW060921-05

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UIC No. / Rec. No.									Location
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Record Type	Record Date	Author							FRC/SWDIV Box No.
Contr./Guid. No.	CTO No.	Recipient Affil.							FRC Warehouse Loc.
Approx. # Pages	EPA Cat. #	Recipient		Subject		Classification	Keywords	Sites	CD No.

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Attachment B

Public Notices

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Oakland Tribune

c/o ANG Newspapers
401 13th Street
Oakland, CA 94612
Legal Advertising
(800) 595-9595 opt.4

BATTELLE SCIENCE & TECHOLOGY
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ATTN: ACCTS PAYABLE,397 WASHINGTON ST
DUXBURY MA 02332

PROOF OF PUBLICATION

FILE NO.

In the matter of

PUBLIC MEETING

The Oakland Tribune

I am a citizen of the United States; I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the Legal Advertising Clerk of the printer and publisher of The Oakland Tribune, a newspaper published in the English language in the City of Oakland, County of Alameda, State of California.

I declare that The Oakland Tribune is a newspaper of general circulation as defined by the laws of the State of California as determined by this court's order, dated December 6, 1951, in the action entitled In the Matter of the Ascertainment and Establishment of the Standing of The Oakland Tribune as a Newspaper of General Circulation, Case Number 237798. Said order states that "The Oakland Tribune is a newspaper of general circulation within the City of Oakland, and the County of Alameda, and the State of California, within the meaning and intent of Chapter 1, Division 7, Title 1 [§§ 6000 et seq.], of the Government Code of the State of California. "Said order has not been revoked, vacated, or set aside.

I declare that the notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

2/22/06

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Wesley Manchester

Public Notice Advertising Clerk

Legal No. **0000622076**

The Department of the Navy Announces a
Public Meeting (March 1, 2006) and
30-Day Public Comment Period (February 17-March 17, 2006)
on the Proposed Plan for
Former Naval Air Station Alameda
Seaplane Lagoon (Site 17)

The U.S. Navy will be holding a Public Meeting and invites public comment on the preferred remedy identified for the cleanup of contaminated sediments at Seaplane Lagoon, also known as Installation Restoration Site 17, at the former Alameda Naval Air Station, Alameda, California.

Seaplane Lagoon is an enclosed lagoon on the southeastern corner of Alameda Point, which is located at the west end of the City of Alameda in Alameda County, CA. Untreated industrial wastewater and stormwater were discharged into SPL until 1975, when the direct discharge was terminated and a stormwater pollution prevention program was put in place. Subsequent investigations, including a Remedial Investigation completed in July 2004 concluded that sediment chemical concentrations in the northeast and northwest corners of the lagoon pose a potential threat to humans and the environment. In July 2005, the Navy completed a Feasibility Study of remedial alternatives. Based on the results of the Feasibility Study, the Navy has proposed a preferred alternative that involves dredging of the identified remediation areas (i.e., the northeast and northwest corners of the lagoon) to a uniform depth of 4 ft and disposing of the dredged and dewatered sediments at an off-site, permitted waste disposal facility. Sediment monitoring would be performed to verify the effectiveness of the remedy. This remedy would likely accommodate the expected redevelopment of the site as a commercial marina surrounded by a mixed-use marina-related district comprised of housing and industrial, commercial, recreational, and open waterfront space.

The Navy has issued a Proposed Plan pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) which summarizes the preferred alternative and is seeking public comment before making a final decision. Federal and state regulatory agencies concur with this Proposed Plan.

30-Day Public Comment Period

The U.S. Navy will be holding a **30-day public comment period from February 17, 2006 through March 17, 2006**. During this time, comments on the Proposed Plan will be accepted. Comments may be submitted orally or in writing at the public meeting, date and time listed below, or via e-mail: thomas.macchiarella@navy.mil, fax (619-532-9083), or mail, postmarked no later than March 17, 2006) to:
Mr. Thomas Macchiarella,
Department of the Navy,
BRAC Program Management Office West,
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

Public comments received during this period, or in person at the public meeting will be considered in the final decision-making process for Site 17.

Public Meeting

The Navy will present its Proposed Plan during a public meeting scheduled:
Date: **Wednesday, March 1, 2006**
Time: **6:30 p.m. - 8:00 p.m.**
Location: **Building 1, Room 201 at Alameda Point, California**

The Navy will provide visual displays and information on the environmental investigations conducted for Site 17. You will have an opportunity to ask questions and formally comment on the Navy's Proposed Plan.

For More Information

The public is encouraged to review the Proposed Plan document, as well as other site-related documents, at the information repositories located at:

Alameda Point,
950 West Mall Square, Building 1,
Rooms 240 and 241,
Alameda, CA 94502
510-747-7777

Alameda Public Library,
2200 A Central Ave,
Alameda, CA 94502
510-749-5800

The Department of the Navy Announces a Public Meeting (March 1, 2006) and 30-Day Public Comment Period (February 17-March 17, 2006) on the Proposed Plan for Former Naval Air Station Alameda Seaplane Lagoon (Site 17)

The U.S. Navy will be holding a Public Meeting and invites public comment on the preferred remedy identified for the cleanup of contaminated sediments at Seaplane Lagoon, also known as Installation Restoration Site 17, at the former Alameda Naval Air Station, Alameda, California.

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Department of the Navy,
BRAC Program Management Office West,
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

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Alameda Point
950 West Mall Square, Building 1,
Rooms 240 and 241
Alameda, CA 94502
510-747-7777

Alameda Public Library
2200 A Central Ave.
Alameda, CA 94502
510-749-5800

Legal Alameda Journal 3304
Publish February 17, 2006

Attachment C

Proposed Plan Public Meeting

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Sign-In Sheet Public Meeting for Former NAS Alameda
Seaplane Lagoon (Site 17) Proposed Plan – March 1, 2006

Name Resident or Affiliation	**Address** (Optional)	**How did you hear about this meeting?**				
		Mailer	Notice in the Alameda Journal	Notice in the Oakland Tribune	Word of Mouth	Other (Please list)
Name Claudia Richardson	Street City, State, Zip					NAVY
Name Valerie Jensen	Street CV City, State, Zip					EPA
Name Lynda Short Battelle	Street City, State, Zip					Navy
Name Ny Bunni Battelle	Street City, State, Zip					Navy
Name Thomas Macchiarella	Street BRAC PMO WEST City, State, Zip					Navy
Name Tor Lofstrom	Street DTSC City, State, Zip					
Name Mark Ripperda	Street City, State, Zip					EPA

Sign-In Sheet Public Meeting for Former NAS Alameda Seaplane Lagoon (IR Site 17) Proposed Plan – March 1, 2006

Name Resident or Affiliation	**Address** (Optional)	**How did you hear about this meeting?**				
		Mailer	Notice in the Alameda Journal	Notice in the Oakland Tribune	Word of Mouth	Other (Please list)
Name CAROL TROTTER	Street PO BOX 527		✓			
	City, State, Zip ALAMEDA 94501					
Name Antigonisky Bay Larry Goldway	Street Po Box 2230 94501					PM Remedy
	City, State, Zip					
Name Judy HUANG	Street SF BAY RWQCB					
	City, State, Zip					
Name Corrina Gould	Street PO Box 794	✓				
	City, State, Zip Alameda CA 94501					
Name Kathalina Fuentes	Street 251 Stardust Place #B	✓				
	City, State, Zip Alameda, CA 94501					
Name JOAN KONRAD	Street 42 INVINCIBLE CT	✓				
	City, State, Zip ALAMEDA 94501					
Name	Street					
	City, State, Zip					

INSTALLATION RESTORATION
SITE 17, SEAPLANE LAGOON

ALAMEDA POINT, CALIFORNIA
PUBLIC MEETING

Wednesday, March 1, 2006

Alameda City Hall West
950 W. Mall Square
Building 1
Community Conference Room
Alameda Point, California

Reported by: Valerie E. Jensen, CSR No. 4401

JAN BROWN & ASSOCIATES
CERTIFIED SHORTHAND REPORTERS
701 Battery Street, 3rd Floor
San Francisco, California 94111
(415) 981-3498

PARTICIPANTS

PRESENTERS:
THOMAS MACCHIARELLA, Navy BRAC Environmental Coordinator
NANCY BONNEVIE, Battelle

OTHER AGENCY, NAVY STAFF AND CONSULTANT REPRESENTATIVES:
LYNDA SHORT, Battelle
CLAUDIA RICHARDSON, Anteon
DOT LOFSTROM, Department of Toxic Substances Control
JUDY HUANG, Regional Water Quality Control Board
MARK RIPPERDA, U.S. Environmental Protection Agency

COMMUNITY MEMBERS AND INTERESTED PARTIES:
CAROL TROTTER
JOAN KONRAD
CORRINA GOULD
KATHALINA FUENTES

MARCH 1, 2006 6:50 P.M.

MR. MACCHIARELLA: Okay. Hello and thank you, everybody, for coming.

We just concluded our posterboard viewing and information discussion session, and now we're moving on to the formal presentations.

I have here the agenda.

First, I'd like to go through an introduction and overview of the Navy's Installation Restoration Program in general, and then I'll pass it off to Nancy Bonnevie for a summary of our proposed plan. And then I'd like to open up the floor for clarifying questions. And then, after that, we, the Navy, will be going into listening mode to receive public comments on the proposed plan.

My name is Thomas Macchiarella, and I'm the BRAC Environmental Coordinator for Alameda Point.

Tonight we're focused on Site 17, the Seaplane Lagoon, but I think it's important to put the Installation Restoration Program into perspective, so you can better understand the status of Site 17 in our process. So, I'd like to go through the Installation Restoration Program.

The program is managed by the Program

Management Office West, with support from the Southwest Division of the Naval Facilities Engineering Command. The Program Management Office West reports directly to the Deputy Assistant Secretary of the Navy for Installations and Environment.

For the BRAC PMO West, I'm the BRAC Environmental Coordinator for Alameda Point, and I have the responsibility and authority to conduct the IR Program. I'm also the Navy's representative on the BRAC cleanup team, which is a team composed of the Navy and regulatory agencies working collaboratively towards completing the Installation Restoration Program and satisfying the necessary regulatory requirements.

Next slide, please.

The purpose of the Navy's Installation Restoration Program is summarized by these bullets. I think number two is the key bullet, but I'll go through them in order. To identify, investigate, assess and characterize and clean up hazardous substances at Alameda Point, to reduce the risk to human health and the environment from past waste disposal operations and hazardous material spills, to be consistent with CERCLA, or the Comprehensive Environmental Response Compensation and Liability Act, sometimes known as "Super Fund" in the private

sector. And, of course, our goal is to move all our sites in the Installation Restoration Program towards site closure.

As you can see, site closure in this figure on the bottom is the goal.

And here is our CERCLA process. I'll walk through the various steps quickly.

The Preliminary Assessment Site Inspection at the top of the page, that's generally a site discovery phase. It involves interviews, record searches and sometimes initial media or soil and groundwater sampling.

A Remedial Investigation/Feasibility Study, or RI/FS, includes a detailed investigation and characterization of soil and groundwater at various sites as well as an analysis of alternatives for cleanup.

The proposed plan, which is where we are now for Site 17, is a presentation of the Navy's preferred alternative, and it provides an opportunity for public comment.

The Record of Decision comes immediately after the proposed plan and documents the selected alternative. Prior to selecting the alternative, the Navy will consider public comments and, in addition

to that, the ROD will include a Responsiveness Summary which addresses those public comments in the Record of Decision.

More specifically at Alameda Point, there are 35 sites in our Installation Restoration Program. The Naval Air Station Alameda -- otherwise known as Alameda Point -- is listed on the National Priorities List, and the United States Environmental Protection Agency is the lead regulatory agency.

The BRAC cleanup team, which is composed of the United States EPA, the California Department of Toxic Substance Control and the San Francisco Bay Regional Water Quality Control Board and the Navy, meets at least monthly. And members of our BRAC cleanup team are present at the meeting tonight.

A Federal Facilities Agreement exists between the Navy and the BRAC cleanup team members. The FFA and the BCT are really two concepts which streamline the cleanup process by sharing timely and thorough coordination among the parties.

The site management plan is a detailed road map, including schedules and milestones, for each of the Installation Restoration sites and is based on input from the regulatory agencies, community and the Navy and available resources.

Next slide, please.

So, where we are now for Site 17 is the proposed plan. The proposed plan provides for community involvement. And the dates for accepting community comments on this proposed plan are between February 17 and March 17. The proposed plan summarizes the environmental efforts to date, including all the investigations done at the site, and proposes a decision, which is called its preferred alternative.

After the proposed plan, we will prepare a Record of Decision. And after the Record of Decision, as I described earlier, we'll prepare a remedial design and conduct a remedial action or the actual cleanup.

Members of the public are free to provide comments this evening when we reach that part of the agenda. Of course, you may also submit comments by fax, e-mail or regular mail to my address, which is shown in the proposed plan.

Before we move on to a more detailed description of Site 17, are there any comments on the Installation Restoration Program in general?

Okay. Let me pass it over to Ms. Nancy Bonnevie, who will give you a summary of the proposed plan.

MS. BONNEVIE: Hello. As Thomas indicated,

I'm Nancy Bonnevie. I work for Battelle as a contractor to the Navy for the site. And tonight I'm going to give you a quick summary of the proposed plan for the site.

Just a beginning overview of what I'll be telling you.

First, quick background information on the Seaplane Lagoon, a summary of the environmental assessments that were conducted at the site, an overview of the areas that are being proposed for remediation, a summary of the remedial alternatives that have been proposed, a summary of the preferred alternative and then, also, a quick summary of the next steps in the process.

So, just quickly, this is the Seaplane Lagoon here, and that's where it is in relation to the rest of Alameda Point. It's a 110-acre manmade lagoon located in the south-central portion of the former Naval Air Station.

A quick summary of the characteristics. I'm assuming you all are familiar with this.

In general, it's 18 to 20 feet deep. It's completely enclosed, except for an 800-foot opening in the southern portion of the breakwater. In general, the ecology -- the species we were looking at were primarily benthic invertebrates -- by which I

means clams -- and then, also, fish and aquatic birds.
For the quick overview of the history.
It was constructed in the 1930s. It was originally used to dock seaplanes. The primary source of waste at the lagoon is wastewater or stormwater through some storm sewer outfalls. Then, in 1975, the Alameda Point Pollution Program was initiated, which was an attempt to control the stormwater discharge to the lagoon.
The potential future uses for the site that are planned right now. Potentially, a private or public boat marina, possibly ferry service, yacht facilities and the other things that are listed up there.
This is an overview of the Installation Restoration process Thomas just described for you, the specifics for Seaplane Lagoon.
So, the preliminary site inspection was conducted in 1983. Since that time, there have been multiple investigations, culminating in a Remedial Investigation report that was completed in May of 2004.
The conclusions of the RI suggested a Feasibility Study was required. That was completed in July 2005.

on potential impacts -- primarily to fish and birds -- associated with concentrations of DDT, cadmium and PCBs and, also, potential risks to humans from consumption of fish containing PCBs. And then, in addition, although not identified as a primary risk driver, there were some concentrations of radium 226 identified in one of the corners of the lagoon. So, that was investigated a little more as well.
So, based on the results of the IR, a Feasibility Study was formally conducted.
The first step of the Feasibility Study was to identify the remedial action objectives for the site. The three objectives that were identified were the protection of fish-eating birds -- some examples of those are least terns, cormorants and scoters -- also, the protection of fish from exposure to cadmium, and then an attempt to minimize the potential for human uptake of PCBs through the consumption of fish.
Remediation goals were developed to achieve these remedial action objectives. Specific numerical goals were developed for PCBs, DDX -- which is the sum of DDT and its breakdown products -- and then, also, for cadmium. Achieving these goals based on the data that we have now will also result in an

Currently, we're here in the proposed plan stage. And then, from here, we'll move into the Record of Decision.
So, a quick summary of the investigations.
As I said before, the preliminary investigations were in 1983. There have been -- well, 1983 and 1992. Those investigations indicated that further study was needed.
Between 1993 and 2002 there were five sediment studies that were done, extensive sediment sampling, throughout the lagoon to evaluate pollutants both at surface and at depth. In addition to the sediment analyses, bioassays were conducted, both toxicity tests and bioaccumulation tests. In addition, in 2001 fish were collected from the lagoon to evaluate tissue concentrations in fish and to look at potential food web transfers.
And then, based on these investigations, it was determined that a Remedial Investigation was required. As I said before, that was conducted in 2004.
Based on the results of the Remedial Investigation, it was determined that the primary areas of concern in the lagoon were the two corners -- the northeast and northwest corners. That was based

area-weighted average of 200 parts per billion or less, which will address the human health concerns.
This is a summary of the areas that were identified based on the remediation goals. The areas shaded in blue are the locations where the numerical goals are exceeded in the surface sediments. In general, sediment concentrations exceeding remedial goals tend to be no more than two to four feet below the sediment surface.
So, the FS identified potential remedial alternatives for addressing the contamination. Seven alternatives were identified.
The first is a no-action alternative, which would mean no remediation occurred.
The second is monitored natural recovery. Again, no remediation would occur, but there would be ongoing monitoring to confirm that the areas were being cleaned up through deposition and other natural activities.
Alternative three is isolation capping using clean cap.
Four, a thin-layer cap that also promotes biological activity and natural recovery processes.
Alternative five, which would be uniform dredging to four feet with dewatering on site and

1 upland disposal at a landfill.
2 Alternative six would be focused dredging
3 that would focus only on specific areas within the
4 proposed remediation areas where the goals were
5 actually exceeded and then, also, dewatering and
6 upland disposal.
7 And then alternative seven, which was
8 a focused dredging but then with treatment of the
9 dredged material and potential beneficial reuse.
10 Each of these seven criteria were
11 subjected to a preliminary evaluation that focused
12 on three specific criteria. First, the overall
13 effectiveness, the implementability and then the
14 cost.
15 Based on these preliminary alternatives,
16 four of the seven were retained for a more detailed
17 evaluation. And that's the no further action, the
18 thin-layer capping, the uniform dredging and then,
19 also, the focused dredging.
20 The detailed evaluation -- these follow
21 criteria that are required as part of the CERCLA
22 process in the FS. The first criteria, the
23 threshold criteria -- these must be satisfied in
24 order for an alternative to continue to be considered.
25 All alternatives that meet these criteria

1 are then evaluated by the primary balancing criteria,
2 which are used to weigh trade-offs between different
3 alternatives. And then the modifying criteria, which
4 are considered after all comments are received and
5 may prompt modifications to the preferred remedy.
6 So, for the threshold criteria, which
7 are protection of human health and the environment
8 and then compliance with ARARS -- and ARARS are the
9 regulatory criteria, which is the Clean Water Act
10 and things like that that govern the activities --
11 no further action was determined to not be compliant
12 with the threshold criteria. It was felt that leaving
13 the sediments without treatment at all would not be
14 protective of human health and would not be compliant
15 with the ARARS.
16 The other criteria -- I mean, the other
17 alternatives all meet each of the three criteria or
18 the two criteria.
19 So, we moved on to the modifying
20 criteria, which are the long-term effectiveness,
21 reduction in toxicity, mobility and volume,
22 short-term effectiveness, implementability and cost.
23 Based on our evaluation of the modifying criteria,
24 alternative five appeared to have the best trade-offs.
25 It was determined to be -- all of them ranked fairly

1 similarly, but it was felt that alternative five
2 would be slightly more effective in reducing the
3 toxicity.
4 So, just a bit of a more-detailed summary
5 of alternative five.
6 Again, it would be a uniform dredging
7 to four feet throughout the proposed remediation
8 areas that I showed you on the previous slide.
9 There would be monitoring during the dredging
10 activities to ensure that the water quality was
11 acceptable during the activities and then post
12 dredging sampling to confirm that the remedial
13 goals were met. The dredged materials would be
14 placed in drying beds on site for dewatering and
15 then disposed off site in a Class II landfill.
16 So, the conclusions.
17 As I said before, the primary areas of
18 concern appear to be the sediments in the northeast
19 and northwest corners. And alternative five was
20 identified as the preferred alternative for addressing
21 these contamination -- for the reasons stated, that
22 it achieves the stated remediation goals. As I said
23 earlier, it reduces the average concentration of total
24 PCBs to less than 0.2 milligrams per kilogram. It
25 also addresses the highest concentrations of radium

1 226, meets the threshold criteria and is expected to
2 fully comply with the statutory requirements set by
3 CERCLA and has the concurrence of the BCT.
4 So, the next steps.
5 As Thomas said, it's the proposed plan
6 phase, which has opportunities for community
7 involvement, such as this meeting, submitting public
8 comments during the public comment period. I also
9 want to note that public comments can be accepted
10 on all of the alternatives, not just the preferred
11 alternative.
12 And then the next step will be the
13 preparation of the ROD for the site, which, as
14 Thomas mentioned, will include a Responsiveness
15 Summary containing responses to comments received
16 on the proposed plan.
17 Next one.
18 If you need more information, contact Thomas.
19 MR. MACCHIARELLA: Thank you, Ms. Bonnevie.
20 Okay. Moving on. We're right on schedule.
21 The next segment on the agenda is a time
22 for clarifying questions before we move on to public
23 comment.
24 Do we have any clarifying questions on what
25 you've seen tonight or anything about the Seaplane

1 Lagoon?
2 MS. TROTTER: Yes. I have a pretty
3 elementary one.
4 So, there's X-amount of feet of water, and
5 then there's seven feet of sediment?
6 MR. MACCHIARELLA: There's --
7 MS. TROTTER: Then there's another depth
8 under that, another --
9 MR. MACCHIARELLA: Nancy, why don't you
10 explain for us the depth of sediments?
11 MS. BONNEVIE: Yeah.
12 There's 18 to 20 feet of water, and then,
13 really, we'd be talking about dredging the top four
14 feet of sediment.
15 MS. TROTTER: Okay. Where is the bottom?
16 MR. MACCHIARELLA: Well, there's --
17 MS. TROTTER: I guess that would be where
18 the sewer -- I don't know if the sewers were sunk or
19 if they were above.
20 MR. MACCHIARELLA: The storm drains, you
21 mean?
22 MS. TROTTER: I'm sorry. Storm drains.
23 MR. MACCHIARELLA: The storm drains were
24 near the surface of the water.
25 MS. TROTTER: Near the surface.

1 So, the sediment is less and less toxic as
2 you go down?
3 MR. MACCHIARELLA: Yes.
4 MS. BONNEVIE: Yes.
5 MR. MACCHIARELLA: So, we plan to remove,
6 we're proposing to remove, the upper four feet of the
7 sediments.
8 MS. TROTTER: Okay. Now, 18 feet sounds
9 like quite a bit. I'm thinking 18 feet of our dock.
10 MS. BONNEVIE: It varies throughout the
11 lagoon. I mean, near the shoreline -- at the northern
12 shoreline it probably isn't 18 feet the whole way, but,
13 in general, throughout the lagoon, the average is that.
14 MS. TROTTER: It's deeper than I thought it
15 was.
16 MR. MACCHIARELLA: Any other clarifying
17 questions?
18 MR. RIPPERDA: Just a...
19 When you're doing the dredging, you're
20 going to be sampling at the bottom of the dredging.
21 So, you're not taking just four feet. But you'll
22 start by taking four feet, and then you sample
23 beneath that. If that's still contaminated, you
24 keep going as far as you have to go to get to the
25 bottom of the contamination.

1 So, they're going to go as deep as they
2 have to go to get to the bottom of it.
3 MS. BONNEVIE: Right. Based on part of
4 the historical sampling, it wasn't just sampling the
5 surface; it was sampling at depth as well with cores.
6 So, based on that data, we believe that four feet will
7 remove the sediments that are above the remediation
8 goals.
9 MS. TROTTER: Okay. It went by before I
10 could see what it meant, but what is a Site 2 or a
11 Class II where the fill would go?
12 MS. BONNEVIE: The Class II landfill?
13 MS. TROTTER: Yes.
14 MR. MACCHIARELLA: Just a type of landfill
15 that can accept that type of sediment.
16 MS. TROTTER: Where is that?
17 MR. MACCHIARELLA: We'll select a landfill
18 in the future in the remedial design phase. So, we
19 haven't selected one yet.
20 MR. RIPPERDA: But there's not one in
21 Alameda or --
22 MS. LOFSTROM: One was in San Joaquin
23 County.
24 MS. BONNEVIE: I listed a few within a
25 certain radius of San Francisco, but, as Thomas said,

1 the final location won't be selected until the remedial
2 design phase.
3 MS. TROTTER: When it's dewatered, is that
4 just to reduce the volume or the weight or does it
5 actually reduce toxicity, also? By exposure?
6 MR. MACCHIARELLA: Primarily to reduce the
7 volume and mass.
8 And any water that we collect will be
9 tested before we remove the water. So, anything that's
10 in the water -- if there are any contaminants in the
11 water, then we'll treat that water before we dispose
12 of it.
13 MS. TROTTER: Okay.
14 MS. GOULD: As the sediment is drying out,
15 is it set out so that animals can get ahold of it or
16 on top of it, or birds? I mean, how is that done?
17 MR. MACCHIARELLA: We'll certainly have
18 an area fenced off where the drying beds are located.
19 We haven't decided yet where those will be.
20 Again, if we move forward with this preferred
21 alternative, in the remedial design stage is where we
22 would decide where to put these. In all likelihood,
23 it would be very close to the lagoon.
24 We'll certainly have an area fenced off.
25 MS. GOULD: How does it happen that the

1 toxicity in the fish go down, after you take sediment
2 out, and that it becomes okay for human consumption?
3 MR. MACCHIARELLA: A good question.
4 The fish eat the small critters off the
5 bottom, and then, eventually, certain birds eat
6 certain types of fish. And that's the pathway to
7 the birds.
8 MS. GOULD: Are there fish that are already
9 at a toxic level that shouldn't be consumed by humans?
10 And if so, how long will it take for all those fish to
11 be depleted by the birds that are going to eat them?
12 MR. MACCHIARELLA: Good question.
13 Nancy, can you tell us about the types of
14 fish that have been tested and whether or not those
15 are the types of fish that people catch to eat?
16 MS. BONNEVIE: The surveys that were
17 conducted were on what we refer to as "forage fish,"
18 meaning that they were -- we did a fairly extensive
19 survey, and the fish that we collected were primarily
20 small fish -- sculpins and gobies. They are small,
21 and they tend to be fish that are eaten more by birds
22 than by humans.
23 We actually weren't able to collect fish
24 that are typically consumed by humans in the lagoon.
25 We didn't find any.

1 We went ahead with the evaluation for human
2 health, based on those fish, as a conservative estimate
3 of what the potential risks might be to people, but it
4 actually was a more conservative estimate because we
5 were using whole body concentrations instead of filets
6 and smaller fish that tend to be more associated with
7 the sediment than the larger fish that people typically
8 consume.
9 MS. GOULD: Still, how do you determine that
10 the toxicity in the fish will go down? And at what
11 time would that happen?
12 MS. BONNEVIE: It's difficult to predict
13 exactly how long it will take, but if you -- the
14 sediment is the source of contamination to the fish.
15 So, if you remove the source of contamination, the
16 fish go through a process that's called depuration.
17 It means their bodies metabolize the contaminants
18 in their system, and it, essentially, cleans their
19 tissues.
20 So, if you remove the source of the
21 contamination so that they're not consuming more,
22 then, over time, their concentrations will decrease.
23 MS. GOULD: Are there signs out there now
24 or will there be signs saying that, if the fish are
25 in the lagoon, that you might not want to eat the fish?

1 MR. MACCHIARELLA: Judy, do you know anything
2 about the fish advisories in the area?
3 MS. HUANG: I believe the lagoon is posted
4 right now -- the entire Bay Area is, where there are
5 advisories about eating fish -- especially pregnant
6 women and children. There are recommendations of
7 not to exceed a certain amount -- which I can't recall
8 off the top of my head. So, Seaplane Lagoon, I believe,
9 is one of them but, without checking, I wasn't going to
10 say that. The entire bay is within the advisories.
11 What we are trying to do right now is to
12 remove one source, which is Seaplane Lagoon. The
13 question you're asking requires cleanup of all
14 different hot spots in the Bay Area. So, Seaplane
15 Lagoon is the first step.
16 MS. GOULD: I understand.
17 It said in one of the slides it would bring
18 the toxicity level of the fish down to the level --
19 MS. HUANG: To an advised --
20 MS. GOULD: I'm saying, how do we know
21 that? And how long will that take? We don't know.
22 MS. HUANG: We don't know. All we can
23 tell you is what we are doing here at Seaplane Lagoon
24 is removing the source and taking a step towards
25 the bay-wide fish advisories, because, obviously, the

1 Navy has no control over what they're doing in the
2 South Bay, you know, and Sacramento River runoff,
3 etcetera.
4 MS. GOULD: I understand that.
5 As part of the lagoon thing, I was looking
6 at the report that it would be brought down.
7 MS. BONNEVIE: The concentrations will be
8 reduced.
9 We did mathematical models to try to
10 predict what the fish tissue concentrations would
11 be based on the future concentrations of sediments.
12 It's a prediction because we can't -- I can't tell
13 you exactly when that would occur. But based on what
14 we know scientifically, we can predict what the tissue
15 concentrations will be once we reduce sediment
16 concentrations. Based on the mathematical models,
17 that's what we believe will happen.
18 And there will be monitoring to confirm
19 that that happens.
20 MS. GOULD: Okay. Thank you.
21 (To Ms. Fuentes) Oh, you had a question?
22 MR. MACCHIARELLA: Any other questions?
23 MS. FUENTES: No.
24 What about the clams? Yeah. What about
25 the clams?

MS. BONNEVIE: The clams issue that we had -- it was based on laboratory tests, bioaccumulation tests. There didn't appear to be risk elevated above the referenced conditions. Fish were more of an issue.

MS. TROTTER: There's clams out there?

MS. BONNEVIE: Honestly, I'm not sure there really are clams. We did an evaluation of shellfish as a conservative estimate. I'm not sure they're really out there.

MR. RIPPERDA: That means you took sediments in the lab and put clams into those to see what they would absorb.

MS. BONNEVIE: Right. The fish evaluation was fish actually collected.

MS. FUENTES: So, there is no clams?

MS. BONNEVIE: I'm not sure there are clams. Yeah.

MS. FUENTES: You didn't take any clams.

MR. MACCHIARELLA: Okay. Now we'll move on to the public comment phase, where we turn into listening mode and record any comments. And all comments received tonight, as well as in writing, in the future will be responded to in our Record of Decision.

Would anybody like to provide comments on the preferred alternative or proposed plan?

MR. RIPPERDA: You can acknowledge that you got written comments from --

MR. MACCHIARELLA: I did receive written comments from Barbara Beck.

MS. TROTTER: That was based on thinking that the sediment -- the top sediment was good and the toxicity was seven feet under that. But it turns out it's the other way around. The worst part is on the top, and it gets better as you go down.

MR. MACCHIARELLA: Okay.

MS. TROTTER: So, the premise in what's written there doesn't work.

MR. MACCHIARELLA: Okay. Well, you're welcome to -- you have until --

MS. TROTTER: It was a great clarification. It changed everything.

MR. MACCHIARELLA: You're welcome to revise your comments up until March 17, if you would like.

MS. TROTTER: Okay.

MS. GOULD: Can I ask a question about what happened to number seven with the treatment and reuse and why that wasn't considered?

MR. MACCHIARELLA: Nancy?

MS. BONNEVIE: Number seven, when we did the -- one of the criteria that we evaluated -- let me look back here.

One of the criteria that we evaluated as part of the initial evaluation was the implementability. We looked at number seven because, obviously, treatment and beneficial reuse is a very attractive alternative. And the reality is that the science isn't there yet. With the volume of sediment that we would be removing, treatment isn't a very viable alternative right now.

MR. MACCHIARELLA: Okay. If there are no further comments, then we're ready to adjourn.

Okay. Thank you very much for coming, everybody.

The meeting is adjourned.

(Off the record at 7:25 p.m.)

STATE OF CALIFORNIA) SS.

I do hereby certify that the meeting was held at the time and place therein stated; that the statements made were reported by me, a certified shorthand reporter and disinterested person, and were, under my supervision, thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the participants in said hearing nor in any way personally interested or involved in the matters therein discussed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal of office this 7th day of March 2006.

VALERIE E. JENSEN
Certified Shorthand Reporter

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Attachment D

Public Comments Received

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February 24, 2006

To Whom It May Concern

After reading the BRAC proposed plan for Site 17, The Seaplane Lagoon, I am concerned that besides solvents and heavy metal there is no specific reference to potassium cyanide and other caustic chemicals used in chrome plating which form a part of the toxic waste. When the base was active, we were told that nothing was to disturb the silt layer above the more than 20 feet of severely contaminated materials below.

If option 5 is selected, there would only be three feet of clean silt left above the polluted area below. It would not take much marine activity to disturb this thin layer and expose the caustic area below.

This is why I reluctantly must favor option 1 which would leave the Seaplane Lagoon untouched. I believe this is the best alternative if no feasible method can be afforded to remove all the 20 feet of toxic materials which exists below the seven feet of clean silt above. I know that if this area is disturbed, the public could be subject to a health risk.

When the marines wanted to do crash boat landings, the Navy refused this exercise because it would disturb the silt. Only hover craft were allowed in the lagoon at that time. The true nature of the toxics should be studied in more detail before any plan is selected that would disturb the silt cover layer.

Respectfully submitted,

Barbara Baack

Barbara Baack former Public Affairs Officer:

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HELLO

THERE AS IN YOU OUR holding a PUBLIC meeting and invites PUBLIC COMMENTS on The CLEAN UP of contaminated SEDIMENTS ECT. WICH IS SITE 17. At The former Alameda NAVAL AIR station. know FIRST who IS RESPONSIBLE for The contaminated SEDIMENTS and How They get There In The first PLACE, WE I MEAN contaminated stuff OUR KILLING OUR EATH. and ITS should NOT BE EXEPTED at NO POINT watch-SO EVER, ITS BAD ENOUGH That we I MEAN PEOPLE IN The BISNESS, LIKE POLUTION WE KEEP THIS UP we human MITE come EXTENT IN 200,000, YEARS from know OUR SOONER. ME I AMT got NO PROBLEM, IF YOU OUR TRYING TO CLEAN UP The contaminated ECT STUFF. PROCEED. AND I'll HELP OUT, there stuff LIKE THIS That can COUSE, NEW DESIES ECT. SO I'm JOSEPH. CASTRO IN PRISON THATS PART INDIAN and DONT LIKE STUFF WICH can HARM HUMANS KIND and OUR EARTH. WHY DO YOU THINK NASA TRYING TO FIND AN OTHER PLANET TO LIVE ON. CUZZ WERE KILLING OUR EARTH, from WATER WICH WE NEED TO SURVIVE. The AIR WICH WE BREATH, EXPECALY The OIL COMPANY WILL I'm JUST MAD. BUT HAPPY THAT PEOPLE LIKE YOU GOT A POINT OF VIEW, There should BE A PUNISHMENT, on all contaminated STUFF WICH IS LOSS on The EARTH WICH CANT BE CONTROLED. WE CALL CLEAN IT UP. BUT WICH IT get TO The SOIL IT SPREADS LIKE A DISEASE, ...
THANK FOR YOU TIME. And HOPE TO HEAR MORE on WHATS going TO happen

→

Im A 25 year OLD. out In MAYA our SOONER BUT NO one should go against what you TRYING TO DO, If THEY DO. They DONT CARE ABOUT THE NEXT human BORN. ECT. ITS ALL ABOUT THEM. ITS A TEAM BISNESS LIKE YOU THEY MAKE a diffrents

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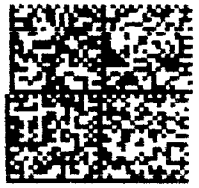

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George B. Humphreys
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Alameda, CA 94502-6417
March 14, 2006

Mr. Thomas Macchiarella
BRAC Environmental Coordinator
Department of the Navy
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

2006 MAR 21 A 9: 44
BRAC OFFICE

Subject: Draft Final Proposed Plan for Former Naval Air Station Alameda, Seaplane Lagoon (IR Site 17)

Dear Mr. Macchiarella:

I have reviewed the draft proposed plan for the seaplane lagoon and offer the following comments:

1. Based on the footprint of the proposed remediation areas in the northwest and northeast corners of the lagoon, the recommended alternative 5 appears to be the most appropriate of those summarized in Table 2. However, this concurrence is subject to the reservations and concerns expressed in the comments which follow.

2. The remediation goals were based on a site use factor of 10 percent for the least tern (Page 6 of 17). This assumption appears to have been reached by assuming different use factors until a desired smaller remediation footprint was obtained. Reference is made to the draft Remedial Investigation Report (ref. 1) Figures 7-3 through 7-8, in which site utilization factors (SUF's) of 1, 0.5, 0.25, and 0.094 were tried successively in computing the hazard quotients for various ecological receptors. Apparently, the least tern was selected as the most sensitive fishing bird. While an SUF of 0.5 could have been justified, based on the seasonal migration patterns of the least tern, the selection of 0.1 (or perhaps 0.094) seems to have been arbitrary. Note that while the least terns may move around to other feeding areas, some of these other sites, including those at Alameda Point, may also be contaminated to an extent comparable to the seaplane lagoon. For example, site utilization factors have also been employed by the consultants at the former skeet range (Site 29), and at the Site 2 west beach landfill and wetlands. Other possibly contaminated Navy sites include the beach and near shore area at Site 1, Site 20 (Oakland Inner Harbor), and Site 24 (the Pier Area adjacent to the Seaplane Lagoon). The remedial goals for the Seaplane Lagoon are in effect setting a cleanup standard for other similarly contaminated sites at Alameda Point and around the Bay. It does not reduce the total ecological risk if a bird spends only10% of its time at the seaplane lagoon, but the balance feeding at other similarly contaminated sites. Another consideration is that the contaminated fish, on which the birds are feeding, also are mobile. In fact, as the

tainted fish move out of the seaplane lagoon, the least terns (or other fishing species) are likely to follow. Flocks of feeding birds often are seen congregated over schools of migrating fish. It does not mean the fish are any less contaminated, simply because they've left the seaplane lagoon. Finally, the least terns are not likely to fly too far away from their nesting area as they are feeding their young. This reviewer would like to see what the remediation footprint would be if a justifiable SUF of 0.5 had been used.

3 The draft RI (ref. 1) in Section 3 shows a number of hotspots in areas of the lagoon away from the northwest and northeast corners. See for example PCB concentrations in Figures 3-16, 3-17 and 3-18 and Ra-226 in Figures 3-20 and 3-21. Other than cost considerations, why wasn't complete excavation of the lagoon evaluated as suggested by the Sierra Club and Arc Ecology (Refs. 2 and 3). Is spot excavation of hot spots, in addition to the selected corners a possible alternative which could be adopted?

4. The proposed plan does not mention the two plumes of contamination which currently appear to be entering the Seaplane Lagoon from the adjacent OU 2B and IR Site 27 Dock Zone. The east side of the lagoon is bounded by a seawall (see page 2 of 17 of the proposed plan). Would excavation of 5 ft of sediment (4 ft, plus 1 ft of over-dredging) in the northeast corner weaken or undermine the adjacent seawall? Would the flow of contaminants be increased from the OU 2B plume and by how much? During the discussion of OU 2B in May 11, 2004, I suggested that a slurry cut-off wall be considered to stop the OU 2B plume from entering the seaplane lagoon (ref. 4). This was said to be infeasible because of he depth to older bay mud (40 or 50 ft) into which the cut-off wall could be tied. Note that dense non-aqueous phase liquids could be dispersing under the seawall and entering sediment layers at depths below what has been sampled and at depths greater than what is proposed to be excavated by the proposed plan (ref. 5, page 7 of 11 wherein OU 2B is incorrectly referred to as OU 2A).

5. A general shortcoming of the Navy's studies is caused by fragmentation of the sites and failure to consider the interactions among the various sites. As noted above, the seaplane lagoon is impacted by contaminant plumes from OU 2B and Site 27. Note also that the recent draft RI on IR Site 20 and IR Site 24 (Pier Area) shows hot spots in the northeast corner of the Pier Area which could be coming from the Site 27 contaminant plume (see for example, Figures 4-15 through 4-18 of ref. 6).

6. The proposed plan states (pg. 5 of 17), "In addition, it was determined that areas of the lagoon associated with unacceptable risks to human health coincided with those identified as posing an unacceptable risk to ecological receptors. Therefore, <u>addressing ecological risks will also address human health exposures"</u> (emphasis added). From this quoted statement it may reasonably be implied that it will be safe for people to eat fish caught from the lagoon. If this is true, will

signs warning people not to eat fish caught in the lagoon be removed after the remedial action is complete? If it is not true, then how can it be said that the proposed remedy protects human health?

7. Regarding the ecological and human health risk assessment, were harbor seals and sea lions evaluated? The impact on harbor seals of eating contaminated fish from the lagoon should be similar to, or greater than, that on humans as a larger portion of the seals' diet consists of fish. Also, regarding bottom feeding fish, were flounder, halibut, and sturgeon evaluated? Flounder and halibut are among fish sought after by people fishing along the nearby breakwater beach.

8. Bay Farm was one of the reference sites stations used in the RI for comparing calculated risks to reference conditions (see ref. 1 pg. 165). It should be noted that as early as 1872 there were oyster farms on submerged land near the Bay Farm Island Bridge. However by the late 1880's the Alameda oysters had become tainted by pollution from the Pacific Oil Refinery located on the west end of Alameda. Oyster farming on Bay Farm ceased in the early 1890's. (see ref. 7) This demonstrates that Bay Farm is not an uncontaminated reference site.

9. There are two areas of debris located approximately midway along the north bank of the seaplane lagoon. During presentations on the seaplane lagoon, it was stated that these debris piles would be removed as part of the remediation action. Nevertheless, they are not shown in blue on Figure 4 of the proposed plan From Figure 3 of the proposed plan, it doesn't appear that any samples were taken from these debris piles.

Thank you for the opportunity to comment on the proposed plan.

Sincerely,

George B. Humphreys

George B. Humphreys
Community Co-chair, Restoration Advisory Board

Neil Cox
Joan Konrad
Bert Morgan
James W. Mooney

Copies to:

Dot Lofstrom, DTSC
Judy Huang, RWQCB
Mark Ripperda, U. S. EPA
Dale Smith, Sierra Club/Audubon Soc.
Frank Matarrese, Alameda City Council

References:

1. "Draft Remedial Investigation Report Seaplane Lagoon, Alameda Point, California", Prepared by Battelle, Entrix, Inc. and Neptune & Company, January 28, 2003.

2. Letter from William J. Smith, Co-chair, Sierra Club Northern Alameda County Regional Group, to Mr. Steven Edde, U.S. Navy, May 6, 2003.

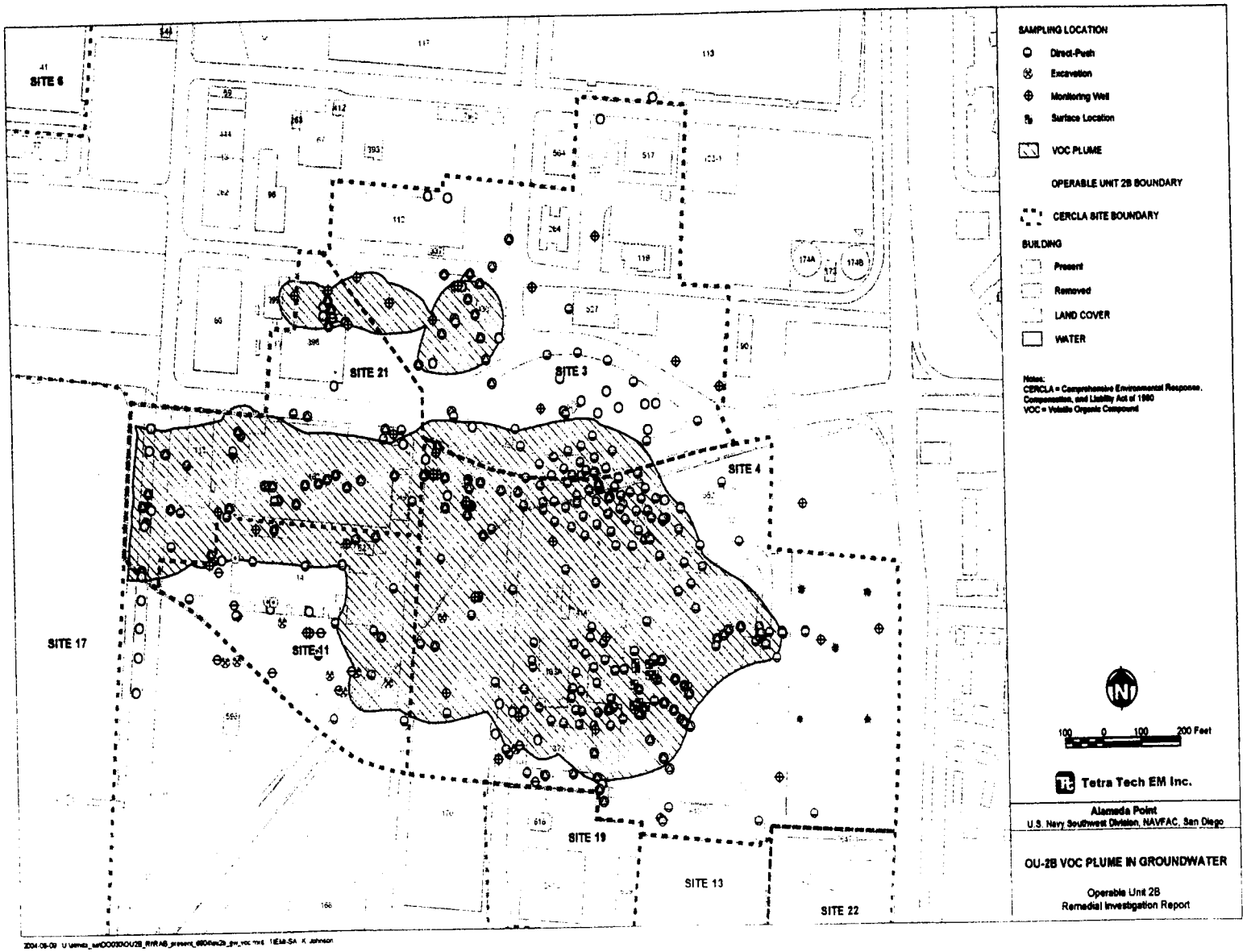
3. Letter from Lea Loizos, Arc Ecology to Mr. Andrew Dick, "Draft Remedial Investigation for the Seaplane Lagoon, Alameda Point, California", May 5, 2003.

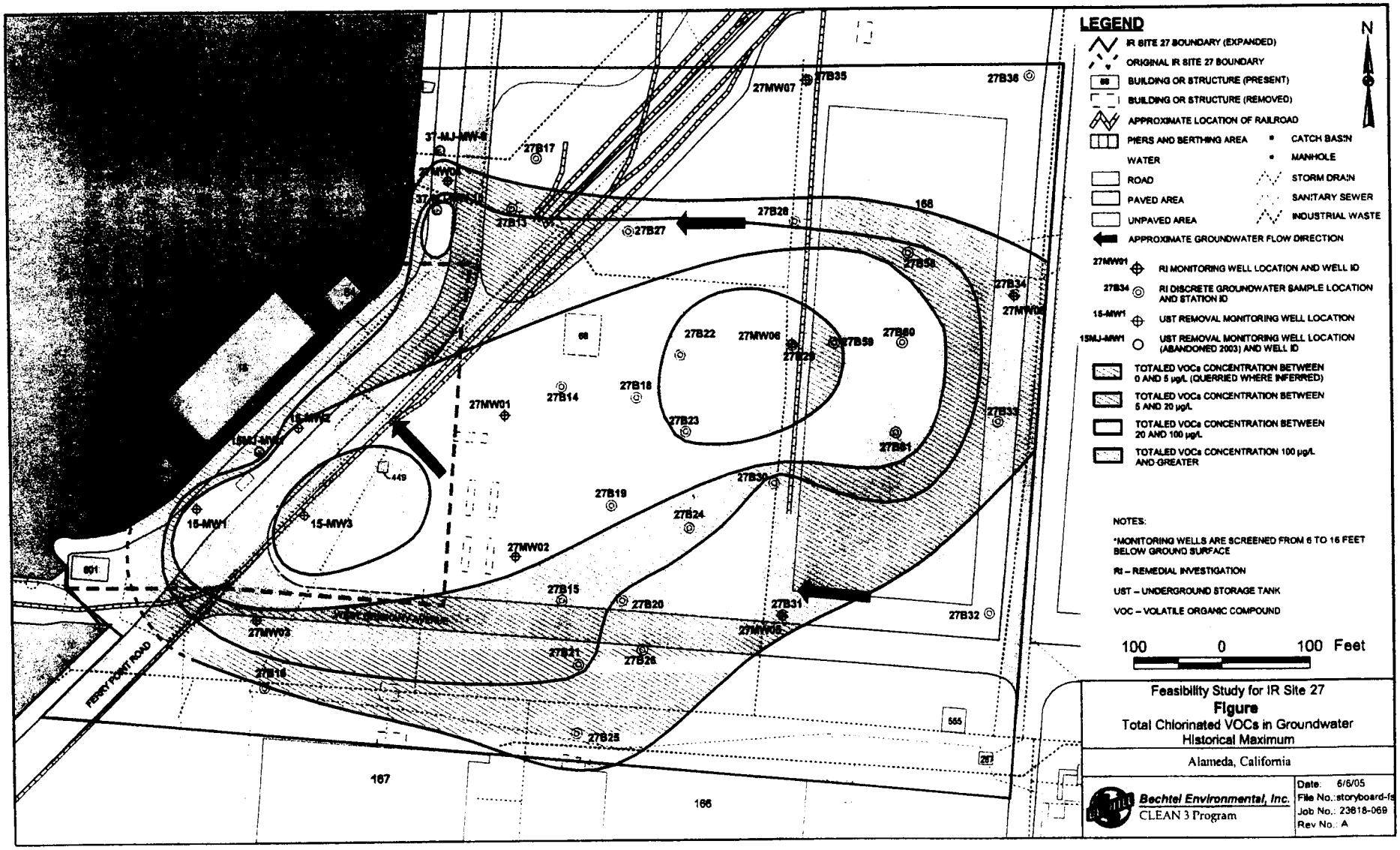
4. 4. RAB Meeting Minutes of May 11, 2004 page 7 of 9.

5. RAB Meeting Minutes of Jan. 6, 2005 page 7 of 11.

6. "Draft Remedial Investigation Report IR Site 20 (Oakland Inner Harbor) and IR Site 24 (Pier Area) Alameda Point, Alameda, California, Battelle, Blasland, Bouch and Lee Inc., Neptune & Company March 2006.

7. Alameda Magazine, Volume 4, Issue 6, "Alameda on the Half Shell", by Woody Minor, Nov. 2005.


SITE 6
SITE 21
SITE 3
SITE 4
SITE 17
SITE 11
SITE 19
SITE 13
SITE 22
SAMPLING LOCATION
Direct-Push
Excavation
Monitoring Well
Surface Location
VOC PLUME
OPERABLE UNIT 2B BOUNDARY
CERCLA SITE BOUNDARY
BUILDING
Present
Removed
LAND COVER
WATER
Notes:
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
VOC = Volatile Organic Compound
N
100 0 100 200 Feet
Tetra Tech EM Inc.
Alameda Point
U.S. Navy Southwest Division, NAVFAC, San Diego
OU-2B VOC PLUME IN GROUNDWATER
Operable Unit 2B
Remedial Investigation Report



Feasibility Study for IR Site 27

Figure

Total Chlorinated VOCs in Groundwater
Historical Maximum

Alameda, California

Bechtel Environmental, Inc.
CLEAN 3 Program

Date: 6/6/05
File No.: storyboard-fs
Job No.: 23618-069
Rev No.: A

George B. Humphreys
25 Captains Dr
Alameda, CA 94502

USA

MR. THOMAS MACCHIARELLA
BRAC ENVIRONMENTAL COORDINATOR
DEPARTMENT OF THE NAVY
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Mr. Thomas Macchiarella
Base Realignment and Closure Environmental Coordinator
BRAC Program Management Office West
1455 Frazee Road
Suite 900
San Diego 92108

March 14, 2006

Re: Draft Final Proposed Plan for Former NAS Alameda Seaplane Lagoon

Dear Mr. Macchiarella,

Thank you for the opportunity to comment on the proposed plan for Seaplane Lagoon.

The Sierra Club, of which I am the representative on the Alameda RAB, has consistently argued for the complete dredging of the Lagoon to ensure that future reuse will not be encumbered by contaminants and to improve the habitat of the Bay. It stands by that preference. As the site is open and accessible, complete remediation would be relatively easy and would greatly improve the water quality of the Bay.

The entire lagoon was not investigated on a grid system. As a result it can be presumed to be poorly characterized. The RAB expressed concern (Alameda Point Restoration Advisory Board Focus Group Comments on Seaplane Lagoon, February 14, 2005) that the radiological investigation was not thorough enough to ensure that the radiological contamination is not more extensive than what the current footprint indicates. The investigation focused on the areas most likely to contain contaminants. The report acknowledged that recent data, not available at the time the RI was completed, indicates that radionuclides may be present at depth at elevated concentrations. There appears to have been no further investigation to clarify this issue. High contaminant levels also were found at the mouth of the lagoon, but there are no plans to remediate these.

The ecological investigations provided by the Navy's consultants have been consistently weak. There has been misidentification of species (brome vs. broom), inadequate surveying (no invertebrate species found in the ponds at Site2, no observation of avian and land species there), poor laboratory controls and poor understanding of the relationship of plants and animals to their environment. As a result this reviewer is concerned that the ecological risk has not been fully developed and that only remediating the corners will not be adequate.

The overall approach to clean up at the base is compartmentalized into discreet sites. This has resulted in plans for one area that conflict with neighboring ones. An example of this is the plume that is in IR Sites 25, 30 and 31 and in the FISC Annex. Some of the land containing that plume has been transferred to a private developer, making clean-up very complex. Assuming that a bird will feed 10% at the lagoon and the rest elsewhere assumes that "elsewhere" is pristine. Campus Bay is another Bay Area site that would appeal to aquatic fishers and it is highly contaminated.

DALE SMITH
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510-841-2115

Given the number of industrial and military installations around the Bay, the exposure to toxics are likely to be compounded and ultimately higher than predicted.

The connection between the stormdrains at Seaplane Lagoon and their potential to contaminate the lagoon further is recognized and will be corrected prior to the start of clean up. However, there are two VOC plumes; one of which almost certainly extends under and into the lagoon. When the contaminated soil in that corner is removed, will the plume be brought into direct contact with the Bay? Would contaminants be able to migrate to the surface if in fact they lie just under the five-foot remediation zone? Will disturbance of the riprap along the shore cause incursion of the plume into the waters of the lagoon? These issues have not been discussed.

This reviewer feels that full characterization of contaminants at the site must be conducted, especially if full remediation will not. The preference is for complete cleanup of the lagoon including the debris piles along the north wall, which have not been investigated either. Given the options offered, I concur with the selection of Alternative 5 as the most appropriate and comprehensive. However, there are still unresolved issues identified above that have not been adequately addressed that make any selection less than ideal.

Again, thank you for this opportunity.

Dale Smith

DALE SMITH
2935 Otis Street
Berkeley California 94703
510-841-2115

-----Original Message-----
From: Patrick Lynch [mailto:clearwater@toxicspot.com]
Sent: Friday, March 17, 2006 16:36
To: Macchiarella, Thomas L CIV OASN (I&E) BRAC PMO West
Subject: Seaplane Lagoon Proposed Plan

Thomas:

The following comments on the Seaplane Lagoon Proposed Plan.

COMMENT No. 1 - The information repository at the Alameda Public Library, which has been closed since March 3, was not available to enable me to review the key documents supporting the recommendations made in the proposed plan. The lack of public access to review and copy key documents during evening hours and weekends I find unacceptable. I feel that an additional 30-day comment period should be allowed after the library reopens on March 20, 2006.

COMMENT No. 2 - Again, simply providing the document index numbers and titles of key documents in the Proposed Plan would greatly enhance the ability of the public to access this information.

COMMENT No. 3 - What is preventing key documents supporting the proposed
plan to be made available online.

COMMENT No. 4 - In March 1969 the Alameda Naval Air Station failed to comply with a Cease and Desist Order from the Regional Water Quality Control Board (RWQCB) to stop discharging industrial wastes and untreated wastewater into the Seaplane Lagoon. As the proposed plan notes this illegal discharge continued until 1975. The 1983 Initial Assessment Study describes the Seaplane Lagoon during this period of illegal discharge was occurring. The IAS recalls instances where fish caught in the Seaplane Lagoon smelled of solvents and that boats anchored in the Seaplane Lagoon had their paint removed. The US Navy bears a greater responsibility for “ambient” pollution in San Francisco Bay than any other major discharger based on the US Navy’s unique failure to comply with Cease and Desist Order’s issued to all major industrial dischargers to the bay.

COMMENT No. 5 – The Proposed Plans estimated total volume of the industrial waste discharged to the Seaplane Lagoon of 300 million gallons is far below the discharge volume of 525,000 gallons per day listed in the Cease and Desist Order.

COMMENT No. 6 – The Proposed Plan’s statement that a stormwater pollution prevention program has been in place at Alameda Naval Air Station since 1975 is absurd. Hazardous waste storage areas did not meet
design requirements until 1993. Stormwater that accumulated in hazardous
waste containment areas was often discharged onto landscaping at Site 3.

In one instance the contaminated stormwater discharged to Site 3 resulted in the deaths of dozens of migratory ducks.

COMMENT No. 7 – The Marsh Crust Excavation Ordinance is not listed as an ARAR despite the fact that the ordinance is an applicable requirement. The Marsh Crust Record of Decision shows the Marsh Crust at a depth of 10 feet below ground surface in portions of the Seaplane Lagoon. While the Marsh Crust Excavation Ordinance excluded Site 25, 30, and 31 (a significant deficiency that should have been identified in the 5-Year Review), it includes the Seaplane Lagoon in its entirety. The City Engineer however has violated the Marsh Crust Ordinance by failing to adopt an excavation depth for the Seaplane Lagoon.

COMMENT No. 8 – What steps will be taken to eliminate odor problems from the handling of excavated sediments? Why haven't BAAQMD regulations for odors been identified as ARARs?

COMMENT No. 9 – How will residual contamination in sediments impact future redevelopment of the Seaplane Lagoon?

Sincerely,

Patrick G. Lynch, P.E.
Chemical/Civil Engineer

Attachment E

Responsiveness Summary

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ATTACHMENT E. RESPONSIVENESS SUMMARY

The proposed plan for Site 17 was released for public comment on February 17, 2006. Comments were accepted until the end of the comment period on March 17, 2006. A public meeting was held on March 1, 2006 at which time a presentation summarizing the preferred alternative was given, and all clarifying questions from the public were addressed. A transcript of the March 1, 2006 public meeting is presented in Attachment C. All comment letters received on the proposed plan are presented in Attachment D, and a summary of each of the comments received and the Department of the Navy (DON) detailed responses are presented in Table E-1. The primary concerns identified by the comments received are summarized below.

Ongoing Sources

Many of the comments received raised questions about the possibility of ongoing sources to Installation Restoration (IR) Site 17, particularly with respect to groundwater plumes from adjacent IR Sites at Alameda Point. As noted in the Record of Decision (ROD), the primary source of contaminants to the lagoon was contaminated stormwater released through storm drains in the northeastern and northwestern corners. In 1975, the direct discharge of industrial wastewater through the storm sewer network was terminated and since that time a stormwater pollution prevention plan has been in place at Alameda Point. During the 1990s the DON cleaned, repaired, and replaced a significant portion of the storm sewer network, and will ensure that the storm drains are no longer an ongoing source prior to initiating remediation of Site 17. With respect to potential impacts from other IR Sites, groundwater plumes originating at onshore IR sites will be addressed as part of the investigations at those sites. However, it should be noted that the sediment investigations at Site 17 do not indicate any evidence of groundwater plumes impacting sediments within Seaplane Lagoon.

Characterization of Contamination Within the Lagoon

Several comments questioned whether the nature and extent of contamination within the lagoon has been adequately characterized. Specific comments included questions about the construction debris pile, whether or not all areas of elevated contamination were being addressed, and concerns about exposing contamination at depth. As described in Section 2.2, sediments at surface and at depth have been collected from more than 100 stations within the lagoon throughout the last thirteen years (see Figure 2-7 of the ROD), providing extensive spatial coverage of the entire lagoon. These sediments were analyzed for a broad suite of contaminants such as metals, semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and gross *alpha* and *beta* radiation. In addition, fish from the lagoon have been collected and analyzed for a similar list of contaminants of potential concern (COPC) and laboratory bioassays evaluating toxicity and bioaccumulation have been conducted using sediments from the lagoon. Therefore, the DON finds that it has properly characterized nature and extent of contamination within the lagoon.

Questions were also raised regarding the construction debris pile. The larger of the two Site 17 debris piles was sampled in February 2006. Concentrations in the debris piles exceed the remedial goal for Total PCBs, and these debris piles will be addressed seperately prior to beginning the Site 17 sediment remediation.

Identification of Remediation Areas and Selected Remedy

Comments were also made with respect to the determination of the remediation areas, as well as the proposed depth of dredging. It was noted that the Sierra Club's preferred remedy would be to dredge the entire lagoon. As stated previously, the sediments within the lagoon have been extensively sampled for a broad suite of contaminants both at the surface and at depth. Based on the investigation conducted during the remedial investigation/feasibility study (RI/FS) process, the DON has determined that sediments in the northeastern and northwestern corners of the lagoon pose an unacceptable risk to humans and the

environment and should be remediated. The specific remediation areas proposed were defined based on the comparison of measured concentrations of chemicals of concern to risk-based remedial goals (RGs) developed during the RI. All sediments with chemical concentrations exceeding those RGs were included in the remediation areas. In addition, the proposed remediation areas address potentially elevated concentrations of other chemicals (chromium, lead, radium-226 [Ra-226]) for which RGs were not determined to be necessary. Sediments outside of these remediation areas were not found to pose an unacceptable risk to humans or the environment and do not require remedial action.

In addition, one comment was received expressing concerns about potentially exposing contaminants buried at depth, and the suggestion was made that Alternative 1 (No Further Action) was the most appropriate alternative. As stated above, the DON concluded based on the RI/FS process that sediments within the remediation areas pose an unacceptable risk to humans and the environment; therefore, Alternative 1 does not meet the threshold criteria for evaluation of alternatives. The selected remedy described in the ROD includes the removal of all sediments within the remediation areas to a depth of four feet. That depth was selected because, based on the available data, it will remove all sediments with chemical concentrations above the RGs. Sediments at depths below four feet are not believed to pose an unacceptable risk to humans and the environment; sampling will be conducted following the dredging to confirm that sediments exposed by the dredging meet the RGs.

Protectiveness of the Human Health and Ecological Risk Assessments

Several comments raised concerns about the overall protectiveness of the human health and ecological risk assessment, as well as about specific assumptions used within the assessment. For example, one comment questioned the use of a 10 percent site use factor (SUF) for the least tern in the derivation of the ecological RG. As described in Section E.5.2 of the RI (Battelle et al., 2004a), this value was a site-specific estimate based on 10 years of data on the foraging behavior of least terns at Alameda Point. Fifteen areas, including Seaplane Lagoon, were identified around Alameda Point and evaluated with respect to the percent time the least terns were observed there. Over the course of the 10 years evaluated, the mean value for the percent time spent at Seaplane Lagoon was 9.4 percent, supporting the selection of 10 percent as the SUF for the risk assessment.

With respect to the human health assessment, it was asked whether signs advising people not to eat fish from the lagoon would be removed following the remedial action. The California Office of Environmental Health Hazard Assessment has issued an interim fishing advisory for all of San Francisco Bay and Delta Region (http://www.oehha.ca.gov/fish/general/sfbaydelta.html). This advisory was issued because of elevated concentrations of mercury, PCBs and other chemicals in fish tissue throughout the Bay. Although the proposed remedial activity is expected to reduce the bioaccumulation of contaminants from sediments within the lagoon, there are numerous other sources throughout the Bay area and a fish consumption advisory will likely remain in place until more of these sources have been addressed.

The human health and ecological risk assessments conducted during the RI incorporated all of the site-specific data collected at Site 17 and have been carefully reviewed by representatives from the U.S. Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC), U.S. Fish and Wildlife (USFWS), and the California Department of Fish and Game (USF&G). These assessments provide a conservative estimate of the potential exposures and risks at the Site. Based on the results of these investigations, the DON and Base Realignment and Closure (BRAC) Cleanup Team (BCT) concur that achieving the RGs identified during the risk assessment process will address potential risks to humans and the environment under both current and future conditions.

Table E-1. Summary of Comments Received and Responses

	Comment	Response
Comments on the Final Proposed Plan from Barbara Baack, citizen (dated February 24, 2006)		
1	I am concerned that besides solvents and heavy metals there is no specific reference to potassium cyanide and other caustic chemicals used in chrome plating which form a part of the toxic waste. When the base was active, we were told that nothing was to disturb the silt layer above the more than 20 feet of severely contaminated materials below. If option 5 were selected, there would only be three feet of clean silt left above the polluted area below. It would not take much marine activity to disturb this thin layer and expose the caustic area below. This is why I reluctantly must favor option 1 which would leave the Seaplane Lagoon untouched. I believe this is the best alternative if no feasible method can be afforded to remove all the 20 feet of toxic materials which exists below the seven feet of clean silt above. I know if this are is disturbed, the public could be subject to a health risk. When the marines wanted to do crash boat landings, the Navy refused this exercise because it would disturb the silt. Only hover craft were allowed in the lagoon at the time. The true nature of the toxics should be studied in more detail before any plan is selected that would disturb the silt cover layer.	The sediments within Seaplane Lagoon have been extensively studied for a full suite of environmental contaminants. A summary of these investigations is provided in Section 2.4 of the Remedial Investigation (RI) (Battelle et al., 2004a). As part of these investigations, all chemicals associated with known sources have been considered. The RI and Feasibility Study (FS) (Battelle, 2005) are focused on those contaminants that have been demonstrated to pose the greatest threat to human health and the environment. Based on the results of the RI/FS process it has been determined that the highest concentrations of these chemicals are within the top four feet of sediment, and that remediation is required to mitigate these risks. The selected remedy addresses these concerns. This comment was submitted by Carol Trotter on behalf of Barbara Baack during the Public Meeting held on March 1, 2006 in Alameda, CA. As documented in the transcript for that meeting (see Attachment C of the ROD), Ms. Trotter noted that the comment was based on a misunderstanding of the depth of contamination.
Comments on the Final Proposed Plan from Joseph Castro, citizen (dated February 28, 2006)		
1	In favor of cleaning up contamination and supports the project if it will do so (paraphrased).	The DON acknowledges your comment.
Comments on the Final Proposed Plan from George Humphreys, RAB Co-Chair (dated March 14, 2006)		
1	Based on the footprint of the proposed remediation areas in the northwest and northeast corners of the lagoon, the recommended alternative 5 appears to be the most appropriate of those summarized in Table 2. However, this concurrence is subject to the reservations and concerns expressed in the comments which follow.	The DON acknowledges your comment.

	Comment	Response
2	The remediation goals were based on a site use factor of 10 percent for the least tern (Page 6 of 17). This assumption appears to have been reached by assuming different use factors until a desired smaller remediation footprint was obtained. Reference is made to the draft Remedial Investigation Report (ref.1) Figures 7-3 through 7-8, in which site utilization factors (SUFs) of 1, 0.5, 0.25, and 0.094 were tiered successively in computing the hazard quotients for various ecological receptors. Apparently, the least tern was selected as the most sensitive fishing bird. While an SUF of 0.5 could have been justified, based on the seasonal migration patterns of the least tern, the selection of 0.1 (or perhaps 0.094) seems to have been arbitrary. Note that while the least terns may move around to other feeding areas, some of these other sites, including those at Alameda Point, may also be contaminated to an extent comparable to the seaplane lagoon. For example, site utilization factors have also been employed by consultants at the former skeet range (Site 29), and at Site 2 west beach landfill and wetlands. Other possibly contaminated Navy sites include the beach and near shore area at Site 1, Site 20 (Oakland Inner harbor), and Site 24 (the Pier Area adjacent to Seaplane Lagoon). The remedial goals for the Seaplane Lagoon are in effect setting a cleanup standard for similar contaminated sites at Alameda Point and around the bay. It does not reduce the total ecological risk if a bird spends only 10% of its time at the seaplane lagoon, but the balance feeding at similarly contaminated sites. Another consideration is that the contaminated fish, on which the birds are feeding, are also mobile. In fact, as the tainted fish move out of the seaplane lagoon, the least tern (or other fishing species) are likely to follow. Flocks of feeding birds often are seen congregated over schools of migrating fish. It does not mean the fish are any less contaminated, simply because they've left the seaplane lagoon. Finally, the least terns are not likely to fly too far away from their nesting area as they are feeding their young. This reviewer would like to see what the remediation footprint would be if a justifiable SUF of 0.5 had been used.	Table 7-7 of the RI presents RGs based on a range of SUFs, including one developed using an SUF of 50%. As described in Section E.5.2 of the RI (Battelle et al., 2004a), the final Site Use Factor selected was a site-specific estimate based on 10 years of data detailing the foraging behavior of least terns at Alameda Point. Fifteen foraging areas, including Seaplane Lagoon, were identified around Alameda Point and evaluated with respect to the percent time the least terns were observed there. Over the course of the 10 years evaluated, the mean value for the percent time the least terns spent foragaing at Seaplane Lagoon was 9.4 percent, supporting the selection of 10 percent as the SUF for the risk assessment. The fish species evaluated in the RI were targeted because they are known to be commonly consumed by piscivorous birds, have high affinity to sediments and relatively small foraging ranges. As a result, it can be assumed that they represent a conservative estimate of sediment exposures from the site. It is possible that the receptors evaluated are exposed to contaminants at other locations, however, consistent with the CERCLA process the purpose of this assessment was to focus on the incremental risk associated with Site 17.
3	The draft RI (ref. 1) in Section 3 shows a number of hotspots in areas of the lagoon away from the northwest and northeast corners. See for example PCB concentrations in Figures 3-16, 3-17, and 3-18 and Ra-226 in Figures 3-20 and 3-21. Other than cost considerations, why wasn't complete excavation of the lagoon evaluated as suggested by the Sierra Club and Arc Ecology (Ref. 2 and 3). Is spot excavation of hotspots, in addition to the selected corners a possible alternative which could be adopted?	The bubble plots presented in the RI (Battelle et al., 2004a) show the relative spatial distribution of chemicals within the lagoon rather than exceedance of RGs. As a result, there may be locations within the lagoon where concentrations of an individual chemical exceed those of the locations around them, making them appear to be 'hotspots'. However, the proposed remediation areas encompass all sediments with sediment concentrations

	Comment	Response
		that exceed the risk-based remediation goals developed in the Feasibility Study (Battelle, 2005). Sediments with concentrations below the remediation goals are not believed to pose a threat to human health or the environment.
4	The proposed plan does not mention the two plumes of contamination which currently appear to be entering the Seaplane Lagoon from the adjacent OU2B and Site 27 Dock Zone. The east side of the lagoon is bounded by a seawall (see page 2 of 17 of the proposed plan). Would excavation of 5 ft of sediment (4ft, plus 1 ft of over-dredging) in the northeast corner weaken or undermine the adjacent seawall? Would the flow of contaminants be increased from the OU2B plume and by how much? During the discussion of OU 2B in May 11, 2004, I suggested a slurry cut-off wall be considered to stop the OU 2B plume from entering the seaplane lagoon (ref. 4). This was said to be infeasible because of the depth of older bay mud (40 or 50 ft) into which the cut-off wall could be tied. Note that dense non-aqueous phase liquids could be dispersing under the seawall and entering sediment layers at depths below what has been sampled and at depths greater than what is proposed to be excavated by the proposed plan (ref. 5, page 7 of 11 wherein OU 2B is incorrectly referred to as OU 2A). A general shortcoming of the Navy's studies is caused by fragmentation of the sites and failure to consider the interactions among the various sites. As noted above, the seaplane lagoon is impacted by contaminant plumes from OU 2B and Site 27. Note also that the recent draft RI on Site 20 and Site 24 (Pier Area) shows hot spots in the northeast corner of the Pier Area which could be coming from Site 27 contaminant plume (see for example, Figures 4-15 through 4-18 of ref. 6).	The evaluation at Site 17 focused on contamination levels within the sediments of Seaplane Lagoon. The potential human and ecological risk from all existing contamination at Site 17 has been thoroughly characterized and no adverse impact from groundwater has been observed. The DON and BCT are currently developing Feasibility Studies for OU2B and Site 27 and will evaluate and address the potential movement of groundwater from those sites as part of those investigations.
5	The proposed plan states (pg. 5 of 17), "In addition, it was determined that areas of the lagoon associated with unacceptable risks to human health coincided with those posing an unacceptable risk to ecological receptors. Therefore, <u>addressing ecological risks will also address human health exposures</u>" (emphasis added). From this quoted statement it may reasonably be implied that it will be safe for people to eat fish caught from the lagoon. If this is true, will signs warning people not to eat fish caught in the lagoon be removed after remedial action is complete? If it is not true, then how can it be said that the proposed remedy protects human health?	The California Office of Environmental Health Hazard Assessment has issued an interim fishing advisory for all of San Francisco Bay and Delta Region (<u>http://www.oehha.ca.gov/fish/general/sfbaydelta.html</u>). This advisory was issued because of elevated concentrations of mercury, PCBs and other chemicals in fish tissue throughout the Bay from multiple sources. The proposed remediation at Site 17 will address only one potential source. Therefore, although the proposed remedial activity is expected to reduce the

	Comment	Response
		bioaccumulation of contaminants within the lagoon, an advisory will likely remain in place until all sources within the Bay area have been addressed.
6	Regarding the ecological and human health risk assessment, were harbor seals and sea lions evaluated? The impact on harbor seals of eating contaminated fish from the lagoon should be similar to, or greater than, that on humans as a larger portion of seals' diet consists of fish. Also, regarding bottom feeding fish, were flounder, halibut, and sturgeons evaluated? Flounder and halibut are among fish sought after by people fishing along nearby breakwater beach.	As described in the RI (Battelle et al., 2004), marine mammals were evaluated as potential receptors in the ecological risk assessment. However, while both sea lions and harbor seals have been observed in the vicinity of Alameda Point, the available radiotelemetry data on their movements and feeding patterns indicates that they do not typically forage in that area. See Section 5.1.1 of the RI report for more detail. The human health risk assessment included an assessment of potential risks associated with consumption of fish, focusing on the forage fish collected for the ecological assessment. These species are known to have a high affinity for sediment and to have relatively small foraging ranges; therefore, they provide a conservative estimate of the possible exposures via consumption of fish from the site. Sport fish species such as flounder, halibut and sturgeon are much more mobile and would, therefore, have less site-specific exposure than the species evaluated (e.g., sculpins and gobies). An evaluation conducted as part of the Hunters Point Shipyard Validation Study (Battelle et al., 2004b) observed that tissue concentrations in forage fish were typically higher than tissue concentrations in larger sport fish caught from the same locations.
7	Bay Farm was one of the reference sites stations used in the RI for comparing calculated risks to reference conditions (see ref. 1 pg. 165). It should be noted that as early as 1872 there were oyster farms on submerged land near the Bay Farm Island Bridge. However by the late 1880's the Alameda oysters had become tainted by pollution from the Pacific Oil Refinery located on the west end of Alameda. Oyster farming on Bay Farm ceased in the early 1890's (see ref. 7). This demonstrates that Bay farm is not an uncontaminated reference site.	It is difficult, if not impossible, to identify locations within urban areas that are completely uncontaminated. In fact, EPA guidance for ecological risk assessment (EPA, 1997) defines reference as 'a relatively uncontaminated site used for comparison to contaminated sites". Therefore, the reference areas evaluated in the RI/FS were defined as areas with comparable physical conditions (e.g., grain size) that were representative of ambient regional conditions.

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8	There are two areas of debris located approximately midway along the north bank of seaplane lagoon. During presentations on the seaplane lagoon, it was stated that these debris piles would be removed as part of the remediation action. Nevertheless, they are not shown in blue on Figure 4 of the proposed plan. From Figure 3 of the proposed plan, it doesn't appear that any samples were taken from these debris piles.	As discussed in the Offshore Core Study Workplan (Battelle et al., 2005), the DON committed to evaluate the soils at the debris pile to confirm that no contamination was introduced to the lagoon through the fill material. A separate investigation is currently being conducted at this area. Soil samples were collected in February and are currently being analyzed for the contaminant list identified in the Offshore Core Study Workplan (Battelle et al., 2005). Removal of those areas will be considered only if chemicals are identified at concentrations posing a risk to humans or the environment.
Comments on the Final Proposed Plan from Dale Smith, the Sierra Club (dated March 14, 2006)		
1	The Sierra Club, of which I am the representative on the Alameda RAB, has consistently argued for the complete dredging of the Lagoon to ensure that future reuse will not be encumbered by contaminants and to improve the habitat of the Bay. It stands by that preference. As the site is open and accessible, complete remediation would be relatively easy and would greatly improve the water quality of the Bay.	The proposed remediation areas address all sediments found to contain chemicals exceeding the risk based Remediation Goals identified in the FS. Therefore, the sediments remaining following the implementation of the remedial action are not expected to pose a risk to human health or the environment.
2	The entire lagoon was not investigated on a grid system. As a result it can be presumed to be poorly characterized. The RAB expressed concern (Alameda Point Restoration Advisory Board Focus Group Comments on Seaplane Lagoon, February 14, 2005) that the radiological investigation was not thorough enough to ensure that the radiological contamination is not more extensive than what the current footprint indicates. The investigation focused on the areas most likely to contain contaminants. The report acknowledged that recent data, not available at the time the RI was completed, indicates that radionuclides may be present at depth at elevated concentrations. There appears to have been no further investigation to clarify this issue. High contaminant levels also were found at the mouth of the lagoon, but there are no plans to remediate these.	Sediments at surface and at depth have been collected from more than 100 stations within the lagoon throughout the last thirteen years (see Figure 2-7), providing extensive spatial coverage of the entire lagoon. These sediments were analyzed for a broad suite of contaminants such as metals, SVOCs, pesticides, PCBs, and gross *alpha* and *beta* radiation. Therefore, the DON finds that it has properly characterized the nature and extent of contamination within the lagoon. The potential risks associated with radium were addressed as part of the RI (Battelle et al., 2004). Based on the data considered, the maximum concentration reported anywhere in the lagoon, including at the mouth, was 3.64 pCi/g. The RI concluded that these concentrations did not pose an unacceptable risk to human health and EPA concurred (see EPA comment letter dated June 29, 2004). However, in 2002, UC

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		Berkeley analyzed samples at varying depths from 20 cores collected from throughout Seaplane Lagoon. These data (presented in Appendix B of the FS) indicate that concentrations of radium at one location within the proposed remediation area (BERC13) may be as high as 7 pCi/g but that elsewhere in the lagoon, concentrations were comparable to or less than those reported in the RI. The DON plans to include radium in the baseline sampling conducted during the remedial design to determine whether special considerations are required.
3	The ecological investigations provided by the Navy's consultants have been consistently weak. There has been misidentification of species (brome vs. broom), inadequate surveying (no invertebrate species found in the ponds at Site 2, no observation of avian and land species there), poor laboratory controls and poor understanding of the relationship of plants and animals to their environment. As a result this reviewer is concerned that the ecological risk has not been fully developed and that only remediating the corners will not be adequate.	The ecological risk assessment prepared for IR Site 17 was reviewed and approved by the BCT and with consultation with USFWS, USF&G etc. Issues identified for other sites at Alameda Point have no relevance for this assessment.
4	The overall approach to clean up at the base is compartmentalized into discreet sites. This has resulted in plans for one area that conflict with neighboring ones. An example of this is the plume that is in Sites 25, 30 and 31 and in the FISC Annex. Some of the land containing that plume has been transferred to a private developer, making cleanup very complex.	The IR sites have been developed in an attempt to focus efforts on those areas of the site that require the most attention. Addressing the site as a whole could result in dilution of significant issues. The BRAC Environmental Coordinator (BEC) has responsibility for reviewing all significant decisions at each site, so that conflicts are addressed. The BCT and RAB also provide another level of consistency review. The DON does not anticipate any conflicts with the Site 17 selected remedy and nearby IR Sites.
5	Assuming that a bird will feed 10% at the lagoon and the rest elsewhere assumes that "elsewhere" is pristine. Campus Bay is another Bay Area site that would appeal to aquatic fishers and it is highly contaminated. Given the number of industrial and military installations around the Bay, the exposure to toxics are likely to be compounded and ultimately higher than predicted.	It is possible that the receptors evaluated are exposed to contaminants at other locations, however, consistent with the CERCLA process the purpose of this assessment was to focus on the incremental risk associated with Site 17.
6	The connection between the storm drains at Seaplane Lagoon and their potential to contaminate the lagoon further is recognized and will be corrected prior to the start of clean up. However, there are two VOC plumes; one of which almost certainly extends under and into the lagoon. When the	At this time, there is no evidence that groundwater plumes are impacting sediments within Seaplane Lagoon. In addition, is it unlikely that volatile organic carbons (VOCs) in groundwater would result in a

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	contaminated soil in that corner is removed, will the plume be brought into direct contact with the Bay? Would contaminants be able to migrate to the surface if in fact they lie just under the five-foot remediation zone? Will disturbance of the riprap along the shore cause incursion of the plume into the waters of the lagoon? These issues have not been discussed.	significant exposure to the aquatic environment because of the dilution that would inevitably occur. Regardless, groundwater plumes originating at onshore IR sites will be addressed as part of those sites.
7	This reviewer feels that full characterization of contaminants at the site must be conducted, especially if full remediation will not. The preference is for complete cleanup of the lagoon including the debris piles along the north wall, which have not been investigated either. Given the options offered, I concur with the selection of Alternative 5 as the most appropriate and comprehensive. However, there are still unresolved issues identified above that have not been adequately addressed that make any selection less than ideal.	As previously discussed, the lagoon has been the focus of multiple investigations over the course of more than ten years. These data are adequate and sufficient to characterize the nature and extent of contamination within the lagoon and to support the selected remedy. Achieving the remedial goals that have been identified will result in unrestricted use of the site.
Comments on the Final Proposed Plan from Patrick G. Lynch, P.E. (dated March 17, 2006)		
1	The information repository at the Alameda Public Library, which has been closed since March 3, was not available to enable me to review the key documents supporting the recommendations made in the proposed plan. The lack of public access to review and copy key documents during evening hours and weekends I find unacceptable. I feel that an additional 30-day comment period should be allowed after the library reopens on March 20, 2006.	The DON acknowledges your comment regarding the hours of operation for the Information Repositories and regretfully was unaware that the Alameda Public Library was closed for a part of the comment period. The DON is currently taking steps to make IR program documents available on-line. In the meantime, please note that there are two information repositories in Alameda, as shown in the Proposed Plan (Battelle, 2006).
2	Again, simply providing the document index numbers and titles of key documents in the Proposed Plan would greatly enhance the ability of the public to access this information.	The DON acknowledges your comment and will consider providing that information on future documents.
3	What is preventing key documents supporting the proposed plan to be made available online.	The DON is currently taking steps to make IR program documents available on-line.
4	In March 1969 the Alameda Naval Air Station failed to comply with a Cease and Desist Order from the Regional Water Quality Control Board (RWQCB) to stop discharging industrial wastes and untreated wastewater into the Seaplane Lagoon. As the proposed plan notes this illegal discharge continued until 1975. The 1983 Initial Assessment Study describes the Seaplane Lagoon during this period of illegal discharge was occurring. The IAS recalls instances where fish caught in the Seaplane Lagoon smelled of solvents and that boats anchored in the Seaplane Lagoon had their paint removed. The US Navy bears a greater responsibility for “ambient”	The DON acknowledges your comment.

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	pollution in San Francisco Bay than any other major discharger based on the US Navy's unique failure to comply with Cease and Desist Order's issued to all major industrial dischargers to the bay.	
5	The Proposed Plans estimated total volume of the industrial waste discharged to the Seaplane Lagoon of 300 million gallons is far below the discharge volume of 525,000 gallons per day listed in the Cease and Desist Order.	The Initial Assessment Study (NEESA, 1983) estimated that at least 300 million gallons of wastewater were deposited in the lagoon. Regardless of the actual volume, the resulting contamination within the lagoon has been thoroughly characterized and will be addressed through the proposed remedial action.
6	The Proposed Plan's statement that a stormwater pollution prevention program has been in place at Alameda Naval Air Station since 1975 is absurd. Hazardous waste storage areas did not meet design requirements until 1993. Stormwater that accumulated in hazardous waste containment areas was often discharged onto landscaping at Site 3. In one instance the contaminated stormwater discharged to Site 3 resulted in the deaths of dozens of migratory ducks.	Efforts have been underway to control stormwater releases at the site since 1975. The contaminant patterns observed in the sediments at the site confirm that discharges have been declining over time.
7	The Marsh Crust Excavation Ordinance is not listed as an ARAR despite the fact that the ordinance is an applicable requirement. The Marsh Crust Record of Decision shows the Marsh Crust at a depth of 10 feet below ground surface in portions of the Seaplane Lagoon. While the Marsh Crust Excavation Ordinance excluded Site 25, 30, and 31 (a significant deficiency that should have been identified in the 5-Year Review), it includes the Seaplane Lagoon in its entirety. The City Engineer however has violated the Marsh Crust Ordinance by failing to adopt an excavation depth for the Seaplane Lagoon.	The DON does not agree that the Marsh Crust Excavation Ordinance applies to proposed remedial activity at Seaplane Lagoon. It is defined as applying to the "underground" layers that represent the marsh and subtidal zones that existed before the area was filled to create additional dry land. Therefore, it applies to the excavation of soils at Alameda, not sediments in existing offshore areas.
8	What steps will be taken to eliminate odor problems from the handling of excavated sediments? Why haven't BAAQMD regulations for odors been identified as ARARs?	BAAQMD Rule 1-301, under California Health and Safety Code § 41700, is considered a federal requirement because it has been approved into the SIP. Rule 1-301 prohibits the discharge to the atmosphere of air contaminants that may cause injury, detriment, nuisance, or annoyance to the public. The DON is troubled by the vague, subjective nature of the nuisance rule and the lack of objective standards, as well as the inclusion of subjective nonenvironmental criteria such as "annoyance, repose, and comfort." The requirements of 40 C.F.R. § 300.5 specify that an ARAR must be an environmental or facility siting requirement or limitation. Rule 1-301 does not fall within the definition

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		of those terms and is therefore not an ARAR. The nature, quantity, and location of identified contaminants at IR Site 17 should not be of concern. The DON has determined that BAAQMD Rule 1-301 is not an ARAR.
9	How will residual contamination in sediments impact future redevelopment of the Seaplane Lagoon?	Confirmation sampling will be conducted to confirm that the sediments remaining within the lagoon are below the RGs identified. Once the RGs have been achieved, there will be unrestricted future use of the lagoon.

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