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Navy BRAC Environmental Coordinator: Lieutenant Commander Michael Petouhoff
California EPA Project Manager: Tom Lanphar
U.S. EPA Regional Project Manager: James Ricks Jr.
Navy Remedial Project Managers: Gary Munekawa and George Kikugawa
NAS Alameda Project Manager: Teresa Bernhard
PRC Installation Coordinator: Duane Balch
PRC BRAC Cleanup Plan Coordinator: Joseph Mollusky

NAVAL COMPLEX ALAMEDA
ALAMEDA, CALIFORNIA

- NAVAL AIR STATION ALAMEDA
- NAVAL AIR DEPOT ALAMEDA

1995 BASE REALIGNMENT AND CLOSURE CLEANUP PLAN

REVISION 01

Prepared By:

PRC ENVIRONMENTAL MANAGEMENT, INC.
10670 White Rock Road, Suite 100
Rancho Cordova, CA 95670

March 1995

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QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
NAVAL FACILITIES ENGINEERING COMMAND SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

NAS ALAMEDA
BRAC CLEANUP TEAM CONSENSUS STATEMENT

This BRAC Cleanup Plan provides current summary information on the status of and strategies for the cleanup of Naval Air Station Alameda. We, the members of the base realignment and closure (BRAC) cleanup team (BCT), with consideration of community and stakeholder advice, have cooperatively developed this plan to provide for the safe, effective, timely and cost efficient environmental restoration and productive reuse of this Department of Defense (DOD) closing facility. This plan will be updated periodically to reflect new information regarding the environmental condition of the property, reuse priorities and availability of funds. The Plan reflects these guiding principles.

NAS Alameda BCT
Guiding Principles

- Protect public health and the environment.
- Support the Community's reuse plan.
- Promote active Public Involvement.
- Enact a bias to begin clean up where necessary as early in the process as sensible.
- Keep an open mind toward the potential advantages of innovative technologies.

LCDR Michael Petouhoff
BRAC Environmental Coordinator
Department of the Navy
Naval Facilities Engineering Command
Engineering Field Activity, West

Thomas Lanphar
Remedial Project Manager
California Environmental Protection Agency
Department of Toxic Substances Control

James Ricks
Remedial Project Manager
United States Environmental Protection Agency

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LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	applicable or relevant and appropriate requirement
ARRA	Alameda Reuse and Redevelopment Authority
BCP	BRAC cleanup plan
BCT	BRAC cleanup team
BRAC	base realignment and closure
BRAG	Alameda Base Reuse Advisory Group
CAL-EPA	California Environmental Protection Agency
CAMU	corrective action management unit
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CS	confirmation study
DERA	Defense Environmental Restoration Account
DoD	U.S. Department of Defense
DQO	data quality objective
DRMO	Defense Reutilization and Marketing Office
DTSC	Department of Toxic Substances Control
EBCRC	East Bay Conversion and Reinvestment Commission
EBMUD	East Bay Municipal Utility District
EBS	environmental baseline survey
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
FFSRA	federal facility site remediation agreement
FOSL	finding of suitability to lease
FOST	finding of suitability to transfer
FS	feasibility study
FY	fiscal year
GIS	geographic information system
IAS	initial assessment study
IMF	intermediate maintenance facility
IRP	Installation Restoration Program
IWTP	industrial wastewater treatment plant

LIST OF ABBREVIATIONS AND ACRONYMS
(Continued)

NACIP	Navy Assessment and Control of Installation Pollutants
NADEP	Naval Aviation Depot Alameda
NAS	Naval Air Station
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NEPA	National Environmental Policy Act, as amended
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
OU	operable unit
PA/SI	preliminary assessment/site inspection
PCB	polychlorinated biphenyl
pCi/L	picocuries per liter
PEP	parcel evaluation plan
PRG	preliminary remediation goal
PWC	Public Works Center
QA/QC	quality assurance/quality control
RAB	restoration advisory board
RAO	remedial action order
RCRA	Resource Conservation and Recovery Act, as amended
RDBMS	relational database management system
RFI	RCRA facility investigation
RI	remedial investigation
ROD	record of decision
RWQCB	Regional Water Quality Control Board
SACM	Superfund Accelerated Cleanup Model
SARA	Superfund Amendments and Reauthorization Act
SCAPS	Site Characterization and Analysis Penetrometer System
SITE	Superfund Innovative Technology Evaluation
SWMU	solid waste management unit
SVOC	semivolatile organic compound
TRC	technical review committee
UCB	University California Berkeley
USC	United States Code
UST	underground storage tank
VOC	volatile organic compounds
ZAP	zone analysis plan

GLOSSARY

Applicable or relevant and appropriate requirements (ARARs) - ARARs are a set of laws, regulations, or regulatory standards promulgated under federal or state laws that are identified as applying to a cleanup action at a site.

Community Environmental Response Facilitation Act (CERFA) - CERFA is a federal statute amends Section 120(h) of CERCLA. CERFA provides minimum procedures and strict timelines for identifying uncontaminated property at closing military installations.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - CERCLA, a federal statute passed in 1980, establishes a framework for responding to releases of hazardous substances, pollutants, or contaminants in all media (soil, water, or air). CERCLA's basis is not in the regulation of, but in the response to environmental problems.

Corrective action management unit (CAMU) - The CAMU is an area within a facility that is used for management of nonhazardous remediation wastes. Laws govern the use of CAMUs, specifically, the storage and maintenance requirements and the length of time that wastes are stored. CAMUs can be used to manage non-contiguous areas of contamination with similar characteristics; waste can be moved from one or more contamination areas to the CAMU.

Data quality objectives (DQOs) - DQOs are statements that specify the type and quality of data needed to support decisions regarding remedial response activities. The type and quality of data needed are based on the intended use of the data. For example, soil physical characteristics such as grain size and cohesiveness can be evaluated in the field; one may use this data for remedial design. Another example is soil or water chemical data analyzed by qualified laboratories; this data may be used to support risk assessment.

Engineering evaluation/cost analysis (EE/CA) - The EE/CA is a comparison of removal action options. The EE/CA provides detailed information on the removal action technologies, including cost analyses, and ability to perform cleanup in accordance with applicable or relevant and appropriate requirements (ARARs).

Environmental baseline survey (EBS) - An EBS is an inventory of all hazardous waste practices associated with a property parcel. The EBS uses document review, site inspections, employee interviews, and, in some cases, sampling to identify if any activities that have occurred on the parcel involved the use, handling, storage, or disposal of hazardous substances. Based on the results of an EBS, parcels are assigned property classifications.

Environmental impact statement (EIS) - The EIS assesses significant environmental impacts posed by a planned project, and discusses alternatives to the project which would avoid or minimize adverse impacts or enhance the quality of the environment.

Feasibility study (FS) - The FS involves the identification and detailed evaluation of potential remedial actions. According to criteria specified in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), the potential remedial actions are screened down to a reasonable number that undergo detailed analysis to provide adequate information to permit selection of an appropriate remedy for a site or operable unit.

Federal Facility Site Remediation Agreement (FFSRA) - The FFSRA is an agreement between the state and Department of Defense which defines the roles and responsibilities of the parties and includes an enforceable cleanup schedule.

Finding of suitability to lease (FOSL) - The FOSL, prepared by the Department of Defense (DoD), documents properties that are suitable for leasing based on the results of an environmental baseline survey and any appropriate local community reuse plans.

Finding of suitability to transfer (FOST) - The FOST, prepared by Department of Defense (DoD), documents two types of properties that are suitable for transfer by deed. One type of property is that where no release or disposal has occurred, and the second type of property is where release or disposal has occurred. The decision for FOST is based on the results of an environmental baseline survey (EBS), and any appropriate local community reuse plans.

Groundwater - Groundwater is the occurrence of an underground water reservoir or stream. Groundwater is water present in a complex saturated zone in the subsurface, and accumulates as water infiltrates the surface of the earth and moves downward with gravity.

Installation restoration program (IRP) - The IRP is a Department of Defense (DoD) program designed to identify, assess, and remediate contamination resulting from past hazardous waste handling activities at DoD facilities.

Interim remedial measure - Interim remedial measures are cleanup actions that can be taken to respond to an immediate site threat or to take advantage of an opportunity to act quickly to protect human health and the environment. Any interim remedial measure must be incorporated into a final remedy managed under a record of decision (ROD). Examples of interim remedial measures include the pumping of a contaminated aquifer to restrict migration of a contaminant, or construction of a temporary cap on a landfill to restrict surface flow and migration of contaminants.

Maximum contaminant levels (MCLs) - MCLs are federally enforceable limits for contaminants in drinking water established as National Primary Drinking Water Regulations. California has established state primary drinking water MCLs, which should not be exceeded in water supplied to the public.

National Environmental Policy Act (NEPA) - NEPA (1969, amended in 1975) governs the federal evaluation of the environmental consequences of federal decision making or federal actions as they affect the public or private sector. NEPA requirements also govern the environmental impact statement (EIS). NEPA procedures must ensure that environmental information is available to the public before decisions are made and before actions are taken.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) - The NCP, a federal statute signed in 1980 and revised in 1990, provides a framework for implementing the statutory requirements of CERCLA. The NCP provides the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.

Operable unit (OU) - An OU is a management unit. A cleanup can be divided into a number of OUs, depending on the complexity of the site. OUs may address geographic portions of a site, specific site problems, or initial phases of an action.

Parcel evaluation plan (PEP) - The PEP is prepared for each parcel identified in the environmental baseline survey (EBS). The PEP discusses the background and historical activities conducted on the parcel; describes the target investigation areas and compounds of concern; presents the proposed sampling program for the investigation; and discusses any follow-up sampling that may be required at the parcel.

Preliminary assessment/site inspection (PA/SI) - The PA and the SI are two initial steps of the CERCLA investigative process. The PA uses document search and review along with site visits and interviews to determine if further investigation is necessary. If so, an SI is performed. In an SI, waste and environmental samples are collected to determine the presence of substances at a site and whether they are being released to the environment.

Preliminary remediation goals (PRGs) - PRGs are U.S. Environmental Protection Agency values used to estimate "safe" levels of contaminants in soil, air, and water.

Proposed plan - The proposed plan is prepared after the remedial investigation/feasibility study (RI/FS) is completed. The proposed plan highlights key aspects of the RI/FS, provides a brief analysis of cleanup options under consideration, identifies the preferred option, and provides information on how the public can participate in the remedy selection process. The proposed plan is made available to the public for comment.

Record of decision (ROD) - The ROD occurs after the remedial investigation/feasibility study (RI/FS) process is completed and the proposed plan has been subject to at least a 30-day public comment period. The ROD documents the selected remedy, along with rationale for the selection of the remedy. The ROD must be signed by the signatories of the federal facility site remediation agreement (FFSRA).

Remedial action - A remedial action is a cleanup option which may involve the complete elimination or destruction of hazardous substances at the site, the reduction of concentrations of hazardous substances to acceptable levels, or prevention of exposure to hazardous substances via engineering or institutional controls, or some combination of the above.

Remedial action plan (RAP) - The RAP is a decision document issued by the Navy and the State of California for non-national priority list (NPL) sites. The draft RAP is the California equivalent of the proposed plan, and the final RAP is the California equivalent of the record of decision (ROD).

Remedial design - Remedial design is the engineering phase during which technical drawings and specifications are developed for the selected remedial action alternative.

Remedial investigation (RI) - The RI serves as the mechanism at a CERCLA site for collecting data to characterize site conditions, including definition of the nature and extent of contamination, identification of federal and state applicable or relevant and appropriate (ARARs), and assessment of risk to human health and the environment.

Resource Conservation and Recovery Act (RCRA) - RCRA was originally passed in 1976 and revised in 1980 and 1984. RCRA regulates the handling and use of wastes from generation to ultimate disposal. RCRA is designed to protect human health and the environment from potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of generated waste, and to ensure that wastes are managed in an environmentally sound manner.

Solid waste management unit (SWMU) - A SWMU is managed under RCRA and is any unit at which solid wastes have been placed at any time, regardless of whether the unit was intended for the management of solid or hazardous waste.

Semivolatile organic compounds (SVOCs) - SVOCs incorporate a wide variety of organic compounds (carbon-based compounds) which are not easily classified. SVOCs can be defined as organic compounds which have vapor pressures less than 77.6 millimeters mercury under atmospheric conditions; these compounds evaporate slower than water under similar conditions. SVOCs do not exist as gases under normal atmospheric conditions.

Vadose zone - This is a soil region that extends from the ground surface down to the groundwater surface. Because it is so close to the groundwater surface, this region may contain semi-saturated soil.

Volatile organic compounds (VOCs) - VOCs have vapor pressures of 77.6 millimeters mercury or greater under atmospheric conditions. In general, VOCs are organic compounds (carbon-based compounds) that evaporate faster than water under similar conditions. VOCs may exist as gases or liquids under normal atmospheric conditions.

NAVAL AIR COMPLEX
EXECUTIVE SUMMARY

Note: Naval Air Complex Alameda refers to both Naval Air Station Alameda and Naval Air Depot Alameda. Both bases are slated for closure. For simplicity, this document refers to both bases collectively as NAS Alameda.

BRAC CLEANUP PLAN VISION

The vision of the Alameda BRAC Cleanup Team (BCT) is set forth in the following guiding principles:

- **PROTECT HUMAN HEALTH AND THE ENVIRONMENT**
- **SUPPORT THE COMMUNITY'S REUSE PLAN**
- **PROMOTE ACTIVE PUBLIC INVOLVEMENT**
- **ENACT A BIAS TO BEGIN CLEANUP WHERE NECESSARY AS EARLY IN THE PROCESS AS IS SENSIBLE**
- **KEEP AN OPEN MIND TOWARD THE POTENTIAL ADVANTAGES OF INNOVATIVE TECHNOLOGIES**

The BCT has developed a strategy to implement these principles.

PROTECT HUMAN HEALTH AND THE ENVIRONMENT, AND SUPPORT THE COMMUNITY'S RUSE PLAN

The first two goals are the foundation of the BRAC cleanup plan (BCP) process. Neither goal can be considered in isolation, but rather decisions must be made with simultaneous awareness of both objectives. Cleanup laws require the use of applicable and relevant or requirements (ARARS); however, in the base closure environment, ARARs must be viewed within the context of the community's reuse plan. After cleanup and conversion, the future of NAS Alameda belongs to the

community. Specifically, in addition to the legal requirements of the cleanup process, the Alameda BCT endeavors to accomplish the following in support of the first two principles:

- Identify all property that can be transferred without cleanup by base closure in April 1997.
- Pursue leasing as an interim measure to accommodate the community's short-term reuse plan.
- Pursue long-term cleanup consistent with the community's long-term reuse plan.
- Use common sense in all decision making.

Planning for the community's short- and long-term reuse is underway. The short-term community reuse plan is expected to be complete in May of 1995 and the long-term plan will be final in December of 1995. The BCT has made a significant effort through the environmental baseline survey to prepare the information that will be required to support leasing decisions, and which eventually will be needed for cleanup and transfer decisions as well.

Each of the remaining principles support the first two. These supporting principles are discussed below.

PROMOTE ACTIVE PUBLIC INVOLVEMENT

The Restoration Advisory Board (RAB) at NAS Alameda has been established to provide community involvement earlier and more frequently than required by cleanup laws. Membership was sought through a public process which included over 14,000 mailings, newspaper notifications, and base employee notification. Members were chosen with the help of a community panel. Once established, community RAB members selected their own co-chair. The RAB has been given 24-hour access to the base and all cleanup documents in a RAB information repository. The membership is a mini-community representing a wide diversity of interests. The RAB has organized itself into focus groups for "Early Actions," "Natural Resources," "Reuse," "Technology," "Organizational," and "Public

Education and Outreach." Just as fast track cleanup requires parallel multi-tasking, the RAB's focus groups accommodate the tracking of public involvement on multiple issues simultaneously.

The goal of the BCT is to create a forum where the opinions of all stakeholders can be heard by the decision makers and where community members can come to understand each others concerns as well. In 1995 the Navy and community co-chairs are working to focus cleanup efforts with the community short- and long-term reuse plans and also to develop community consensus by coordinating the effort of the RAB with the Base Reuse Advisory Group which advises the reuse authority on reuse planning.

ENACT A BIAS TO BEGIN CLEANUP WHERE NECESSARY AS EARLY IN THE PROCESS AS IS SENSIBLE

The BCT is working to speed up the cleanup process both through expedited site characterization as well as through beginning cleanup sooner through early actions. Using a comprehensive approach to site characterization and real time decision making will ensure that sites are identified and characterized so cleanup can begin. A technical memorandum in Appendix E addresses the process for comprehensive assessment of all real estate.

The Navy has initiated efforts to consolidate historical and current environmental data into a data management system that is being installed on a geographic information system (GIS). The GIS will enable the BCT to access site data and view the data spatially. The GIS will augment informed decision making concerning contamination migration, removal actions, and remedial actions.

In addition, early action strategies of removal actions at more straightforward sites and treatability studies at more complex sites allow cleanup to begin as early as is practicable. Early actions are consistent with the U.S. EPA Superfund Accelerated Cleanup Model in providing early risk reduction and may also be directed to support community reuse needs.

KEEP AN OPEN MIND TOWARD THE POTENTIAL ADVANTAGES OF INNOVATIVE TECHNOLOGIES

To improve and accelerate cleanup, the NAS Alameda project team is evaluating the use of innovative technologies. Consistent with the NCP (40 CFR Part 300.430 (e)(5)), the BCT embraces a bias to introduce better (i.e. in situ treatment vs. excavation) and less expensive technologies early in the process to establish their effectiveness. In a partnership authorized by the Secretary of the Navy, the University of California at Berkeley is currently proposing several technologies for application at NAS Alameda sites, which, after demonstration as treatability studies and based on public and regulatory review, would be available for full scale implementation as part of the cleanup of various sites.

In addition, the Navy, California EPA, and US EPA are also jointly conducting a soil washing technology demonstration at Site 15 through the EPA's Superfund Innovative Technology Evaluation (SITE) program. The SITE program evaluates new and promising treatment and monitoring technologies for the cleanup of hazardous waste sites.

An example of innovative technology applied to site characterization is the recently completed contaminant delineation of Site 13 at NAS Alameda using the Site Characterization and Analysis Penetrometer System (SCAPS). SCAPS uses laser light, fiber optic cable, and optical sensors to detect petroleum hydrocarbons in soil and groundwater in real time.

BCP OVERVIEW

The BCT prepared the BCP to serve as the road map for expeditious cleanup of NAS Alameda. This BCP contains the status, management and response strategy, and action items related to NAS Alameda's ongoing environmental restoration and associated compliance programs. The BCP reflects the outcome of a comprehensive bottom-up environmental program review by the BCT and project team with consultation from the community. The BCP was developed following the 33-point protocol described in the BRAC cleanup plan guidebook published by the U.S. Department of Defense (DoD) in 1993. The BCT conducted BCP workshops with the RAB on December 13, 1994 and January 3,

1995, and received comments from the full RAB at the January 10, 1995 RAB meeting. As a dynamic document, the BCP will be revised at least annually to update the status and strategies of all environmental programs as well as the environmental condition of property. This document is the first revision of the BCP and represents conditions and strategies as of December 1994.

STATUS AND STRATEGY OF ENVIRONMENTAL PROGRAMS

A federal facility site remediation agreement (FFSRA) is being negotiated between the Navy and the California EPA. The FFSRA includes a site management plan that addresses a comprehensive strategy consistent with the BCP for integration of the Installation Restoration Program with all other programs affecting the environmental condition of property.

Currently, there are 23 sites within the Installation Restoration Program. These sites are organized into four operable units based on contamination, location, remediation potential, and reuse priority. Other environmental programs addressed in the BCP include those for underground and aboveground storage tanks, Resource Conservation and Recovery Act (RCRA) solid waste management units, fuel lines, polychlorinated biphenyl (PCB) transformers, lead paint, asbestos, and natural resources. Action items to be performed by the BCT and the NAS Alameda project team to expedite environmental response actions to facilitate property reuse are presented in Table ES-1.

SCHEDULE AND FUNDING

The BCP provides a schedule and resource requirements by fiscal year (FY) for planning and execution. Associated funding requirements are based on solid engineering estimates of known requirements consistent with industry practice. The BCP is consistent with previous budgetary allocations for FY95. Where opportunities for acceleration have been identified but cannot be fully exploited because of constraints in the FY95 budget, these additional, executable funding requirements are listed separately. Requirements are displayed for installation restoration, closure-related compliance, and natural resources by FY. The FFSRA, using the site management approach, will

provide an annual update of the entire life cycle schedule for all action through cleanup. The process is designed to be consistent with the timing of the federal budgeting process.

TABLE ES-1

NAVAL COMPLEX ALAMEDA
BCT/PROJECT TEAM ACTION ITEMS
Sheet 1 of 4

Action Item	To be Performed	In Progress	Complete
Reuse			
Determine environmental condition of property.		X	
Identify CERFA-eligible parcels.			X
Determine FOSL/FOST requirements and property transfer mechanisms.		X	
Coordinate with reuse plan development.		X	
Modify EBS to support FOSL and FOST for all parcels.			X
Define decision document to support FOST for all parcels.		X	
Continue to define role and responsibilities of RAB.		X	
Determine transfer requirements for DTSC Part B Hazardous Waste Permit.		X	
Determine transfer requirements for air permits.		X	
Coordinate with reuse planners and community to identify and understand future reuse priorities.		X	
Complete EBS phases IIA and IIB and update environmental condition of property of all parcels.		X	
Installation Restoration Program			
Assemble early action focus group.			X
Assemble innovative technology focus group.			X
Determine extent of groundwater contamination.		X	
Evaluate comingling of groundwater contamination plumes in relation to program integration.		X	
Refine operable unit boundary definitions.			X
Define beneficial reuse of groundwater.		X	
Evaluate data quality and usability of historical data.		X	
Evaluate quality of Canonie IRP data.		X	
Input Canonie historical IRP data and RI data into the GIS.		X	
Recognize potential for RIs to address parcels identified by EBS.	X		

TABLE ES-1

NAVAL COMPLEX ALAMEDA
BCT/PROJECT TEAM ACTION ITEMS
Sheet 2 of 4

Action Item	To be Performed	In Progress	Complete
Conduct additional work to complete the ecological assessment of the aquatic sites (Sites 17 and 20, and wetlands).	X		
Perform additional groundwater monitoring in the first and second water-bearing zones of the first aquifer to characterize groundwater conditions.		X	
Conduct four quarterly groundwater sampling events to address the seasonal variability of groundwater quality.		X	
Evaluate the adequacy of the existing data for representing background conditions.		X	
Evaluate the use of PRGs in an effort to accelerate the RI/FS process.		X	
Initiate the risk assessments as soon as at least two quarters of groundwater data are available, adjusting the final risk assessments after all four quarters data are available.		X	
Develop conceptual site models during the RI.	X		
Perform an ARARs evaluation during the RI/FS.	X		
Environmental Compliance Programs			
Evaluate integration of RCRA and UST sites into the IRP.			X
Identify potential NEPA requirements for environmental assessment for interim uses of property.		X	
Prepare non-IRP/RCRA sampling plan.			X
Investigate PCB transformer sites to assess impact to soils and groundwater from spills or leaks of oil.	X		
Conduct a basewide asbestos survey to identify asbestos-containing material present in buildings.		X	
A RCRA facility investigation (RFI) is required to demonstrate compliance with the RCRA Part B permit. Conduct the EBS phase II field work as a RFI.		X	
Assess oil/water separator sites for environmental impacts.		X	
Perform a basewide lead-based paint survey to identify building materials containing lead paint.	X		

TABLE ES-1

NAVAL COMPLEX ALAMEDA
BCT/PROJECT TEAM ACTION ITEMS
Sheet 3 of 4

Action Item	To be Performed	In Progress	Complete
Characterize and determine treatment method and treatment area for contaminated soils from UST removals.		X	
Conduct survey to evaluate radiation concerns.		X	
Identify location of treatment area for contaminated soils from UST removals.		X	
Other Issues			
Formulate strategy for data management and GIS implementation to support on-site decision making.			X
Evaluate funding mechanism for natural resource trustees.		X	
Input EBS, RAC and RI data into the GIS.	X		
Evaluate compliance program data for incorporation into the GIS.	X		
Conduct storm water sampling to demonstrate compliance with the storm water permit.	X		
Implement long-term groundwater monitoring plan.		X	
Develop storm water monitoring plan.		X	
Evaluate analytical results of filtered and unfiltered groundwater samples.	X		
Evaluate the application of CAMUs for on-site treatment of hazardous wastes.		X	
DTSC will solicit ARARs for NAS Alameda.		X	
Coordinate actions between all contractors with the CLEAN contractor providing oversight and integration of all data into the RI/FS and ROD.		X	
Through the IRP, identify new ways to communicate ongoing cleanup actions and risk management.		X	
Incorporate new, innovative characterization and cleanup technologies and expert input during the NAS Alameda cleanup process.		X	
Evaluate presumptive remedies on a site-by-site basis.		X	

TABLE ES-1

NAVAL COMPLEX ALAMEDA
BCT/PROJECT TEAM ACTION ITEMS
Sheet 4 of 4

Action Item	To be Performed	In Progress	Complete
Pursue opportunities through partnering training, facilitated workshops and public open houses to foster real partnering between all "stakeholders" in the NAS Alameda closure and conversion process.	X		
Define consensus statement process.		X	
Work closely with EFA West and NAVFAC to provide accurate updates on budget requirements and schedule impacts.		X	
Complete treatability studies and incorporate results into the FS and remedial designs.		X	
Identify opportunities for small and disadvantaged business.		X	
Assess and monitor CLEAN and RAC capacities available to evaluate continuity of program execution.		X	
Complete early actions to accelerate cleanup.		X	

ARAR	Applicable or Relevant and Appropriate Requirements
CAMU	Corrective Action Management Unit
CERFA	Community Environmental Response Facilitation Act
CLEAN	Comprehensive Long-term Environmental Action Navy
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
EFA WEST	Engineering Field Activity WEST
FFSRA	Federal Facilities Site Remediation Agreement
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
FS	Feasibility Study
GIS	Geographic Information Systems
IRP	Installation Restoration Program
NAS	Naval Air Station
NAVFAC	Naval Facility Engineering Command
NEPA	National Environmental Policy Act
PRG	Preliminary Remediation Goals
RAC	Remedial Action Contract
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
UST	Underground Storage Tank

CHAPTER 1
INTRODUCTION

On July 2, 1993, President Clinton presented a five-part program to expedite economic recovery at communities with military bases identified for closure. The program includes the following components:

- Jobs-centered property disposal that emphasizes local economic redevelopment
- Easy access to transition and redevelopment assistance for workers and communities
- Fast-track cleanup that accelerates remedial action while protecting public health and the environment
- Transition coordinators located at bases identified for closure
- Larger economic development planning grants to communities

In September 1993, Naval Air Station (NAS) Alameda and Naval Air Depot Alameda (collectively referred to as NAS Alameda) were designated for closure in accordance with the Defense Base Realignment and Closure (BRAC) Act of 1990. The NAS Alameda BRAC cleanup plan (BCP) addresses the status and strategy developed for the fast-track cleanup portion of the President's program. The key elements of fast-track cleanup include establishing a cleanup team at every base; making clean parcels available for civilian use as quickly as possible; and accelerating the National Environmental Policy Act (NEPA) process, with the community's reuse plan being the basis for the NEPA analysis. The Installation Restoration Program and environmental compliance programs have been accelerated to expedite property reuse. NAS Alameda's aggressive response to the challenges posed by base closure have addressed all the key elements of fast-track cleanup and provided a foundation for attaining property reuse and economic redevelopment.

An environment baseline survey (EBS) is underway and is being performed in phases. The first phase included the gathering and evaluation of nonintrusive data to initially assess the environmental condition of all base property (214 parcels), identify data gaps, and identify Community

Environmental Response Facilitation Act (CERFA)-qualified parcels. The EBS phase I has been completed and parcels 39, 60, 63, 93, 101, and 194 were identified as CERFA-qualified parcels. To address data gaps, environmental assessment protocols were established and the EBS phase II is being performed on 208 parcels (six other original parcels are being investigated separately as part of the Fleet Industry Supply Center Oakland [FISCO]). EBS phase IIA involves a limited site investigation of selected parcels. EBS phase IIB includes environmental sampling to address data gaps at parcels as identified during phase IIA.

The EBS will be finalized by summarizing all parcel information into a parcel-specific EBS report that includes all the parcel information required for finding of suitability to lease (FOSL) or finding of suitability to transfer (FOST). The parcel-specific EBS report will include the following information: parcel description, background and historical activities, building descriptions, open space discussion, parcel boundary conditions, target area and compounds of concern, and a parcel map showing sampling locations. The parcel-specific EBS report will be attached to the FOSL or FOST as parcels become available or are remediated. The BCT has set a goal to complete all documentation required for FOSL or FOST for BRAC category 1 through 4 parcels (those parcels with no past impacts through impacted sites for which all cleanup actions have been performed) by the time the Navy vacates the parcel and has completed any one-time compliance activities.

The Navy has implemented environmental programs to identify contaminated areas and clean up those areas that pose a threat to human health or the environment. In addition, compliance with applicable federal and state laws and regulations will ensure that present waste and resource management practices implemented by the Navy and property lessees are carried out in a manner that protects human health and the environment.

This BCP summarizes the current status of the NAS Alameda environmental restoration and associated environmental compliance programs. The BCP also presents a comprehensive strategy for implementing response actions necessary to protect human health and the environment. This strategy involves integrating environmental restoration activities and the associated environmental compliance programs to support full restoration of the base. Associated compliance programs include Resource

Conservation and Recovery Act (RCRA)-type compliance programs, natural and cultural resource programs, environmental condition of property studies, and community relations activities. This BCP also summarizes the community's reuse plan and the Navy's strategy for integrating environmental cleanup plans with reuse plans. The BCP is a dynamic document that will be updated regularly to incorporate new information and reflect the completion or change in status of any programs. This BCP, revision 01, is based on information available as of February 1995.

This BCP is a planning document. Information, schedules, and removal actions presented here do not necessarily represent those that have been or will be approved by the Navy or federal and state regulatory agencies. It was necessary to make certain assumptions and interpretations to develop the estimates. Furthermore, schedules depend on contracts and the availability of funds. As additional data become available, implementation schedules and cost estimates could be dramatically altered. Such changes would then be reflected in future updates to this BCP.

The BCP, which is structured according to guidelines outlined in the 1993 U.S. Department of Defense (DoD) BRAC guidebook, is organized as follows.

Chapter 1 describes the objectives of the environmental restoration program, explains the purpose of the BCP, introduces the project team formed to review the program, and provides a brief history of the base.

Chapter 2 summarizes the current status of the property disposal planning process and describes the relationship of the disposal process with other environmental programs.

Chapter 3 summarizes the current status and past history of environmental programs at NAS Alameda including the Installation Restoration Program (IRP), associated environmental compliance programs, natural and cultural resource programs, and the environmental condition of property studies. Chapter 3 also discusses the status of community relations activities.

Chapter 4 describes the strategy for environmental restoration programs discussed in Chapter 3.

Chapter 5 provides master schedules of planned and anticipated activities to be performed throughout the duration of the environmental restoration program, including associated compliance activities.

Chapter 6 describes specific technical and administrative issues to be resolved and presents a strategy for resolving these issues.

In addition to the main text, the following appendices are included in this document:

- Appendix A - Presents tables summarizing funding requirements for the environmental restoration program.
- Appendix B - Lists environmental restoration program documents to date.
- Appendix C - Presents working conceptual models for sites or operable units (OU).
- Appendix D - Presents background summary tables for background soil and groundwater sampling.
- Appendix E - Presents the technical memorandum for the environmental assessment approach for parcels that have not been evaluated and will require additional evaluation.
- Appendix F - Contains the guidance for findings of suitability to lease (FOSL) and findings of suitability to transfer (FOST).

1.1 ENVIRONMENTAL RESPONSE OBJECTIVES

The environmental restoration strategy described in Chapter 4 and the related master schedules presented in Chapter 5 were developed according to the following six guiding principles.

1. Protect human health and the environment
2. Focus on community reuse
3. Adopt a bias for early action versus additional study
4. Introduce innovative technologies early in the process to accelerate site characterization and cleanup in a cost effective manner

5. Make informed and realistic decisions

6. Promote active public involvement

The environmental programs will comply with existing statutes and regulations, and all IRP activities will be conducted in a manner consistent with Section 120 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendment and Reauthorization Act (SARA).

The following specific goals have also been identified, and action items toward meeting these goals are reflected in the strategies and schedules presented in this cleanup plan:

- Meet federal facility site remediation agreement (FFSRA) deadlines presented in Chapter 5 of this BCP.
- Conduct environmental baseline surveys (EBS).
- Continue efforts to identify all potentially contaminated areas.
- Incorporate any new sites into the FFSRA as appropriate.
- Establish priorities for environmental restoration and restoration-related compliance activities.
- Initiate selected removal actions to control, eliminate, or reduce risks to protect human health and the environment; to reduce future remedial action expenditures; and to enact a bias for cleanup where necessary as early in the process as is sensible, rather than performing additional studies.
- Identify and map the environmental condition of installation property, concurrent with remedial investigation (RI) efforts; consider future land use scenarios when characterizing risks associated with releases of hazardous substances, pollutants, contaminants, or hazardous wastes.
- Identify and map areas that are suitable and unsuitable for transfer by deed.
- Complete RIs as soon as practicable for each source area, or at each OU, in an order determined after environmental concerns and reuse plans have been considered.

- Develop, screen, and select remedial actions that reduce risks in a manner consistent with statutory requirements.

- Advise the real estate arm of the Navy BRAC organization of properties that are deemed suitable for transfer or not suitable for transfer because they are either not properly evaluated or pose an unacceptable human health or environmental risk.

1.2 BCP PURPOSE, UPDATES, AND DISTRIBUTION

This BCP summarizes the status of NAS Alameda environmental restoration and compliance programs and the comprehensive strategy for environmental restoration and restoration-related compliance activities. It lays out the NAS Alameda environmental response action approach supporting base closure. In addition, it defines the status of efforts to resolve technical issues so that continued progress and implementation of scheduled activities can occur. The NAS Alameda BCP strategy and schedule are designed to streamline and expedite the necessary response actions associated with all parcels to facilitate the earliest possible disposal and reuse activities.

The original NAS Alameda BCP was released in March 1994. This is revision 01 and reflects progress made and information collected as of February 1995. Updates are expected to be issued annually.

A distribution list is provided at the front of this document.

1.3 BCT/PROJECT TEAM

Table 1-1 presents the NAS Alameda BRAC cleanup team (BCT). The BCT, which is led by the BRAC environmental coordinator, is responsible for managing the BCP process, preparing the BCP, and addressing the community's concerns on base closure and reuse.

The BCT is assisted by a project team composed of representatives from the Navy and its contractors as well as representatives of California Department of Toxic Substances Control (DTSC), U.S. Environmental Protection Agency (EPA), and the community. The NAS Alameda project team is

identified in Table 1-1. During project team meetings, periodic program reviews are conducted and consensus on decisions reached with federal and state regulators.

1.4 DESCRIPTION OF BASE

This section contains a summary of the NAS Alameda environmental setting, history, and waste generating and disposal activities that are known to have or may have contributed to the present environmental condition. To complete the description of NAS Alameda, Sections 1.4.5, 1.4.6, and 1.4.7 describe the status of property acquisition, tenants, and housing.

1.4.1 Environmental Setting

NAS Alameda is located on Alameda Island, which lies at the western end of the city of Alameda in Alameda County, California. Figure 1-1 displays the regional location, size, and shape of NAS Alameda. Alameda Island lies along the eastern side of the San Francisco Bay adjacent to the city of Oakland. The base, rectangular in shape, is approximately 2 miles in length, 1 mile in width, and occupies 2,634 acres. NAS Alameda includes approximately 1,526 acres of land and 1,108 submarine acres. Land use in the vicinity of NAS Alameda is primarily residential and military. The base is bordered to the north by the Oakland Inner Harbor, north of which is the main site of the Fleet and Industrial Supply Center Oakland. Located to the west and south of NAS Alameda is the San Francisco Bay. To the east is a mixture of industrial, residential, and public land uses including shipyards, naval supply centers, single family dwelling homes, apartments, restaurants, retail stores, schools, and a state beach. Figure 1-2 presents a site map of NAS Alameda.

Alameda Island is at the base of a gently westward-sloping plain that extends from the Oakland-Berkeley hills on the east to the shore of the San Francisco Bay. Originally a peninsula, Alameda Island was detached from the mainland in 1902 when a channel was cut linking San Leandro Bay with the San Francisco Bay. The northern portion of Alameda Island was formerly tidelands, marshlands, and sloughs adjacent to the historical San Antonio Channel, now known as the Oakland Inner Harbor. Most of the land that is now NAS Alameda was originally under water.

The San Francisco Bay area experiences a maritime climate with mild summer and winter temperatures. Prevailing winds of the San Francisco Bay Area are from the west. Because of the varied topography of the Bay Area, climatic conditions vary considerably throughout the region. Heavy fogs occur on an average of 21 days per year. Rainfall occurs primarily during the months of October through April. NAS Alameda averages approximately 18 inches of rainfall a year (Air Traffic Control NAS Alameda 1992). There are no naturally occurring surface streams or ponds on NAS Alameda. Precipitation either returns to the atmosphere by evapotranspiration, runs off in the storm drain system that discharges to San Francisco Bay, or infiltrates to the groundwater.

NAS Alameda is underlain by approximately 300 feet of unconsolidated sediments, which themselves overlie consolidated Franciscan bedrock (Radbruch 1957). All or some of the following unconsolidated units are typically present within the NAS Alameda area, listed beginning with the deepest (oldest) to most shallow (youngest):

- Lower Pleistocene deposits (undifferentiated), immediately overlying Franciscan bedrock, consist of undifferentiated terrestrial (channels of sand and gravel, with silt and clay interbeds) and estuarine deposits (relatively finer-grained material containing sparse microscopic marine fossils deposited in bays and marshes) of Lower Pleistocene age (Atwater et al. 1977). The thickness of the Lower Pleistocene deposits is not known.

- Upper Pleistocene estuarine deposits, which overlie the undifferentiated lower Pleistocene deposits, consist of dark, greenish-gray silty clay. The unit is considered an aquitard in the NAS Alameda area and is present at a depth of approximately 90 feet under the westernmost portions of NAS Alameda (PRC Environmental Management, Inc. [PRC] 1991).

- Upper Pleistocene/Holocene deposits unconformably overlie the Upper Pleistocene deposits. The unit consists of eolian (fine-grained sand to silty sand deposited by wind, with bivalve shells and (broken shell debris or "hash") deposits of Late Pleistocene to Holocene age in the NAS Alameda area.

- Holocene Bay Mud, the youngest naturally occurring unit, consists of fine-grained material (clay to silty clay with silty and clayey sand interbeds, some bivalve shells and plant remains) deposited in an estuarine environment.

- Artificial fill overlies the Holocene Bay Mud and consists of dredge spoils from surrounding San Francisco Bay, the Seaplane Lagoon, and the Oakland Channel. The fill composition is generally silty sand to sand with minor inclusions of clay or gravels or both. Thickness ranges from 0 to 30 feet over most of NAS Alameda.

Most of NAS Alameda is built on land created by fill material placed over adjacent submerged lands. The original tidal area consisted of deep deposits of Holocene Bay Mud interspersed with numerous drainage channels and sloughs. Land was obtained by hydraulic filling of adjacent tidal areas of the bay. The fill came from many places, including material dredged from the estuary.

Two aquifers underlie NAS Alameda. The deepest aquifer, labeled the second aquifer (PRC 1993b) occurs in terrestrial sediments of the undifferentiated Lower Pleistocene deposits discussed above. The first aquifer comprises two (the first and second) water-bearing zones locally separated by the discontinuous Holocene Bay Mud Unit. The first water-bearing zone occurs in artificial fill, and the second water-bearing zone occurs in Upper Pleistocene/Holocene deposits. The second water-bearing zone is locally continuous with the first water-bearing zone. Both the first and second aquifers are influenced by tidal fluctuations of the San Francisco Bay.

Water quality problems have been identified in wells that tap shallow aquifers (generally not exceeding about 100 feet in depth) in the city of Alameda area. Water quality problems identified in these wells include high concentrations of nitrates and saltwater intrusion. Groundwater within the second aquifer was at one time used for industrial supply wells on Alameda Island. The wells were abandoned because of naturally occurring mercury contamination derived from the Franciscan Formation (Ecology and Environment, Inc. [E&E] 1983). Presently, no groundwater is used for water supply on Alameda Island or in Oakland according to the East Bay Municipal Utility District (E&E 1983).

1.4.2 Base History

The western tip of the Alameda peninsula known as Point Alameda was originally farmed before becoming an industrial and ferry and rail transit center. Railroad yards and right-of-ways for

Southern Pacific, Central Pacific, and small local railways were built over the site and the sloughs to the north. The western terminus for the transcontinental railroad was at the south east corner of the base for a short period in 1869. Before 1930, at least two large industrial sites (a borax processing plant and an oil refinery) were located on Alameda Island within what is now NAS Alameda. The oil refinery was located in the southeast corner of the air station. The borax plant was also located on the dry land at the southeast corner of Atlantic and Eighth Streets (Sanborn 1897). The U.S. Army acquired the NAS site from the City of Alameda in 1930 and began construction activities in 1931. In 1936, the U.S. Navy acquired title to the land from the Army and began building the air station in response to the military buildup in Europe before World War II. The construction involved filling considerable area between the Oakland Estuary (Oakland Inner Harbor) and the old Alameda Point. After the 1941 entry of the U.S. into the war, more land was acquired adjacent to the air station. Following the end of the war, NAS Alameda returned to its original primary mission of providing facilities and support for fleet aviation activities.

1.4.3 Hazardous Waste Generation

Operations and the population at NAS Alameda vary considerably because of the influx of reservists and personnel from ships homeported at the station. Similarly the waste generating activities have also fluctuated as the activities at NAS Alameda have changed with time. Table 1-2 presents a history of operations at NAS Alameda and the related hazardous substance activities. Table 1-3 summarizes the current hazardous waste generating activities at NAS Alameda. The generation rates shown in Table 1-3 are based on 1992 or 1993 yearly totals. Waste generating activities described in Table 1-3 have occurred in various places throughout the base. Figure 1-2 shows generalized use areas, such as industrial areas, housing areas, and runway areas.

NAS Alameda and its two largest tenants, Navy Public Works Center (PWC) and Naval Aviation Depot Alameda (NADEP), support several activities that have generated RCRA-listed hazardous wastes including, but not limited to, industrial solvents, acids, paint strippers, degreasers, caustic cleaners, and metal plating wastes. Minor quantities of other hazardous materials and nonhazardous materials, such as used oil, fuel, and asbestos are also likely to have been generated.

Other NAS Alameda activities that have generated hazardous wastes in the past are described below.

- **The Aircraft Intermediate Maintenance Department (AIMD).** The AIMD is responsible for the intermediate repair of aircraft components for transient and tenant aircraft. NAS Alameda is homeport to seven air squadrons and one Marine Air Group squadron.

- **Air Operations.** The air operations office manages a Navy Class "C" airfield at NAS Alameda. This is a complete airfield capable of handling any aircraft that the Navy operates under instrument flight rules or visual flight rules conditions, with standard precision instrument approach conditions of 200-foot ceiling and 1/2-mile visibility. Contaminants associated with air operations include fuel spills, fuel dumps before emergency landings, and occasional crashes. A helicopter wash-down area is present near structure 489.

- **Waterfront Operations.** NAS Alameda operates a deep water port capable of berthing aircraft carriers. Currently, there are three ships homeported at NAS Alameda including two aircraft carriers. The operations department, through the Port Services Division, operates and maintains service craft, provides berthing facilities for major Pacific Fleet ships, compiles and maintains boarding jackets, and provides environmental cleanup services around the piers. In the past, the Port Services Division has been a generator of hazardous waste at NAS Alameda. Before the initiation of Cold Iron programs designed to eliminate discharges to the pier waters by ships in port, wastes were disposed of overboard. Currently, the disposal of shipboard hazardous waste is coordinated through PWC, and the Port Services Division cleans waterborne hazardous waste spills when they occur.

- **Navy Exchange Service Stations.** One service station is operated on base in Building 459 (IRP Site 7A). The station is approximately 30 years old. A second service station, in Building 547 (IRP Site 7C), is no longer in service. In 1980, an underground gasoline storage tank at the Building 547 station ruptured. However, the rupture was not detected until service station customers discovered water in the gasoline they pumped for their automobiles. It is believed by NAS Alameda that no gasoline leaked from the tank because the tank was located below the water table and water was seeping into the tank. However, the tank was not drained and repaired until sometime between 1980 and 1987. In 1987, tank testing revealed that fuel lines to the tank were leaking; and they were subsequently replaced (Canonie Environmental Services, Inc. [Canonie] 1990c). Waste oils at both stations were stored in underground tanks and pumped out as needed by a local contractor (E&E 1983). The locations of the waste oil tanks at the former service station are unknown. The initial assessment study (IAS) reported that a third service station was operated at Building 162 (IRP Site 7B) before 1961; base personnel did not confirm this report at the time of the IAS. However, two 500-gallon tanks located at the northeast corner of

Building B-612 that held aviation gasoline for floatbowl testing (Pentony 1994) may be the reason for this report.

- **Weapons Department.** The Weapons Department is responsible for receiving, issuing, storing, and shipping ammunition, ammunition components, and explosives. The department also operated a small arms firing range and saluting battery and coordinates ordnance disposal with the Explosive Ordnance Disposal (EOD) detachment. The department follows established criteria for the safe handling of ordnance.

- **Supply Department.** NAS Alameda houses a supply department that is responsible for, among other things, providing fueling support service. Fueling support service activities have contributed to soil and groundwater contamination since 1941, when aviation gasoline supply lines near the hangers ruptured and caused the evacuation of several buildings. Other fuel leaks and spills have also been reported.

- **Pest Control.** Pest control activities were the function of NAS Alameda's Public Works Department before 1974 and later were handled by the Oakland Naval Supply Center's PWC. In the past, the insecticides chlordane, lindane, and dichlorodiphenyltrichloroethane (DDT), as well as the herbicides Telvar, Chlorvar, and 2,4-dichlorophenoxyacetic acid (2,4-D), have been used.

Several other tenants and supported units that may also have contributed to the release of hazardous wastes to a minor extent in the past are listed below.

- Commander Naval Air Force U.S. Pacific Fleet Material Representative
- Construction Battalion Unit 416 (CBU 416)
- Defense Property Disposal Office (DPDO)
- Navy Disease Vector Ecology Control Center (DVECC)
- Alameda Detachment, EOD Group One
- Marine Air Group 42
- Marine barracks
- Naval Air Reserve Unit (NARU)
- Naval PWC - San Francisco Bay
  - Building 114 (public works shops, pesticide shop discussed previously)
  - Building 6 (transportation shop)
  - Power Plant - Building 10
  - Power Plant - Building 584
- Naval Regional Dental Center (NAVREGDENCEN) Branch Clinic
- Naval Regional Medical Center (NAVREGMEDCEN) Branch Clinic
- Pacific Fleet Audio-Visual Facility (PACFLTAVFAC) Component
- Shore Intermediate Maintenance Activity (SIMA)
- Supervisor of Shipbuilding, Conversion, and Repair (SUPSHIP)

1.4.4 Waste Disposal and Storage Activities

Most industrial wastes generated at NAS Alameda were disposed of in one of three locations: the 1943-1956 disposal area, the West Beach Landfill, or the San Francisco Bay. Details of waste disposal operations at NAS Alameda were compiled during the initial assessment study (IAS) conducted under Naval Assessment and Control of Installation Pollutants (NACIP) program (E&E 1983). A brief summary of those operations is provided below.

The 1943-1956 disposal area, located in the northwest corner of the base, is believed to have received all wastes generated on base except those that were discharged to the storm sewers. Materials known to have been disposed of at this site include old aircraft engines, garbage, cables, scrap metal, waste oil, paint waste, solvents, cleaning compounds, construction debris. Paper products were burned in the base incinerator, which was located near Building 459 and operated until 1945. The ashes were disposed of in the disposal area. The disposal method used by PWC personnel consisted of digging trenches to the water table, filling them with waste, and compacting the material with a bulldozer. Cover material was applied on a regular basis. In the early 1950s, open burning was used as the disposal method. The burning pit was located at the northern end of Runway 13-31.

Most of the liquid wastes generated at NAS Alameda were discharged to the storm drains. However, before the early 1970s, an estimated 50,000 pounds per month of accumulated sludges, spent liquid, and solid process material were disposed of at the West Beach Landfill (E&E 1983). The disposal method used at the West Beach Landfill was similar to that used at the 1943-1956 disposal area. After several fires were caused by bulldozers driving over drums full of apparently flammable material, the drums were buried after they were punctured and drained. The surface of the roads that traverse the landfill were made using spent blasting grits and abrasives for the road surface. From approximately 1957 to the early 1970s, waste oils were released directly on the landfill road surfaces from waste oil tankers and baker tanks to control dust. Two unlined oil sumps were located at the West Beach Landfill for waste oils that were not reclaimed or sold. These sumps are reportedly located in the northeast corner of the landfill and in the southwest corner just north of the approximate boundary between the landfill and the previous dredge spoil area (E&E 1983). Waste

oils disposed at the landfill included polychlorinated biphenyl (PCB)-contaminated oil from transformers. Other wastes disposed of at the landfill included PCB-contaminated rags, radium-contaminated rags from the instrument dial painting and stripping shop, tons of carbonless paper containing PCBs, infectious waste from the Oak Knoll Naval Hospital, pesticides, asbestos pipe lagging, mercury wastes from broken manometers and fluorescent tubes, inert ordnance, and waste from three other naval bases in the San Francisco Bay Area (E&E 1983). A one-time disposal of several hundred pounds of tear gas agents from the National Guard occurred in 1968 or 1969. The tear gas was disposed of as loose powder in containers; their locations are unknown.

As noted previously, all industrial wastewaters generated at NAS Alameda before 1974 were discharged directly to the storm drains. The storm drains, in turn, discharged to the Seaplane Lagoon, Dock 5 basin, and Oakland Inner Harbor. Between 1972 and 1975, the industrial waste collection system was rerouted to discharge to the East Bay Municipal Utilities District (EBMUD) wastewater system. Currently, five pretreatment facilities exist at Buildings 5, 24, 25, 32, and 360 to meet EBMUD influent standards.

Building	Flow Rate (gpd)
5	5,000
360	10,000
24	1,000
25	8,000
32	5,000
Total	**29,000**

The industrial wastewater treatment plants (IWTP) at Buildings 5, 24, and 25 currently treat and reduce chromium wastes. The IWTP at Building 32 currently treats chromium, cyanide, and phenol wastes. The IWTP at Building 360 is inactive but formerly treated chromium and cyanide wastes. The IWTP at Building 410 is inactive but formerly treated chromium and phenol wastes. The active pretreatment pit at Building 360 adjusts pH before the waste is released to the industrial sewer.

1.4.5 Property Acquisition

A property acquisition table is being compiled for NAS Alameda based on property title documents. The table will be included in a future update of the BCP.

1.4.6 Tenants

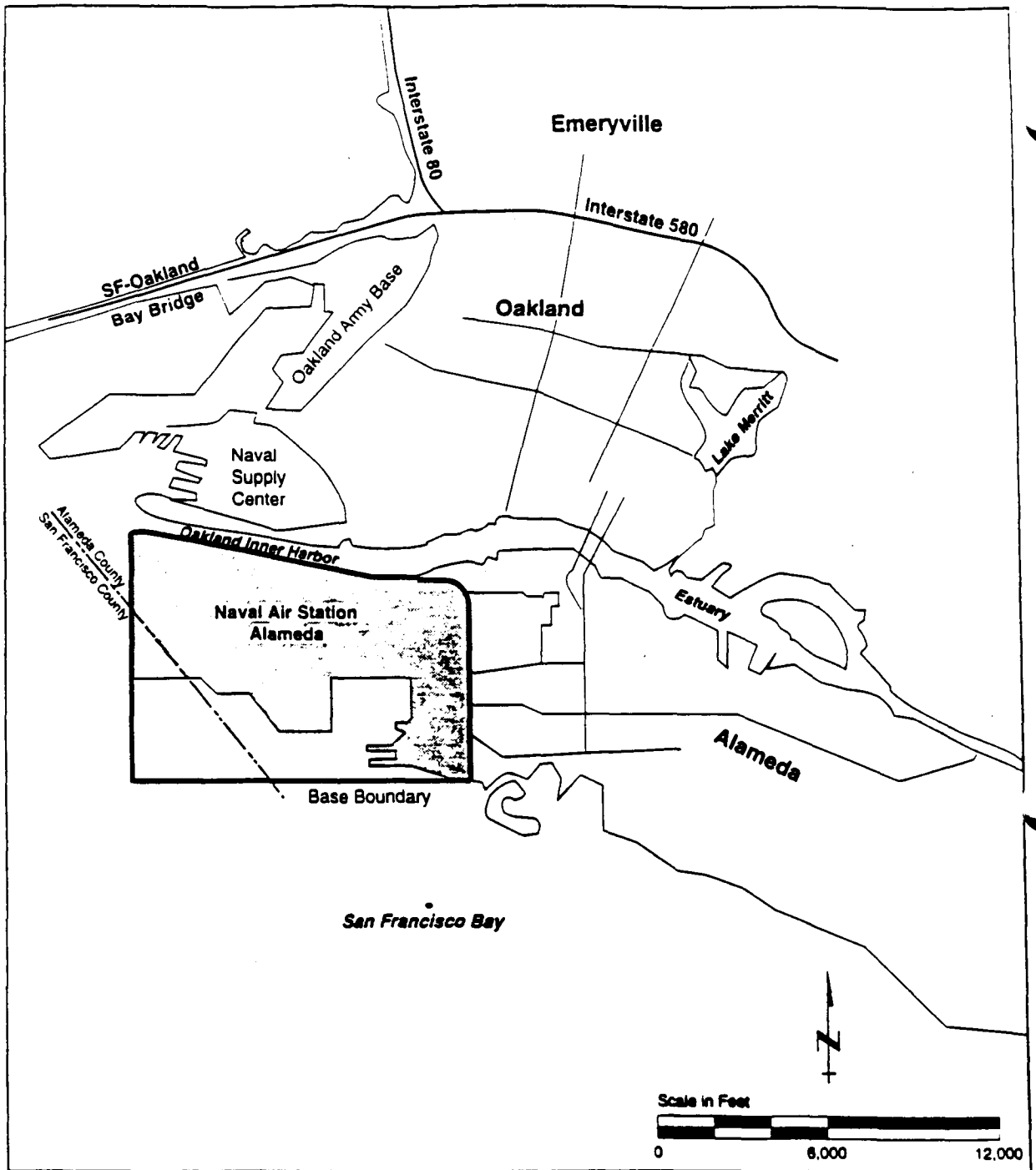
Table 1-4 lists on-base tenants at NAS Alameda.

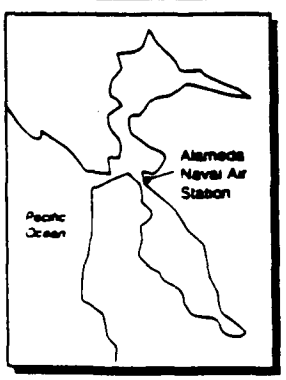
1.4.7 Housing

As shown in Figure 1-2, the existing land use design for NAS Alameda consists of a runway area in the extreme western end of the island, an industrial activities area in the central portion of the base, and residential and personnel support areas on the eastern portion of the base.

NAS Alameda contains a total of 1,234 units of family housing located in different areas on the base. NAS Alameda includes a residential zone located mostly on land east of Main Street. The zone contains 90 percent of the station's family housing units, including 171 detached homes and 984 apartments in four-, six-, or eight-unit structures. Of the 270 acres in this zone, 63 acres are located to the north and west of Main Street and compose a highly desired area of older homes in a pleasant residential setting. However, a number of these homes are located in proximity to Runway 25 and are seriously affected by high noise levels. Clear zones are usually established around active airport runways to prevent development of structures, in consideration of noise and physical safety reasons. Approximately 12 of the homes are physically within the clear zone around Runway 25 (Navy 1990).

In addition, NAS Alameda uses housing located at the Fleet and Industrial Supply Center Oakland Alameda Annex, adjacent to the eastern boundary of NAS Alameda. The annex contains 785 housing units (Navy 1990).





Source: Modified from CA State Automobile Assoc. map, Oakland/Berkeley/Alameda. Copyright 1980, revised 1989

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

REGIONAL LOCATION OF NAS ALAMEDA

FIGURE 1-1

TABLE 1-1

NAVAL COMPLEX ALAMEDA
CURRENT BCT/PROJECT TEAM MEMBERS

Sheet 1 of 4

Name	Organizations/Title	Phone
BCT Members		
Lieutenant Commander Mike Petouhoff	NAS Alameda BEC	(510) 263-3726
James Ricks Jr.	EPA RPM	(415) 744-2402
Tom Lanphar	CAL-EPA DTSC Project Manager	(510) 540-3809
Project Team Members		
James Nusrala	RWQCB Project Manager	(510) 286-0301
Bill Valento	NAS Public Affairs Officer	(510) 263-3079
Camille Garibaldi	EFA WEST RPM	(415) 244-2516
Gary Munekawa	EFA WEST RPM	(415) 244-2524
George Kikugawa	EFA WEST RPM	(415) 244-2559
Dennis Wong	EFA WEST RPM	(415) 244-2526
John Corpos	EFA WEST Compliance	(415) 244-2578
Larry Lind	EFA WEST USTs	(415) 244-2527
Stewart Cheang	EFA WEST EBS	(415) 244-2528
Ray Chiang	EFA WEST NEPA	(415) 244-3720
Lidia Chagonjian/staff	EFA WEST Contracts	(415) 244-2349
Marvin Norman	EFA WEST Counsel	(415) 244-2100
Nick Bollo	EFA WEST Counsel	(415) 244-2124

TABLE 1-1

NAVAL COMPLEX ALAMEDA
CURRENT BCT/PROJECT TEAM MEMBERS

Sheet 2 of 4

Name	Organizations/Title	Phone
Esther Hill	EPA Reuse Representative	(415) 744-2246
Project Team Members		
Diane Peebler	CAL-EPA DTSC Reuse Specialist	(916) 255-2015
CDR Al Elkins	Base Transition Coordinator	(415) 395-3920
Dorthy Wilson	EPA Community Relations Specialist	(415) 744-2179
David Louk	Alameda Reuse and Redevelopment Authority	(510) 263-2870
Ron Owens	CAL-EPA Public Participation Specialist	(510) 540-3941
Sherri Withrow	NAS Alameda Community Relations Specialist	(510) 263-3724
Hans Harrison	EFA WEST Real Estate	(415) 244-3814
Tom Dudley	EFA WEST Caretaker	(415) 244-3628
Doug Pomeroy	EFA WEST Natural Resources	(415) 244-3718
Lou Wall	EFA WEST Cultural Resources	(415) 244-3719
Randy Cate	NAS Alameda Compliance	(510) 263-3716
Amelia Duque	EFA WEST Compliance	(510) 263-3715
Paul Pentony	NADEP Alameda Compliance	(510) 263-6294
Rudy Pontemayor	NADEP Alameda Compliance	(510) 263-6120
Roger Caswell	NADEP Alameda IRP	(510) 263-6241
Teresa Bernhard	NAS Alameda IRP	(510) 263-3723

TABLE 1-1

NAVAL COMPLEX ALAMEDA
CURRENT BCT/PROJECT TEAM MEMBERS

Name	Organizations/Title	Phone
Project Team Members		
Anne Klimek	NAS Alameda IRP	(510) 263-3729
John Headlee	NAS Alameda IRP	(510) 263-3728
Dan Lent	PWC SF Bay Compliance	(510) 302-5415
Denise Klimas	NOAA Representative	(415) 744-3126
Jim Haas	U.S. Fish & Wildlife Representative	(415) 978-4886
Michael Martin	California Fish & Game Representative	(408) 649-7178
Ron Gervason	California RWQCB Section Supervisor	(510) 286-0688
Gary Grimm	California RWQCB Legal Counsel	(510) 286-0889
Norman Rial	California Fish & Game Representative	(408) 649-7195
Contractors		
Duane Balch	PRC CLEAN RPM	(916) 852-8300
Joe Mollusky	PRC BCP Coordinator	(206) 624-2692
Susan Willoughby	PRC Project Team	(916) 852-8300
Ken Leung	M-W RPM	(510) 975-3460
Kelli Shuter	M-W Project Team	(510) 975-3473
Contractors		
Donald Landeck	ERM-West EBS Project Team	(510) 946-0455

TABLE 1-1

NAVAL COMPLEX ALAMEDA
CURRENT BCT/PROJECT TEAM MEMBERS

Name	Organizations/Title	Phone
Valerie Crooks	IT Corporation	(510) 372-9100

BCP	BRAC Cleanup Plan
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BRAC	Base Realignment and Closure
CAL-EPA	California Environmental Protection Agency
CLEAN	Comprehensive Long-Term Environmental Action Navy (contract name)
DTSC	Department of Toxic Substances Control
EBS	Environmental Baseline Survey
EFA WEST	Naval Engineering Field Activity West (formerly Western Division Naval Facilities Engineering Command [WESTDIV])
EPA	U.S. Environmental Protection Agency
IRP	Installation Restoration Program
M-W	Montgomery Watson
NADEP	Naval Aviation Depot Alameda
NAS	Naval Air Station Alameda
NEPA	National Environmental Policy Act, as amended
NOAA	National Oceanic and Atmospheric Administration
PRC	PRC Environmental Management, Inc.
PWC SF	Navy Public Works Center San Francisco Bay
RPM	Remedial Project Manager
RWQCB	California Regional Water Quality Control Board
UST	Underground Storage tank

TABLE 1-2

NAVAL COMPLEX ALAMEDA
HISTORY OF INSTALLATION OPERATIONS

Sheet 1 of 2

Period	Type of Operation	Hazardous Substance Activities
1850-1900	Whale Oil Operations	
1869	Alameda Point Ferry	Rail operations
Pre-1879	Residential, agricultural, early industrial	Construction, railroad construction, port operations
1879-1903	Pacific Coast Oil Company & Standard Oil Company oil refinery	Oil refinery, benzene and kerosene, asphatic wastes
1884	Alameda Mole (train)	Constructed for ferry/rail operations
1902	Channel cut to create Alameda Island	Dredging, oil refining, oil storage, laboratory activities
1902 - Unknown	Tidal canal dug Pacific Coast Borax Works	NA
1927-1936	Municipal airport	Airfield operations, construction
1930-1936	U.S. Army facility	NA
1936-1940	U.S. Navy Base, early construction	Construction, found 75-yr-old pier and ferry slip, discarded sailing-ship ballast
1940	Station commissioned	Alcohol and tabacco
1940	Air operations 1,500 planes, included seaplanes Maximum activity during World War II and again during Korean War, port operations, submarine ordnance handling	Emergency landings (fuel dumps), crashes, nonsewerable waste disposal in 1943-1956 disposal area/West Beach Landfill, rework, maintenance and testing of aircraft engines, plating, missile rework, shipboard waste disposal
1940-present	Weapons Department	Receiving, issuing, storing, and transhipping of ammunition, components and explosives, small arms firing range and saluting battery
Unknown	Explosive Ordnance Disposal Group One	Ordnance disposal (ether cans disposed of in Fire Training Area berms, then ruptured)

TABLE 1-2

NAVAL COMPLEX ALAMEDA
HISTORY OF INSTALLATION OPERATIONS

Sheet 2 of 2

Period	Type of Operation	Hazardous Substance Activities
1940s-1960s	Radium dial painting shop operated by Naval Overhaul and Repair Department and later by Naval Air Rework Facility	Radium waste disposal in 1943-1956 disposal area/West Beach Landfill, liquid wastes in Seaplane Lagoon, decontamination wastes in unlined trench north of rifle range
1948-1967	Naval Overhaul and Repair Department	Aircraft, engine, gun and avionics maintenance
1961-present	Naval Air Reserve Unit	Aircraft wash, maintenance and fueling
1967-1987	Naval Air Rework Facility (former Overhaul and Repair Department)	Aircraft, engine, gun and avionics maintenance; engine overhaul and testing; cleaning, reworking, plating, and paint stripping
1975-1978	Fleet Maintenance Assistance Group	Carrier maintenance, ship overhaul (wastes disposed of off base)
1978 - 1979	USS Hector (Maintenance assistance)	NA
1978-present	Supervisor of Shipbuilding, Conversion, and Repair	Disposal of ship waste materials, including asbestos in West Beach Landfill
Unknown - 1982	Supply Department	Fueling support, hazardous waste disposal
1982-present	Shore Intermediate Maintenance Activity	Minor carrier maintenance
1983-present	Naval Air Reserve Unit - 48 aircraft (27 A-7B, 10 KA-3B, 8 SH-30, 3 C-98)	NA
1985-present	Average population 16,000 military and civilian, four squadrons, one Marine Air Group, six ships (including two aircraft carriers)	NA
1987-present	Naval Aviation Depot (Formerly Naval Air Rework Facility)	Aircraft, engine, gun and avionics maintenance; engine overhaul and testing; cleaning, reworking, plating, paint stripping

NA not available

TABLE 1-3

NAVAL COMPLEX ALAMEDA
CURRENT HAZARDOUS WASTE GENERATING ACTIVITIES

Sheet 1 of 2

Facility	Type of Activity	Name of Waste Material	Generation Rate	Disposition
NADEP Shops	GAP	Most wastes: paints, solvents, fuels, hydraulic fluids, contaminated rags and debris, lead-acid batteries, acids, metal plating solutions, alkaline cleaning compounds, cyanide, grinding swarf	800,000 pounds/yr	Part B Permit facility, DRMO disposal contract
NADEP Shops	GAP	Blasting grit, abrasives	337,500 pounds/yr	PWC disposal contract
NADEP Shops	GAP	Sludge cake from IWTP	208,400 pounds/yr	PWC disposal contract
PWC SF	GAP	Oily liquids, paints and related material, solvents, acids, fluorescent light bulbs, ballast, freon, oil and grease, batteries, PCB capacitors	see Appendix D	Part B Permit facility, PWC disposal contract
Navy ships in port	G	Waste adhesive, flammable liquids, paint, mineral spirits, petroleum distillate, sealer, acetone, MEK, lubricating oil, acids, batteries, lithium batteries, mercuric nitrate, contaminated rags, asbestos, silver nitrate, corrosive liquids, solvents, insecticide, electron tubes, compressed gas	NA	Part B Permit facility, PWC disposal contract
Navy ships in port	G	Waste oil from waste oil rafts, oil-water separators	NA	Recycled
SIMA	GAP	Photochemicals, wastewater with oil, oily rags, batteries, empty aerosols, acid, nickel and copper contaminated water filters, water-based solvent, hydrocarbon solvent, sandblast grit, grease, MEK, machinery coolant, acid spill cleanup, ammonium hydroxide, sulfuric acid, oil absorbent, bilge sludge, asbestos wallboard, antifreeze, trisodium phosphate, ferric chloride	54,600 pounds/yr	SIMA disposal contract

TABLE 1-3

NAVAL COMPLEX ALAMEDA
CURRENT HAZARDOUS WASTE GENERATING ACTIVITIES

Facility	Type of Activity	Name of Waste Material	Generation Rate	Disposition
CBU 416 COMNAVAIRPACMATR [a]EP FLTIMAGFACPAC[b] HM-15, HM-19 MAG-46, MA-304 VR-55, NAS Fuels Weapons Department Port Services AIMD	SHWAP CHWGAP	Hazardous solids and liquids including petroleum, paint, flammable liquids, compressed gas, solvents, fuels	see Appendix D	CHWGAP, NAS Environmental office disposal contract
AIMD	SHWAP, CHWGAP	Solvents	see Appendix D	Solvent recycler
Navy Resale	G	Solvents	see Appendix D	Solvent recycler

AIMD Aircraft Intermediate Maintenance Department
CBU Naval Construction Battalion Unit
CHWGAP Centralized hazardous waste generator accumulation point
DRMO Defense Reutilization and Marketing Office
G Generator
GAP Generator accumulation point
IWTP Industrial Wastewater Treatment Plant
MEK Methyl ethyl ketone
NA Not available
NADEP Naval Aviation Depot, Alameda
NAS Naval Air Station, Alameda
PCB Polychlorinated biphenyl
PWC SF Navy Public Works Center San Francisco Bay
SHWAP Satellite hazardous waste accumulation point
SIMA Shore Intermediate Maintenance Activity

a Commander Naval Air Force-US Pacific Fleet Material Representative
b Fleet Imaging Facility Pacific (Photography Lab)

TABLE 1-4

NAVAL COMPLEX ALAMEDA
ON-BASE TENANT UNITS

Sheet 1 of 2

TENANTS	
1.	Naval Aviation Depot (NAVAVNDEPOT)
2.	Naval Regional Data Automation Center (NARDAC)
3.	Naval Oceanographic Command Detachment (NAOCEANCOMDET)
4.	Naval Regional Medical Center (NAVREGMEDCEN)
5.	Navy Public Works Center (PWC)
6.	Naval Air Reserve Unit (NARU)
7.	Marine Air Group Forty-two (MAG-42)
8.	Navy Commissary Store (COMSYSTO)
9.	Naval Regional Dental Center (NAVREGDENCEN)
10.	Navy Disease Vector Ecology and Control Center (NAVDISVECTECOLCONCEN)
11.	Fleet and Industrial Supply Center, Oakland (FISCO)
12.	Naval Investigative Service Office (NAVINVSERVO)
13.	Human Resource Management Detachment (HUMRESMANDET)
14.	Telecommunications Center
15.	Supervisor of Shipbuilding, Conversion and Repair, San Francisco (SUPSHIP)
MAJOR SUPPORTED UNITS	
1.	Commander Carrier Group Three (COMCARGRU 3)
2.	Commander Naval Air Force-US Pacific Fleet Material Representative Office (COMNAVAIRPAC)
3.	Naval Construction Battalion Unit-416 (CBU-416)
4.	Explosive Ordnance Disposal Group One
5.	Naval Aviation Engineering Services Unit
6.	Navy Exchange
7.	Submarine Development Group One Detachment (COMSUBDEVGRUONE DET)
8.	Combined Services Support Program School (COMBINED SVCSUPPSCOLSPAC)

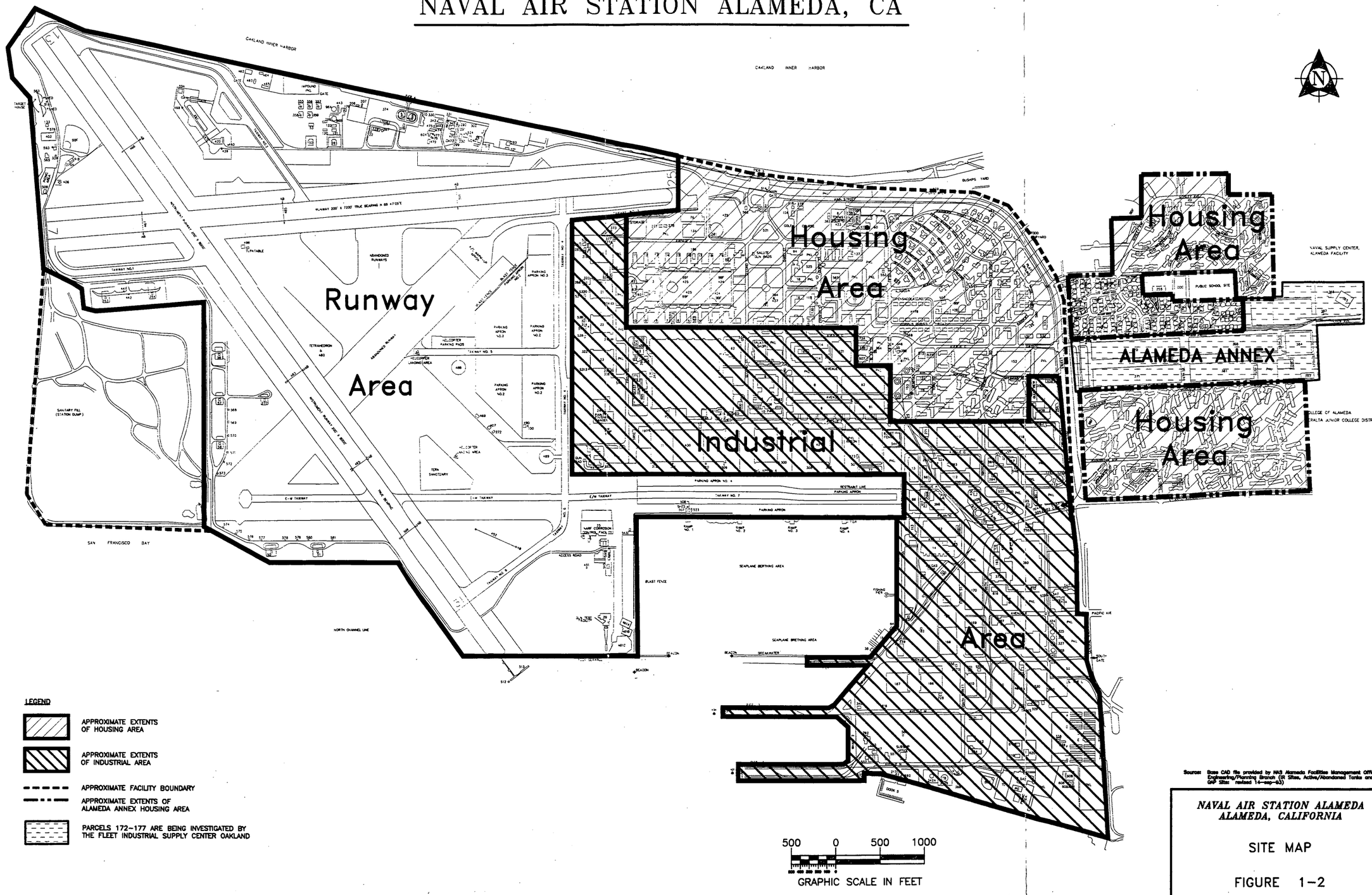
TABLE 1-4

NAVAL COMPLEX ALAMEDA
ON-BASE TENANT UNITS

Sheet 2 of 2

TENANTS	
9.	Counseling and Assistance Center
10.	Naval Air Logistic Control Office Eastern Pacific (NALCOEASTPAC)
11.	Navy Alcohol Action Safety Program
12.	Personnel Support Activity Detachment (PERSUPPACT DET)

NAVAL AIR STATION ALAMEDA, CA



Source: Base CAD file provided by NAS Alameda Facilities Management Office, Engineering/Planning Branch (IR Sites, Active/Abandoned Tanks and GAP Sites: revised 14-sep-93)

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

SITE MAP

FIGURE 1-2

IMU/SFAL-SITE.DWG 01/30/95 PLOT 1=500 REV002

CHAPTER 2
PROPERTY DISPOSAL AND REUSE PLAN

The conversion of Naval Air Station (NAS) Alameda to civilian use involves three interrelated activities: the closure of NAS Alameda, the development of a community reuse plan, and the planning of associated environmental actions necessary to accompany the transfer and reuse of real estate. This section of the NAS Alameda Base Realignment and Closure (BRAC) cleanup plan (BCP) addresses the status of the Navy's property disposal process, the status of the community reuse plan, and the BCT's strategy for addressing the related environmental issues.

2.1 NAVAL COMPLEX ALAMEDA CLOSURE STATUS

NAS Alameda and Naval Aviation Depot (NADEP) Alameda were both selected for closure in September 1993 in accordance with the Defense Base Realignment and Closure Act of 1990. Even though NAS Alameda and NADEP were considered for closure separately in the BRAC process, they will be managed under a single program since both will be closed. NADEP is the largest of the 54 tenant commands at NAS Alameda, and its facilities are inter-mingled with other tenants at NAS Alameda. This BCP addresses all tenants at the Alameda complex including NADEP.

The closure date for NAS Alameda depends on the homeport change dates of the aircraft carriers homeported at NAS Alameda. NADEP's closure date is driven by its workload and the Navy's ability to shift continuing workload to other installations. The current projected operational closure date for NADEP is September 1996, with final closure in March 1997. The closure date for NAS Alameda is April 1997. Under the current statutory requirement, both NAS Alameda and NADEP Alameda must be closed within 6 years from the enactment of the closure decision (therefore, September 1999). While funding or operational constraints may change the target date beyond 1997, closure planning must be based on the earliest possible date. Therefore, planning for initial closure activities for NAS Alameda is based on the April 1997 closure date. The Navy's plan for property transfer will be closely and continuously coordinated with the community plan for reuse.

2.2 COMMUNITY REUSE STATUS

The Navy expects to receive interim and final reuse plans from the community. Reuse planning efforts are underway and are being closely coordinated with the Navy. Interim and final plans are expected to be forwarded to the Navy by the Alameda Reuse and Redevelopment Authority (ARRA), representing a single voice from the community. This section describes the community reuse plan, reuse planning organization, BCT interfacing with reuse planning, and reuse issues.

2.2.1 Community Reuse Plan

The interim community reuse plan is scheduled for completion in April 1995, and the long-term reuse plan will be completed in December 1995. The interim plan is focused on making use of existing facilities for economic reuse. The long-term plan looks beyond current use and may include some land development or redevelopment.

The community reuse plan is being prepared in the following phases:

- Phase 1 - Reconnaissance (July 1994 to September 1994)
- Phase 2 - Conditions and trends data collection and analysis (August 1994 to January 1995)
- Phase 3 - Interim reuse strategy (November 1994 to April 1995)
- Phase 4 - Plan alternatives (December 1994 to July 1995)
- Phase 5 - Community reuse plan (July 1995 to December 1995)

Team coordination and public involvement meetings occur throughout the phased reuse plan process.

2.2.2 Reuse Planning Organizations

NAS Alameda reuse planning is being coordinated through the following organizations: ARRA, Alameda Base Reuse Advisory Group (BRAG), the East Bay Conversion and Reinvestment Commission (EBCRC) and the Restoration Advisory Board (RAB). The City of Alameda has also established a Base Closure Department composed of professional staff who support the ARRA and coordinate with the Navy, the BRAG, other Alameda City staff, as well as other commissions and agencies that have reuse jurisdiction in areas such as air and water quality, transportation planning, seaport and shoreline development. The Alameda Base Closure Department is located at NAS Alameda in Building 90 by a mutual arrangement with the Navy.

2.2.2.1 Alameda Reuse and Redevelopment Authority

The ARRA includes nine members and represents the interests of Alameda and the East Bay. The nine representatives include the five Alameda City Council members including the mayor of Alameda; mayors of the nearby cities of Oakland and San Leandro, which will also be significantly impacted by base closure; a County of Alameda district representative; and a representative from the 9th U.S. Congressional District. The ARRA is responsible for preparing the interim and final reuse plans for NAS Alameda property. The ARRA is chaired by the Alameda mayor and vice chaired by a representative of the Congressional office.

2.2.2.2 Alameda Base Reuse Advisory Group

The BRAG is composed of volunteers representing community interests in the reuse process. The BRAG organization includes interim reuse, long-term reuse, environmental, and eight other subcommittees. The BRAG environmental subcommittee chairman is represented on the Alameda RAB. The BRAG interfaces with ARRA.

2.2.2.3 Other Organizations Associated with Reuse

East Bay Conversion and Reinvestment Commission

Another important reuse entity is the EBCRC. The EBCRC was established by Congressman Dellums to oversee the base conversion process in the East San Francisco Bay Area. Its mission is to ensure issues and challenges encountered during the conversion process receive high level coordination and to identify innovative opportunities.

The EBCRC has an environmental subcommittee that includes the NAS Alameda BRAC environmental coordinator and representatives from the BCT, California Environmental Protection Agency (CAL-EPA), and U.S. Environmental Protection Agency (EPA), as well as East Bay Parks, Department of the Interior, and the Sierra Club and various other community members. The EBCRC provides coordination for both the cleanup and reuse progressing at NAS Alameda.

Restoration Advisory Board

While the RAB was established by the Navy to provide formal, two-way flow of information regarding the Navy's environmental restoration program, the RAB also coordinates with the community.

2.2.3 Interfacing with Reuse Planning

The BCT has frequently interfaced with reuse planners to indicate the status of environmental programs and incorporate reuse issues into the NAS Alameda cleanup strategy. Reuse specialists from DTSC and the EPA have assisted the BCT in facilitating reuse.

Interface with reuse planning includes two primary areas. The interim reuse strategy which is targeted for completion and adoption in April 1995, will focus on the execution of interim leases,

with support from the EBS. Long-term cleanup will be focused on the community's long-term reuse plan which will be available in 1995 prior to cleanup RODs for 1997.

Likewise, information on environmental condition of property for the EBS will be available in the summer of 1995 to reuse planners to include in the December 1995 reuse plan. Environmental condition of property, reuse, and cleanup levels will all be mutually and continuously coordinated.

To support leasing requests, close coordination will be maintained between the Navy's drawdown schedule and the community's reuse interests to ensure EBS documentation is ready when needed to support FOSL decisions.

The BCT provided the ARRA with a draft parcel map and requested that the reuse planners identify those parcels that have potential for reuse of the existing facilities. The BCT modified the EBS strategy based on the input from the ARRA; the EBS phase II sampling schedule has been accelerated for those parcels with short-term reuse potential. The ARRA has identified the following "highest" priority buildings as a result of the EBS Phase II investigation: 7, 11, 21, 32, 76, 134, 167, 168, 170, 400, and 530. Consequently, the determination of the environmental condition of these parcels will be expedited, and parcels may be available for interim leasing.

The BCT has set a goal to complete all documentation required for finding of suitability to lease (FOSL) or finding of suitability for transfer (FOST) for BRAC category 1 through 4 parcels (see Table 2-3) by the time the Navy vacates the parcel and has completed any required one-time compliance activities. Therefore, all necessary environmental program documentation will be complete and support the lease or transfer of property as soon as the parcel is available.

2.2.4 Reuse Issues

Both interim and long-term community reuse plans are being contemplated. The interim plan is focused on making use of existing developed facilities for immediate reemployment opportunities, while the long-term plan looks beyond current use and may include some land development or

redevelopment or both. Three important issues being evaluated initially for the community reuse plan are (1) the potential for continued use of the pier facilities for port use, (2) continued use of the airfield as a commercial airport, and (3) private sector reuse of aviation facilities. More general uses will be considered in the long-term plan. Reuse planning for future land uses such as recreation, housing, and business park development will also consider the natural resources that exist at NAS Alameda, such as wetlands, endangered species refuge, and the Seaplane Lagoon.

The ARRA reuse planners held a NAS Alameda key issues summit on October 26, 1994, and identified the following topics as key to the successful reuse of NAS Alameda:

- Utility systems - condition, standards compliance, capital improvement, operation and maintenance responsibility, and funding.
- Environmental cleanup - scope, funding levels, schedule, and priorities.
- Natural and cultural resource policy and regulation.
- State lands commission jurisdiction - public trust lands.
- McKinney Act - homeless accommodation.
- Federal closure and transfer policy - interim leases, master lease, caretaker role, personal property, and transfer.
- Funding and financing implementation - federal, state, and local responsibilities and abilities.

The BCT will continue to work closely with the reuse planners to develop strategies to address these key topics to facilitate reuse.

2.3 ENVIRONMENTAL ISSUES STRATEGY

The reuse planning process, the CERCLA and Resource Conservation and Recovery Act (RCRA) cleanup process, and the evaluation of environmental impact of the community reuse are proceeding on simultaneous and parallel paths. The EBS will prioritize the parcels by closure date and by

community interest so that a complete EBS and FOSL are available at the time the parcel is to be leased. This requires close coordination between the community, the reuse groups, the regulatory agencies, and the Navy. Close coordination between the parties and the processes will enable repetitive steps to be avoided and complimentary phases to be enhanced. The following sections discuss reuse issues concerning environmental programs, cleanup, and the National Environmental Policy Act (NEPA) process.

2.3.1 Relationship of Property Reuse to Environmental Programs

CERCLA Section 120 (h)(3)(B)(i) requires deeds for federal transfer of previously contaminated property to contain a commitment that all remedial actions necessary to protect human health and the environment have been taken at the site. This deed requirement applies only to property on which hazardous substance was stored for 1 year or more or is known to have been disposed of or released. Thus, a remedial or removal response action must be selected and implemented for these types of contaminated properties before transfers to private parties can occur. However, in 1992 the Community Environmental Response Facilitation Act (CERFA) amended CERCLA and clarified that all remedial actions have been considered taken if the construction and installation of an approved remedial design has been completed and if the remedy has been demonstrated to be operating properly and successfully. These amendments also state that carrying out long-term treatment, or operation and maintenance, after the remedy has been demonstrated to be operating properly and successfully does not preclude the transfer of property. Therefore, for example, a parcel with groundwater contamination and ongoing groundwater treatment could be transferred with groundwater use restrictions prior to attaining cleanup goals.

To facilitate the earliest possible disposal and reuse activities, the NAS Alameda property disposal and reuse strategy is designed to expedite the necessary response actions associated with all parcels.

The Navy and the BCT coordinate with the community and reuse groups so that priority buildings will be assessed early in the EBS process. This allows for the cleanup and reuse process to proceed

on simultaneous and parallel paths. This is especially important because reuse and environmental processes are expected to be iterative.

The BCT has the responsibility to ensure compliance with all applicable environmental requirements and allow the Navy to demonstrate compliance with Section 120(h) of CERCLA before parcels are transferred. The BCT has implemented an accelerated process by which the EBS will be used to facilitate the integration of all environmental programs with future reuse consideration for all base property parcels. This process will integrate (1) comprehensive parcel evaluation through the EBS, (2) assessment of the environmental condition of property, (3) formal documentation of the assessment and the condition of property in the parcel-specific EBS report and FOSL or FOST, and (4) administration of parcel leasing and transfer. This process as currently implemented will address 100 percent of the environmental issues at 100 percent of the parcels prior to reuse.

The mechanisms for ensuring environmental compliance prior to parcel transfer are the EBS and FOST/FOSL processes. In short, the EBS will be used to facilitate the comprehensive assessment of all environmental programs that will be conducted at all property parcels at NAS Alameda. The EBS has been tailored by the BCT to produce parcel-specific information that will be used by the BCT to determine the environmental condition of each parcel. If compliance with all environmental programs is demonstrated at a parcel, then this condition of property (BRAC categories 1 through 4 [see Table 2-3]) will be documented in a FOSL or FOST. The FOSL or FOST will contain the parcel-specific EBS information. Finally, the FOSL or FOST would be included with the lease or transfer documentation respectively, to inform future land users of past and current conditions at the parcel of interest.

2.3.2 Cleanup and Reuse

Property disposal and reuse activities at NAS Alameda are integrally linked to environmental investigations, restoration, and compliance activities. Such environmental activities must consider and satisfy the applicable requirements of the hazardous and solid waste regulations of RCRA and cleanup goals of CERCLA. In addition to complying with regulations, the Navy has the responsibility to

consider actual risk when evaluating the reuse potential of a parcel. In essence, actual reuse, common sense, science and environmental regulations will be evaluated when each parcel is examined for transfer. CERCLA Section 120(h)(3)(B)(i) governs the transfer of federal property to nonfederal parties by providing that "all remedial action necessary to protect human health and the environment with respect to any [hazardous] substance remaining on the property has been taken before the date of such transfer. . . ." The possibility of residual contamination remaining on site after remedial activities have been initiated or completed is considered in CERCLA Section 120(h)(3)(B)(i), which drives the future use of the federal property. Therefore, cleanup levels in the CERCLA record of decision (ROD) are affected by the intended reuse, and likewise, the reuse planning will take into account a knowledge of environmental conditions.

The current schedule for the CERCLA RODs and the community reuse plan will allow cleanup decisions to reflect interim and final reuse. The final community reuse plan is expected by December 1995, and the RODs are expected during 1996 and 1997. Environmental investigation results from the remedial investigation (RI) will be available in 1995 for use by reuse planners. RI information provided to the reuse planners by approximately July 1995 can be considered in the long-term reuse plan. Also, information concerning natural resources inventory (wetlands, least tern and brown pelican nesting areas, buffer zones) and cultural resources inventory (historical buildings) will be provided to reuse planners to be considered for the long-term reuse plan. The CERCLA RODs will occur after the final reuse plan is complete, ensuring that land use considerations can be taken into account. The BCT is committed to providing all available information to the reuse planners to facilitate effective reuse.

2.3.3 Reuse and NEPA

NEPA requires that environmental impact considerations be included in project planning. Project planning and decision making should include the integrated consideration of technical, economic, environmental, social, and other factors.

The regulations require that a detailed environmental impact statement be prepared for all "major federal actions significantly affecting the quality of the human environment." The purpose of an environmental impact statement is to provide decision-makers and the public with an impartial discussion of probable significant environmental impacts, reasonable alternatives, and mitigation measures that would avoid or minimize adverse impacts. An environmental impact statement is the document created to communicate information about proposed decisions or actions having a "significant impact of the human environment" and to provide evidence that the federal manager has considered these environmental impacts in the program decisions. The NEPA process requires evaluation of reasonable alternatives or courses of action and diligent involvement of the public in the decision making process. NEPA is a public disclosure process established to document agency decision making.

BRAC legislation stipulates that NEPA documents for base closures should be completed within 12 months from Navy receipt of the local reuse authority's final approved reuse plan, and policy requires that the reuse authority's approved reuse plan is the preferred alternative in the disposal and reuse environmental impact statement for the base. Navy policy also requires that NEPA compliance must be completed prior to operational closure of a base. In the absence of a reuse plan from ARRA, the Navy will commence the environmental impact statement process 12 months before operational closure of a base, develop feasible alternatives, and complete the NEPA process by the time of operational closure.

In addition to the Navy's preparation of a NEPA environmental impact statement, the State of California requires documentation according to the California Environmental Quality Act (CEQA). The Navy anticipates that joint documents will be produced addressing the requirements of NEPA and CEQA. While the formal NEPA/CEQA documentation will be in response to a final reuse plan, the Navy anticipates that public scoping of environmental issues will begin when a draft reuse plan becomes available. The Navy will complete the requirements of several additional laws including the Endangered Species Act, National Historic Preservation Act, Coastal Zone Management Act, and Clean Air Act, concurrent with completion of NEPA documentation.

2.4 ENVIRONMENTAL CONDITION OF PROPERTY

The status and the strategy of the NAS Alameda EBS are discussed in Sections 3.4 and 4.4, respectively. The EBS is in progress, and many parcels are still in BRAC category 7 (parcels for which no environmental evaluation has been made), indicating additional information is necessary (see Table 2-3). Additional information from the complete EBS is expected to be included in the "environmental condition of property" map to be included in the next revision of the BCP. Although the EBS is still in progress, CERFA determinations have been completed. The following parcels were identified as CERFA-qualified in the draft EBS/CERFA report (ERM-West 1994): parcels 39, 60, 63, 93, 101, and 194 (Figure 2-1). As Figure 2-1 indicates, only a small portion of the total NAS Alameda parcels will qualify as category 1 (CERFA-qualified). Most parcels qualify for transfer with appropriate documentation under categories 2, 3, or 4 (after necessary remedial action based on preliminary EBS findings).

Comparison of the CERFA-qualified parcels (i.e., the baseball field) with the areas of interim reuse interest identified by the community (mostly industrial areas) indicates minimal overlap. The BCT developed a comprehensive strategy for classifying property into categories 2, 3, and 4 and eventual transfer. The strategy and sampling protocols are documented in a technical memorandum included as Appendix E of the BCP, and the strategy is described in Section 2.7.

2.5 INTERIM USE AND LEASING

Even given the most expedited cleanup scenario possible, it is clear that reuse opportunities may be present long before cleanup is complete. Interim leasing provides one opportunity to facilitate economic reuse while the CERCLA cleanup process continues to ensure full protection of human health and the environment.

The current closure plan shows certain facilities becoming available for reuse over time as the Navy mission diminishes and closure approaches. Based on the preliminary version of the community short-term reuse plan, certain facilities have been identified as having high potential for initial reuse.

Though no specific reuse or leasing provisions have been made, Table 2-1 lists these facilities as well as the Navy's planned departure date. While the actual departure date may change and other issues such as building access must be addressed, Table 2-1 indicates the earliest potential FOSL dates for planning purposes. Most of the facilities in Table 2-1 are now used by the Navy.

The Navy's leasing strategy will consist of both interim leases and leases in furtherance of conveyance. While the application of each type of lease will be negotiated on a case by case basis with the ARRA, in general, interim leases will be used as the Navy's drawdown schedule creates building vacancies to support the community's interim reuse strategy. After base closure, a NEPA ROD will be in place for the community reuse plan and the Navy will have vacated the base except for continuing cleanup and caretaker activities. In this later case, a lease of furtherance of conveyance would be used, consistent with the approved reuse plan, until a CERCLA ROD is in place and fulfilled, so that the real estate can be transferred with an accompanying FOST.

Before leasing a parcel, an EBS for FOSL will be conducted. The Navy will notify the appropriate state officials before issuing a lease. The lease would include notification of environmental conditions and any appropriate use restrictions. The EBS for FOSL will be performed in accordance with U.S. Department of Defense (DoD) FOSL review policy of 1993 summarized in Section 2.6.1.

2.6 PROPERTY TRANSFER METHODS

To facilitate reuse and property transfer, the base is currently divided into 208 parcels. A parcel map showing all parcels and boundaries is presented on Figure 2-1. The parcels were designated in conjunction with community planners with the objective of identifying usable areas of land with similar types of environmental issues. Additional information should be collected for many of the parcels to address data gaps and reclassify parcels in BRAC categories. The EBS is organized according to these parcels.

Several mechanisms exist for property transfer of parcels at NAS Alameda. Property transfer methods that may be used includes interim leases, federal transfer of property, no-cost public benefit

conveyance, negotiated sale and competitive sale. Parcels may be identified for transfer based upon a FOSL and a FOST. These mechanisms will be implemented as the NAS Alameda base closure continues; however, there is currently not enough available data to present any property transfer scenarios. The following summary lists the required policy that will be followed as the FOSL/FOST process continues. The detailed DoD guidance for FOSL and FOST is included in Appendix F.

2.6.1 FOSL Review Process Policy Summary

Regulatory agencies will be notified at the initiation of the EBS and the FOSL. The development processes for these documents will be designed to assure that regulators are provided adequate opportunity to express their views. Any unresolved regulatory comments will be included as attachments to the EBS or the FOSL.

As required by CERCLA Section 120(h)(5), DoD shall notify the state before entering into any lease that will encumber the property beyond the date of termination of DoD's operations. Although public notice is specified, public review and comment is not required by this section of CERCLA. These notifications shall include the length of lease, the name of lessee, and a description of the uses that will be allowed under the lease of the property.

DoD will provide 30-day public notice of signing the FOSL; will retain the signed FOSL, including all regulatory comments and responses on the EBS and FOSL, in the transaction file (and the administrative record, where applicable); and will make the FOSL available to the public upon request.

The EBS and the FOSL will be provided to each lessee before execution of the lease.

Leases will provide that both the EBS and restrictive conditions in the lease dealing with environmental requirements limiting use will be included in subleases as they occur. Copies of all subleases will be provided to DoD representatives with jurisdiction over the parcel, retained in the transaction file, and made available to the public upon request.

Amendments, renewals, or extensions of leases shall not require a new EBS or FOSL or an updating of them unless the leased premises change substantially or the permitted uses of them are to change in environmentally significantly ways.

2.6.2 FOST Review Process Policy Summary

FOSTs can be determined for parcels at which no release or disposal has occurred and also where release or disposal has occurred. The FOST process can be simplified to the following steps:

- Notify state and federal agencies of the intent to initiate the FOST process.
- Evaluate the property for transfer.
- Determine the suitability of the property for transfer.
- Notify the regulatory agencies and the public of the intent to sign a FOST.
- Complete and sign the FOST.
- Notify the public of signature of the FOST.

2.7 STRATEGY FOR ATTAINING FOSL AND FOST THROUGH THE EBS

The BCT has tailored the EBS to address data gaps, determine the environmental condition of property, and provide documentation to support FOSLs and FOSTs. The strategy for attaining FOSL and FOST using the parcel-specific EBS is described below.

The EBS is being performed in phases. The first phase included the gathering and evaluation of parcel information (employee interviews, aerial photographs, waste management records) to initially determine the environmental condition of property, identify data gaps, and identify CERFA-eligible parcels. The EBS phase I has been completed and identified six CERFA-qualified parcels as discussed in Section 2.4. All the remaining parcels were classified as BRAC category 7. EBS phase II is being performed to conduct a comprehensive assessment of all environmental programs and to address data gaps identified in phase I. Parcel evaluation plans were developed in EBS phase II. The

PEPs are the field sampling work plans prepared to strategically determine screening sampling locations for soil and groundwater within each parcel. EBS phase IIA involves a limited site investigation of parcels according to the PEPs. If additional characterization is required, EBS phase IIB includes necessary intrusive environmental sampling to address data gaps identified during phases I and IIA. The EBS will be finalized by summarizing all parcel information into a parcel-specific EBS report that includes all the parcel information required for FOSL or FOST. The parcel-specific EBS report will include the following information: parcel description, background and historical activities, building descriptions, open space discussion, parcel boundary conditions, target areas and compounds of concern, and a parcel map showing sampling locations. The parcel-specific report will be attached to the FOSL or FOST as parcels become available or are remediated.

The BCT has combined the 208 parcels into 23 zones that will be addressed in the EBS. Guided by input from the ARRA reuse planners, the BCT has placed priority on EBS zones 6, 8, 10, 11, 13, and 22; these zones will be investigated first. Table 2-2 presents the parcel and EBS zone designations.

The BCT has set a goal to complete all documentation required for FOSL or FOST for BRAC category 1 through 4 parcels by the time the Navy vacates the parcel and has completed any one-time compliance activities. Therefore, the necessary documentation required to support parcel lease or transfer will be complete prior to the parcel being available. The Navy will complete the EBS and one-time compliance activities prior to FOSL or FOST.

2.8 EXAMPLE PARCEL

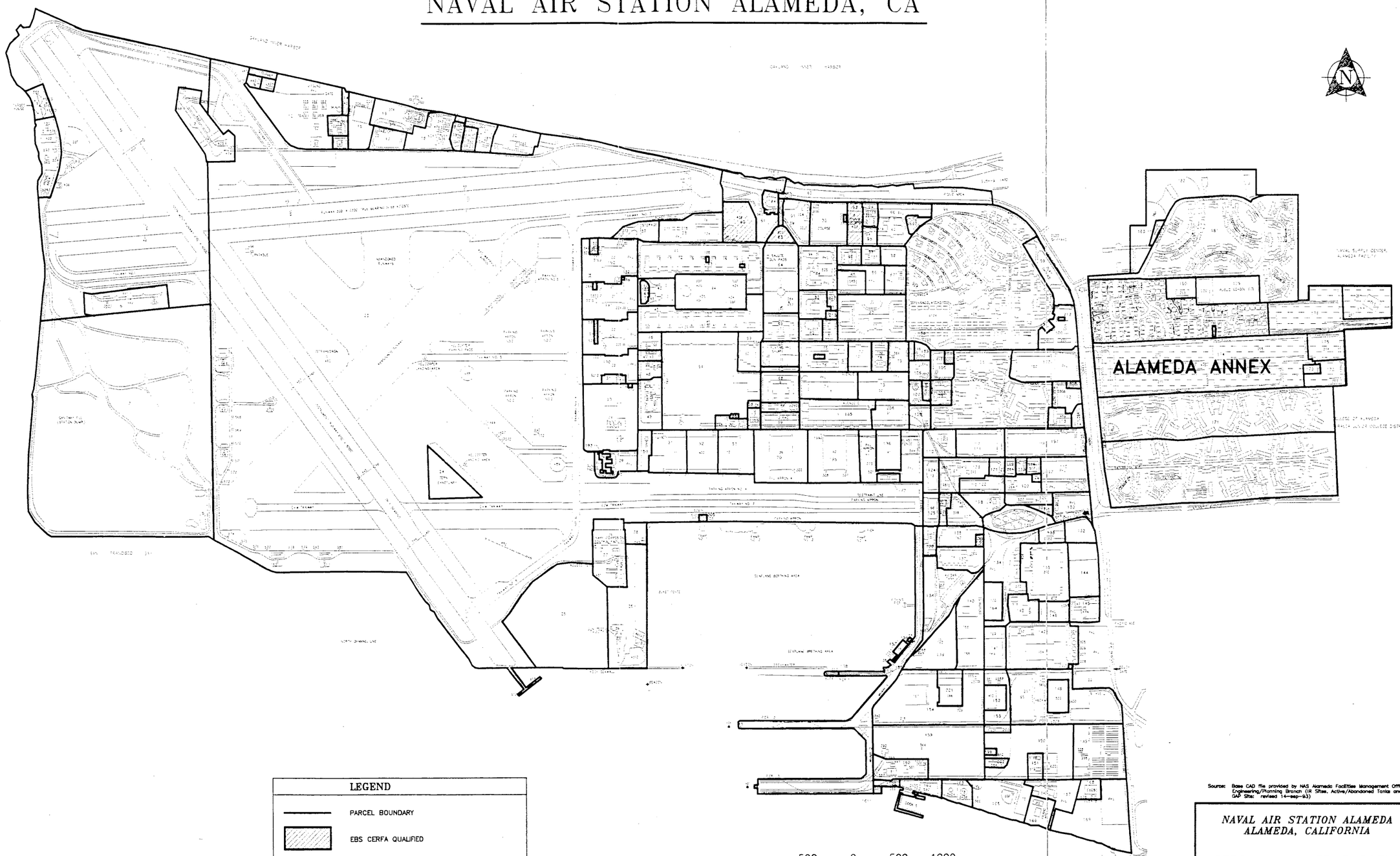
The description and reuse potential of an example parcel at NAS Alameda are presented to demonstrate the relationship of the environmental programs to the disposal and reuse process (example parcel information extracted from ERM-West 1994).

Parcel 23

Parcel 23 is the current airfield and includes approximately 80 percent of the runways. The community's reuse decisions to maintain this area for airport use or to undertake other uses depend on important environmental issues. Though the airfield has not been previously identified for CERCLA investigation under the Navy's Installation Restoration Program (IRP), the parcel also does not meet the requirements to be designated a CERFA parcel. In this case, additional sampling will be necessary to document the environmental condition of property and determine whether it is a candidate for residential or commercial reuse. Additional sampling is currently planned, and sampling data will be made available to reuse planners.

Another important issue associated with this parcel is its location adjacent Parcel 24, the least terns nesting area. The area is an endangered species refuge, and the impact to the area by any potential reuse activity is an important planning factor. The Navy is undertaking an effort to evaluate the impact of various reuse scenarios on the least terns. This information will be available to the community planners before the completion of a final reuse plan and formal NEPA documentation.

NAVAL AIR STATION ALAMEDA, CA



LEGEND

- PARCEL BOUNDARY
- EBS CERFA QUALIFIED
- PARCELS 172–177 ARE BEING INVESTIGATED BY THE FLEET INDUSTRIAL SUPPLY CENTER OAKLAND

CERFA – Community Environmental Response Facilitation Act
EBS – Environmental Baseline Survey

Source: Base CAD file provided by NAS Alameda Facilities Management Office, Engineering/Planning Branch (UR Sites, Active/Abandoned Tanks and GAP Site: revised 14-sep-93)

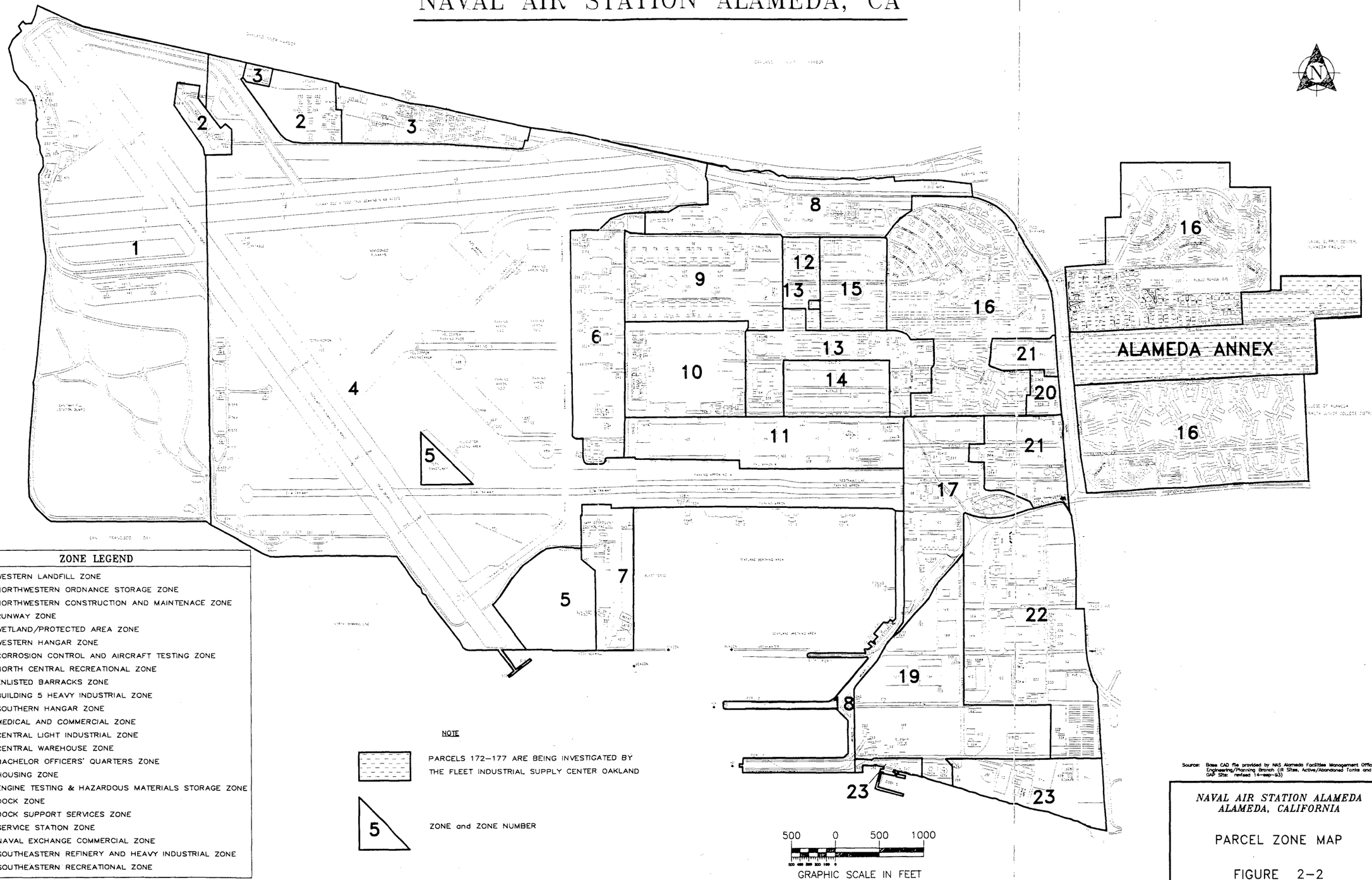
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

CERFA QUALIFIED PARCELS WITH PARCEL BOUNDARIES

FIGURE 2-1

CERF-TOP.DWG REV 12/7/94 PLOT 1=500

NAVAL AIR STATION ALAMEDA, CA



ZONE LEGEND	
1	WESTERN LANDFILL ZONE
2	NORTHWESTERN ORDNANCE STORAGE ZONE
3	NORTHWESTERN CONSTRUCTION AND MAINTENACE ZONE
4	RUNWAY ZONE
5	WETLAND/PROTECTED AREA ZONE
6	WESTERN HANGAR ZONE
7	CORROSION CONTROL AND AIRCRAFT TESTING ZONE
8	NORTH CENTRAL RECREATIONAL ZONE
9	ENLISTED BARRACKS ZONE
10	BUILDING 5 HEAVY INDUSTRIAL ZONE
11	SOUTHERN HANGAR ZONE
12	MEDICAL AND COMMERCIAL ZONE
13	CENTRAL LIGHT INDUSTRIAL ZONE
14	CENTRAL WAREHOUSE ZONE
15	BACHELOR OFFICERS' QUARTERS ZONE
16	HOUSING ZONE
17	ENGINE TESTING & HAZARDOUS MATERIALS STORAGE ZONE
18	DOCK ZONE
19	DOCK SUPPORT SERVICES ZONE
20	SERVICE STATION ZONE
21	NAVAL EXCHANGE COMMERCIAL ZONE
22	SOUTHEASTERN REFINERY AND HEAVY INDUSTRIAL ZONE
23	SOUTHEASTERN RECREATIONAL ZONE

Source: Base CAD file provided by NAS Alameda Facilities Management Office, Engineering/Planning Branch (IR Sites, Active/Abandoned Tanks and GAP Site: revised 14-sep-93)

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

PARCEL ZONE MAP

FIGURE 2–2

REVZONE.DWG REV 02/02/95 PLOT 1=500

TABLE 2-1

NAVAL COMPLEX ALAMEDA
BUILDINGS BY PRIORITY FOR REUSE

Parcel	Acreage*	Building	Description	Vacate Date**	Projected Transfer Date	Transfer Mechanism	Recipient
NADEP First Priority							
082	1.35	7	Material Engineering Laboratory	09/15/96	TBD	TBD	TBD
054	20.90	5	Aircraft Rework (IRP Site 5)	04/01/97	TBD	TBD	TBD
051	2.54	11	Aircraft Rework	04/01/97	TBD	TBD	TBD
053	2.54	12	Aircraft Rework	10/01/96	TBD	TBD	TBD
030	10.65	24	Paint and Finishing Hangar	10/01/95	TBD	TBD	TBD
027	1.25	25	Corrosion Control Facility	10/01/95	TBD	TBD	TBD
026	0.45	29	Gun Test Facility	04/01/96	TBD	TBD	TBD
066	4.23	32	Plating Shop	04/01/97	TBD	TBD	TBD
052	6.80	400	Avionic Component Repair (IRP Site 10A)	03/15/97	TBD	TBD	TBD
148	1.93	530	Missile Systems Repair (IRP Site 10B)	07/10/95	TBD	TBD	TBD
NAS First Priority							
065	3.33	1	Administration	03/01/97	TBD	TBD	TBD
068	2.71	6	Fire Station	04/01/97	TBD	TBD	TBD
083	3.58	16	Medical/Dental Clinic	10/01/96	TBD	TBD	TBD
194	0.92	30	Security Department	04/01/97	TBD	TBD	TBD
120	0.11	119	McDonalds	12/01/99	TBD	TBD	TBD
NADEP Second Priority							
26	0.29	38	Aircraft Acoustical Enclosure	04/10/96	TBD	TBD	TBD

* Acreages are for building foot print unless building is only structure on the designated parcel, in which case the acreage reflects parcel acreage.
** Indicates last vacate date; as some buildings have tenants that may vacate prior to date shown.
TBD To Be Determined

TABLE 2-1

NAVAL COMPLEX ALAMEDA
BUILDINGS BY PRIORITY FOR RE-USE

Parcel	Acreage*	Building	Description	Vacate Date**	Projected Transfer Date	Transfer Mechanism	Recipient
046	0.07	42	Engineering Laboratory	03/15/96	TBD	TBD	TBD
125	1.71	66	Engine Access - Test Shop	06/16/96	TBD	TBD	TBD
154	1.27	167	Aircraft Supply Equipment	10/01/96	TBD	TBD	TBD
143	4.11	360	Engine Rework (IRP Site 4)	07/01/96	TBD	TBD	TBD
134	0.43	372	Engine Test Cells	06/16/96	TBD	TBD	TBD
147	0.40	397	Engine Test Cells (at IRP Site 13)	06/16/96	TBD	TBD	TBD
127	0.71	398	Auxiliary Power Units/Gas Turbine Compressors	06/16/96	TBD	TBD	TBD
142	2.04	Yard D-13	Hazardous Waste Accumulation Site (IRP Site 19)	03/15/97	TBD	TBD	TBD
NAS Second Priority							
045	11.22	2	NEX Cafeteria/Admin/Dormitory	03/01/97	TBD	TBD	TBD
041	15.59	4	Enlisted Club/Dormitory	01/01/97	TBD	TBD	TBD
074	8.88	8	Warehouse	04/01/97	TBD	TBD	TBD
185	2.72	9	Warehouse	04/01/97	TBD	TBD	TBD
080	10.61	17	BOQ	03/01/97	TBD	TBD	TBD
084	0.6	18	Theater, Post office, Safety	03/01/97	TBD	TBD	TBD
096	0.67	60	O' Club	01/01/97	TBD	TBD	TBD
140	3.80	168	Warehouse	04/01/97	TBD	TBD	TBD
141	2.69	169	Warehouse	07/01/96	TBD	TBD	TBD
164	2.11	170	Warehouse	04/01/97	TBD	TBD	TBD

Acreages are for building foot print unless building is only structure on the designated parcel, in which case the acreage reflects parcel acreage.
Indicates last vacate date; as some buildings have tenants that may vacate prior to date shown.
To Be Determined

TABLE 2-1

NAVAL COMPLEX ALAMEDA
BUILDINGS BY PRIORITY FOR RE-USE

Parcel	Acreage*	Building	Description	Vacate Date**	Projected Transfer Date	Transfer Mechanism	Recipient
180	1.79	250	Child Care Center	04/01/97	TBD	TBD	TBD
084	0.53	525	Bowling Alley	12/31/96	TBD	TBD	TBD
100	0.22	531	Navy Lodge	09/01/96	TBD	TBD	TBD
100	0.21	532	Navy Lodge	11/01/96	TBD	TBD	TBD
100	0.21	533	Navy Lodge	03/01/97	TBD	TBD	TBD
085	1.64	585	CPO Club	10/01/95	TBD	TBD	TBD
070	8.63	39	Hangar	04/01/97	TBD	TBD	TBD
195	2.94	40	Hangar	09/01/96	TBD	TBD	TBD
196	3.21	41	AIMD (IRP Site 6)	12/01/96	TBD	TBD	TBD
NAS Third Priority							
043	2.37	3	Galley	04/01/97	TBD	TBD	TBD
124	1.59	13	Paint Oil Storage	07/15/95	TBD	TBD	TBD
157	0.38	15	Port Services Headquarters	04/01/97	TBD	TBD	TBD
084	0.81	18	Safety/Post Office	04/01/97	TBD	TBD	TBD
193	0.74	19	ATC Tower	04/01/97	TBD	TBD	TBD
192	1.50	20	Hangar	02/10/95	TBD	TBD	TBD
191	1.52	21	Hangar	03/01/95	TBD	TBD	TBD
032	3.01	22	Hangar	07/01/94	TBD	TBD	TBD
190	2.20	23	Hangar	01/01/97	TBD	TBD	TBD

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TBD – To Be Determined

TABLE 2-1

NAVAL COMPLEX ALAMEDA
BUILDINGS BY PRIORITY FOR RE-USE

Parcel	Acreage*	Building	Description	Vacate Date**	Projected Transfer Date	Transfer Mechanism	Recipient
188	0.06	35	Ground Electronics Division	04/01/97	TBD	TBD	TBD
059	1.22	62	NARDAC Computer Center	04/01/97	TBD	TBD	TBD
156	0.05	64	SIMA Dive Locker	04/01/96	TBD	TBD	TBD
038	0.57	76	Indoor Pool	12/31/96	TBD	TBD	TBD
072	0.89	77	Air Terminal/Supply	04/01/97	TBD	TBD	TBD
084	0.21	94	Chapel	04/01/97	TBD	TBD	TBD
077	2.72	101	Education Center	03/01/97	TBD	TBD	TBD
075	1.77	114	PWC Shop/Administration Spaces (IRP Site 8)	04/01/97	TBD	TBD	TBD
197	6.52	118	Navy Exchange	03/01/97	TBD	TBD	TBD
038	0.85	134	Gymnasium	03/01/97	TBD	TBD	TBD
089	1.23	137	Youth Activity Center	04/01/97	TBD	TBD	TBD
135	3.16	162	SIMA Repair Shops	06/15/96	TBD	TBD	TBD
201	2.83	166	GSS Maintenance Shops	04/01/97	TBD	TBD	TBD
198	0.52	385	Marina Boat House	08/31/96	TBD	TBD	TBD
113	1.16	459	Gas Station (IRP Site 7A)	03/01/97	TBD	TBD	TBD
116	0.69	517	Mini Mart	03/01/97	TBD	TBD	TBD
104	0.36	522	CEWRA Headquarters	12/31/96	TBD	TBD	TBD
129	1.59	527	ALFA Credit Union	02/01/97	TBD	TBD	TBD
059	0.11	534	PWC Housing Office	09/01/97	TBD	TBD	TBD

* - Acreages are for building foot print unless building is only structure on the designated parcel, in which case the acreage reflects parcel acreage.
** - Indicates last vacate date; as some buildings have tenants that may vacate prior to date shown.
TBD - To Be Determined

TABLE 2-1

NAVAL COMPLEX ALAMEDA
BUILDINGS BY PRIORITY FOR RE-USE

Parcel	Acreage*	Building	Description	Vacate Date**	Projected Transfer Date	Transfer Mechanism	Recipient
167	3.34	542	Fleet Recreation Center	03/01/97	TBD	TBD	TBD
078	0.22	607	PWC Carpentry/Hobby Shop	12/01/96	TBD	TBD	TBD
168	0.23	608	Auto Hobby Shop	08/31/96	TBD	TBD	TBD
199	0.19	612	PWC Hose Storage Facility	09/01/97	TBD	TBD	TBD
105	2.21	613	Family Services Center	01/01/97	TBD	TBD	TBD
150	0.13	621	Mare Island Detachment Field Office	04/01/96	TBD	TBD	TBD

NEX	Navy Exchange
BOQ	Bachelor Officer Quarter
CPO	Chief Petty Officer
AIMD	Aircraft Intermediate Maintenance Dept.
ATC	Air Traffic Control
NARDAC	Naval Regional Data Automation Center
SIMA	Shore Intermediate Maintenance Activity
CEWRA	Civil Employees Welfare Recreation Association
PWC	Public Works Center

* - Acreages are for building *foot print* unless building is only structure on the designated parcel, in which case the acreage reflects parcel acreage.
** - Indicates last vacate date; as some buildings have tenants that may vacate prior to date shown.
TBD - To Be Determined

TABLE 2-2

NAVAL COMPLEX ALAMEDA
ENVIRONMENTAL BASELINE SURVEY PARCEL ZONE DESIGNATIONS

Zone Number	Zone Name	Parcels in Zone
1	Western Landfill Zone	1, 2, 5-7
2	Northwestern Ordnance Storage Zone	3, 8, 12, 13
3	Northwestern Construction & Maintenance Zone	4, 9-11, 14-22
4	Runway Zone	23, 205
5	Wetlands/Protected Area Zone	24, 25
6	Western Hangar Zone	29-37, 190-193, 204
7	Corrosion control and Aircraft Testing Zone	26-28
8	North Central Recreational Zone	38, 39, 60-63, 91-97, 101, 194
9	Enlisted Barracks Zone	40-45, 64, 65, 187
10	Building 5 Heavy Industrial Zone	46-49, 54-59
11	Southern Hangar Zone	50-53, 70-72, 195, 196
12	Medical and Commercial Zone	81, 83, 84, 207
13	Central Light Industrial Zone	66-69, 75-79, 82, 104-109, 186, 188, 189, 203, 213
14	Central Warehouse Zone	73, 74, 185, 206
15	Bachelor Officers' Quarters Zone	80, 85-90
16	Housing Zone	98, 99, 100, 103, 170, 171, 178-184, 212
17	Engine Testing & Hazardous Materials Storage Zone	110, 111, 122-128, 131, 135-138, 200
18	Dock Zone	155-158
19	Dock Support Services Zone	139, 140, 150, 151, 154, 159, 160, 163, 199, 201, 202
20	Service Station Zone	112-114
21	Naval Exchange Commercial Zone	102, 115-121, 129, 130, 197, 208, 209
22	Southeastern Refinery & Heavy Industrial Zone	132-134, 141-149, 152, 153, 164, 210, 211, 214
23	Southeastern Recreational Zone	161, 162, 165-169, 198

TABLE 2-3
NAVAL COMPLEX ALAMEDA
PARCEL CATEGORIES

Category 1.	Areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).
Category 2.	Areas where only storage of hazardous substances or petroleum products has occurred (but no release or disposal or migration from adjacent areas has occurred).
Category 3.	Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred, but at concentrations that do not require a removal or remedial action.
Category 4.	Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken.
Category 5.	Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, removal and/or remedial actions are underway, but all required remedial actions have not yet been taken.
Category 6.	Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been taken.
Category 7.	Areas that are have not been evaluated or require additional evaluation.

CHAPTER 3
ENVIRONMENTAL RESTORATION STATUS

This chapter summarizes the current status of environmental restoration projects and ongoing compliance program activities at Naval Air Station (NAS) Alameda. It also describes the natural and cultural resources as well as the environmental condition of the base property and summarizes the status of community involvement to date.

The strategy for implementing these programs is described in Chapter 4, and the implementation schedules are presented in Chapter 5. Chapters 3, 4, and 5 work together to present the status, strategy, and schedule for each program.

3.1 ENVIRONMENTAL PROGRAM STATUS

Presented within this subsection are (1) a summary of the history of environmental programs at NAS Alameda, including a discussion of regulatory actions and authorities affecting these programs; (2) the status of ongoing Installation Restoration Program (IRP) activities; and (3) the status of installation-wide source discovery and assessment activities.

3.1.1 History of Environmental Programs and Regulatory Actions

In 1975, the U.S. Department of Defense (DoD) initiated a program to identify and investigate potential hazardous waste sites at military installations. This program was the result of increasing public and government concern over the potential impacts of past hazardous waste disposal methods at military installations. The program was started on a pilot scale and was expanded in 1980 as the Navy Assessment and Control of Installation Pollutants (NACIP) program.

The purpose of the NACIP program was to systematically identify, assess, and control contamination of the environment resulting from past hazardous material management operations. Investigative activities under NACIP were designed to identify disposal sites and other areas that handled, stored,

or otherwise managed potentially hazardous substances. These sites were then evaluated for their potential threat to human health or the environment. The NACIP program consisted of the following steps:

- Initial Assessment Study (IAS): Perform record searches and personnel interviews to identify past disposal sites and to assess their potential for adverse environmental or public health effects.
- Confirmation Study (CS):
  - Verification Step: Perform on-site investigations to confirm or refute the existence of areas thought to have released hazardous material into the environment.
  - Characterization Step: If releases are confirmed, quantify the extent and rate of migration of detected substances.
- Feasibility Study (FS): Develop and evaluate alternatives to remediate the releases.
- Project Documentation: Prepare a site operation plan and project design documentation with cost estimates satisfactory for remedial funding request.
- Remedial Measures: Implement selected and approved remedial technologies to control, minimize, or eliminate the releases.

Concurrent with the formation of the NACIP program, Congress directed the U.S. Environmental Protection Agency (EPA) to develop a comprehensive national program to manage past disposal sites. The basis for this program is the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or "Superfund." Superfund was amended in 1986 by the Superfund Amendments and Reauthorization Act (SARA). One of the provisions of SARA was to place greater accountability on federal facilities for hazardous waste site cleanup. Accordingly, Section 211 of SARA established the Defense Environmental Restoration Account (DERA) in 1986. In 1988, DoD chose to adopt EPA's terminology for the investigation and remediation of past hazardous waste disposal sites, and the Navy converted the NACIP program into the IRP to better conform to CERCLA, as amended by SARA in 1986.

The sequence of steps to be carried out under the IRP in compliance with CERCLA and SARA leads to the same result as the sequence of steps for the NACIP program, although the elements incorporated into each step are slightly different. The sequential alignment of these steps is presented in the following table.

NACIP Step	IRP Step	Description
Initial Assessment Study	Preliminary assessment	Identification of potential disposal or contaminated sites, and evaluation of these sites for potential threat to human health and the environment.
Confirmation Study-Verification Step	Site investigation	
Confirmation Study-Characterization Feasibility Study	Remedial investigation Feasibility study	Verification and characterization of the extent of contamination, definition of potential migration pathways, and evaluation of the feasibility of potential remedial measures.
Remedial Measures	Remedial design Remedial action Site close out	Design and implementation of the required corrective measures to mitigate or eliminate confirmed problems.

Under the NACIP program, an IAS was completed at NAS Alameda in 1983 (E&E 1983). A CS - verification step was subsequently performed in 1985 (Wahler 1985). These two studies were conducted before the IRP was initiated in 1988 and are considered equivalent to the preliminary assessment/site investigation (PA/SI) under the IRP. These investigations are described in detail under Section 3.1.2.

As it relates to the DoD's (Navy) IRP at NAS Alameda, the California Environmental Protection Agency's (CAL-EPA) Department of Toxic Substances Control (DTSC) assumes the role of the lead regulatory agency for environmental investigation of federal facilities located in California that are not listed on the National Priorities List, such as NAS Alameda. Other regulatory agencies, including the San Francisco Bay Regional Water Quality Control Board (RWQCB) and Alameda Department of

Environmental Health, also have regulatory oversight responsibilities at NAS Alameda. Before the BCT was formed, the federal EPA's role at NAS Alameda involved supporting the DoD, participating in the technical review committee meetings for NAS Alameda, and reviewing investigative work plans and reports. As a non-National Priorities List facility, the DoD (Navy) assumes the lead agency role (equal to EPA and the U.S. Department of Energy [DOE] as defined under CERCLA).

State regulatory involvement in the IRP at NAS Alameda was elevated in June 1988, when the California Department of Health Services (subsequently delegated to the CAL-EPA DTSC) issued a unilateral remedial action order (RAO) for NAS Alameda, requiring that a remedial investigation (RI) be conducted at NAS Alameda for selected sites of concern. In 1988, the Navy started preparing work plan documents following CERCLA protocols for conducting an RI/FS at NAS Alameda, partially in response to the RAO and because of Navy-planned ongoing IRP activities. Between 1988 and 1990, RI/FS work plan documents were completed by the Navy based on the results of the earlier NACIP studies, concerns addressed in the RAO, and the subsequent identification of additional sites of concern by the Navy. After DTSC reviewed the RI/FS work plan documents, the Navy began a phased-approach to the RI/FS activities in 1990. Section 3.1.2 describes these RI/FS activities in detail.

Between 1990 and 1993, annual federal funding constraints, particularly as it affected non-National Priorities List federal facilities without a formal agreement between the DoD and the State of California, made it difficult for the Navy and CAL-EPA to arrive at mutually acceptable cleanup schedules for activities conducted under the RI/FS, and for scheduling future remedial designs and actions. As a result, in April 1993, the Navy and the State of California began preparation of a draft federal facility site remediation agreement (FFSRA) under California Health and Safety Code §§ 25355.5, 25353, and 25347.6 and pursuant to the following authorities:

- Division 7 of the California Water Code
- Sections 120(a)(4), 120 (f) and 121 of CERCLA
- The Defense Environmental Restoration Program
- Other applicable state law

The draft FFSRA was submitted to CAL-EPA in September 1993. The final agreement is expected to be signed in early 1995. The FFSRA requires that the work described be performed in accordance with applicable state and federal law and be consistent, to the maximum extent possible, with the priorities, guidelines, criteria, and regulations in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

Under Section 6 of the FFSRA, the Navy agrees to undertake, seek adequate funding for, fully implement, and report on the following tasks for NAS Alameda:

- RIs
- FSs
- All response actions
- Operation and maintenance of response actions
- Federal and State Natural Resource Trustee notification and coordination

Under Section 8 of the FFSRA, the Navy agrees to submit a draft site management plan to the State of California for review and approval within 90 days of the effective date of the agreement. The Navy submitted a draft site management plan for NAS Alameda for review by the DTSC and the RWQCB on September 22, 1993. The purpose of the site management plan was to set priorities for SIs and response actions, identify operable units (OU), address project acceleration techniques, and set forth projected (unenforceable) dates for submittal of primary documents through completion of all necessary SIs and response actions throughout NAS Alameda. The site management plan was based on information available at the time of preparation and was to be annually revised, updated, and resubmitted by the Navy to reflect new information generated since the previous plan was prepared. Necessary rescoping or redirection of ongoing work will be addressed by the site management plan revisions. The site management plan would also address the need for and length of modifications of enforceable compliance deadlines established pursuant to Subsection 8.2 of the FFSRA.

Under Subsection 8.2 of the FFSRA, all parties agree to the deadlines set forth in Appendix A of the agreement for high-priority OUs and response actions. The enforceable deadlines include submittal dates for any of the draft primary documents listed below.

- PA/SI
- RI/FS work plans, including sampling and analysis plans and removal action or interim remedial action work plans
- Quality assurance project plans
- Public participation plans and community relations plan
- Implementation reports
- RI reports
- FS reports
- Proposed plans
- Remedial action plan and record of decision (ROD)
- Health and safety plans

Projected dates were listed in the initial site management plan. However, since the base was affected by BRAC in September 1993, this BRAC cleanup plan (BCP) has largely replaced many of the functions that the site management plan would have covered as a stand-alone document. Now the site management plan is basically a "keeper of the schedules" document that, as updated, becomes part of the legally binding FFSRA (when finally approved by both DTSC and Navy). Portions of the BCP, specifically the master schedules presented in Chapter 5, will be incorporated into the site management plan.

The FFSRA also stipulates that the parties intend to integrate the Navy's CERCLA response obligations with the Navy's RCRA corrective action obligations, to the extent possible, and State corrective and remedial action obligations. According to the FFSRA, the CERCLA response obligations will also be integrated with obligations under all orders and other statutory requirements of RWQCB relating to releases of hazardous substances, hazardous wastes, wastes as defined in Water Code Section 13050, pollutants, or contaminants adequately addressed by the remedial actions provided for under the FFSRA.

3.1.2 Installation Restoration Program Activities

Table 3-1 provides a summary of NAS Alameda site studies organized by IRP site numbers. Figure 3-1 shows IRP site locations. IRP activities are described below in two date groups: 1982 to 1990 and 1990 to present.

1982 to 1990

The Navy began its investigation of NAS Alameda under the NACIP program in early 1982. The investigation began with an IAS in 1983 during which 12 potentially contaminated sites were identified (E&E 1983). These 12 sites included the current IRP sites 1, 2, 3, 4, 13, 14, 15, 16, 17, and 20, and two sites not currently part of the IRP, namely the base-wide fuel lines and the piers and turning basin (Figure 3-1). Following the IAS, a CS verification step was conducted at seven sites identified in the IAS for further study (IRP sites 1, 2, 3, 4, 15, 16, and 17; see Table 3-1). The CS verification step report, completed in 1985, recommended additional investigation at five of the sites (IRP sites 1, 2, 3, 4, and 16) and no additional action at two of the sites (IRP sites 15 and 17).

In the June 1988 RAO, the State identified the following 12 sites under its "Findings of Fact":

- NAS Alameda
  - Building 41, Aircraft Intermediate Maintenance Facility (IRP site 6)
  - Area 97, fuel storage area (IRP site 3)
  - West Beach Landfill (IRP site 2)
  - 1943-1956 Disposal Area (IRP site 1)
  - Seaplane Lagoon (IRP site 17)
  - Oakland Inner Harbor (IRP site 20)
- Navy Resale Activity
  - Building 459, service station (IRP site 7A)
- Naval Aviation Depot
  - Industrial Waste Water Discharges
  - Building 5 (IRP site 5)
  - Building 360 (IRP site 4)
  - Building 410 (IRP site 9)
  - CANS C-2 Area (IRP site 16)
  - Building 360 Plating Shop (within IRP site 4)
- Navy Public Works Center, San Francisco Bay
  - Building 10, Power Plant (IRP site 12)

The RAO sites include 7 of the 12 sites described in the IAS (IRP sites 1, 2, 3, 4, 16, 17, and 20) as potentially contaminated.

In partial fulfillment of the substantive requirements of the RAO, and to address the findings of the IAS and the CS, the Navy began preparing RI/FS work plan documents for NAS Alameda in 1988. The Navy included a total of 20 sites in the RI/FS work plan. The 20 IRP sites included all but 2 of the 12 sites in the IAS (the 2 sites not included were the fuel lines and the piers and turning basin). The IRP sites also included 5 sites not described in the 12 IAS sites but included in the RAO (IRP sites 5, 6, 7A, 9, and 12). An additional 5 sites, listed below, were added to the study based on the Navy's own internal review of facility activities, as well as on the review of the IAS, CS verification step, and RAO:

- Building 114, pest control area and separator pit (IRP site 8)
- Buildings 400 and 530, Missile Reworks Operations (IRP site 10)
- Building 14, engine test cell (IRP site 11)
- Station sewer system (IRP site 18)
- Yard D-13, hazardous waste storage (IRP site 19)

The Navy also subsequently included two other former on-base service stations as part of IRP site 7, in addition to the service station described in the RAO. IRP sites 7 and 10 have been subdivided into five geographically separate sites (sites 7A, 7B, 7C, 10A, and 10B), making a total of 23 IRP sites. All of the 23 IRP sites are located on NAS Alameda. These 23 IRP sites, along with the fuel lines and piers and turning basin sites, which were not recommended for inclusion in the CS verification step, are summarized in Table 3-1. The 23 IRP sites are shown in Figure 3-1.

Table 3-1 includes the operable unit (OU) designation, parcel number, site number, site name, site class, description, material disposed of, dates of operation, status of environmental response actions, and the results of a Confirmation Study Ranking System.

All known or suspected hazardous waste disposal sites identified during the IAS were evaluated using the Confirmation Study Ranking System developed by Naval Energy and Environmental Support Activity (NEESA) for NACIP (E&E 1983). The system is described as a two-step procedure for

systematically evaluating a sites's potential hazard to human health and the environment based on the evidence collected during the IAS. The first step was a flow chart that eliminated innocuous sites from further consideration. In the next step, a ranking model was used to assign a numerical score, within a range of 0 to 100, to indicate the potential severity of a site. Scores were intended to reflect the characteristics of the waste disposed of at a site, contaminant migration pathways, and potential contaminant receptors on and off the installation. Confirmation Study Ranking System scores and engineering judgement were used to evaluate the need for a confirmation study. IAS sites for which no Confirmation Study Ranking System score was provided were presumably eliminated during the first step. As referenced by the IAS, NEESA Report 20.2-042 provides a detailed description of the Confirmation Study Ranking System (E&E 1983).

The IAS and CS conducted at NAS Alameda are considered equivalent to a PA/SI. Following these initial investigations, RI/FS work plan documents were generated between 1988 and 1990. The RI/FS work plan documents prepared by Canonie Environmental Services, Inc. (Canonie), consist of the following 10 planning document volumes:

- Sampling plan
- Sampling plan, solid waste water quality assessment test proposal addendum
- Air sampling plan
- Health and safety plan
- Quality assurance project plan, quality assurance and quality control plan
- Community relations plan
- Project management plan and schedule
- Data management plan
- Public health and environmental evaluation plan
- FS plan

Upon DTSC approval of the RI/FS work plan documents, Canonie began a phased-approach to the RI/FS activities, which were subsequently transferred to PRC Environmental Management, Inc., in 1990. Listed below are the original eight RI/FS phases and the sites investigated in each phase.

Phase	Description	IRP Sites Investigated
Phases 1 and 2A	Field investigation and data summary report	Sites 1, 2 (partial), 3, 4 (partial), 7C, 9, 10B, 13, 16, and 19
Phases 2B and 3	Field investigation and data summary report	Sites 4 (partial), 5, 6, 7A, 7B, 8, 10A, 11, 12, 14, and 15
Phase 4	Ecological assessment and report	Sites 17 and 20
Phases 5 and 6	Solid waste water quality assessment test investigation and report	Sites 1 and 2 (1943-1956 Disposal Area and West Beach Landfill)
Phase 7	Comprehensive RI report	All sites
Phase 8	FS report	All sites

As a result of past confusion during identification of and referencing between sites that were investigated under a specific RI/FS "phase," the BCT decided to refer to future work activities at a specific IRP site by either the IRP site number or collectively under the OU number that contains that particular IRP site. In other words, as the RI/FS reports are generated in the near future, these documents will not reference RI/FS phases 7 and 8, but rather reference the OU number. OUs are discussed briefly below, and OU strategies are discussed in Chapter 4.

1990 to Present

Since 1990, considerable progress has been made in the RIs of the IRP sites:

- The original Canonie sampling plans have been implemented, including preparation of a solid waste water quality assessment test report of the landfills at IRP sites 1 and 2.
- An ecological assessment has been conducted at two wetland areas: at selected offshore locations west and south of the island and at the offshore IRP sites 17 and 20.
- Early actions have already been taken at IRP Sites 2, 7A, 13, and 15 (Table 3-2).

The results of the initial RI sampling have been analyzed to assess the need for additional sampling at each IRP site. Three RI/FS follow-on field sampling plans have been prepared for additional sampling at nearly all IRP sites, except those studied under the ecological assessment. The follow-on field sampling plans were finalized in 1994 (phases 2B/3 field sampling plan, the phases 5/6 field sampling plan, and the phase 2A field sampling plan); phase 1 sites were subsequently combined with the phases 5/6 field sampling plan. Field work began in spring 1994 and is currently ongoing through fall 1994. Follow-on ecological assessment work is expected based on review of the data collected in 1993, and ecological assessment follow-on work plans are currently being drawn up for implementation in 1995. The follow-on work will address several areas including Site 17, the West Beach Landfill wetlands and the skeet range at Site 1 (along the Western Bayside). In addition, ecological assessments will be conducted for OUs 1, 2, and 3; and a basewide ecological assessment will incorporate the information and findings of each OU assessment.

Early actions include both removal actions and treatability studies as listed below.

Removal Actions	Treatability Studies
IRP Sites 1, 5, 7A, 7C, 13, 14, 15, 16, 18, 19	IRP Sites 1, 2, 3, 4, 5, 13, 17

Early actions are completed or ongoing at four IRP sites and are being considered or initiated (or both) at up to eight other IRP sites, in addition to the ongoing IRP study and analysis. The status of these early actions is summarized in Table 3-2 and includes the IRP site number, early action description, and purpose. To reduce immediate hazards caused by methane gas buildup at the West Beach Landfill (IRP site 2), a fence was constructed around the landfill perimeter, and methane gas was vented. Soil removal has been performed at two locations within IRP site 13. The first was conducted to eliminate fuel-contaminated soil as a result of a JP-5 release near Building 397, and the second removal action was conducted to remove low pH and high lead-contaminated soils discovered during the preconstruction activities for a new intermediate maintenance facility (IMF). Also during preconstruction activities for the IMF, free product was detected on the groundwater, and an extraction well product removal system was installed and is currently in service.

In addition to committing to early removal actions, the Navy aggressively embraces a strategy of implementing innovative technologies. Innovative technologies potentially represent a cost effective and proficient method of treating sites. So that these new technologies may compete on an equal footing with more demonstrated technologies, the Navy has provided a mechanism for the implementation of treatability studies. These treatability studies are implemented through an innovative technologies contract with University of California at Berkeley (UCB). These treatability studies allow for demonstration of the technologies which then may be considered at the time of ROD. To do this, the technology must be attempted early in the process so that documentation in support of a technology will be available.

Several of NAS Alameda's IRP sites are being examined by UCB for applications of appropriate innovative technologies. In early March 1995, UCB will recommend several technologies for NAS Alameda's IRP sites. The BCT in conjunction with other Navy and regulatory advisement will consider the university's recommendations and implement some of these innovative studies through bench-scale treatability studies.

The treatability studies at these sites will be conducted by local university laboratories, UC Berkeley and Lawrence Livermore Labs. At IRP Sites 1 and 2, the treatability study may evaluate an in situ biological curtain or "funnel and gate" technology to capture and treat leachate-impacted groundwater migrating from beneath the landfills. Screening and pilot-scale treatability studies at IRP Sites 4 and 5 involve in situ bivalence technologies to treat hexavalent chromium in soil beneath the plating shops. Currently under development is the treatability study at Site 13 using enhanced steam stripping technologies which may work to mobilize hydrocarbon liquids and vapors from soil for capture and treatment. Serious review of potential early treatability studies for the Seaplane Lagoon (IRP Site 17) sediments is being conducted, with input from the UCB group and from the Navy research and development group in NAVFAC's Southwest Division in San Diego. The UCB group has recommended additional minor characterization to determine bioavailability and the lateral and vertical extent of contamination. Following the characterization, a recommendation for treatment will be made.

The Navy continued to assert this position by implementing innovative site characterization technologies. In April 1994 it used optical cone penetrometer testing equipment to investigate the lateral and vertical extent of petroleum crude waste by-products at the old refinery site (IRP Site 13), generating not only geotechnical subsurface data, but also real-time quantitative measurements of hydrocarbon impacts to soils.

Other innovative early actions occurred at IRP Site 15, where field screening was completed to delineate the extent of polychlorinated biphenyls and lead present in the surface soils, and an engineering evaluation/cost analysis (EE/CA) was submitted for public comment. The Navy selected, with public concurrence, excavation, ex situ treatment by soil washing, and return placement of treated soils. Excavation and treatment began in late December 1994, and completion is planned by July 1995.

At IRP Site 7A, the installation's automobile service station, a field assessment was initiated in 1994. The assessment goal is to collect data that will support the preparation of an EE/CA. Following public regulatory review of the EE/CA, a removal action is planned to address contaminated soils and groundwater associated with active and abandoned underground storage tanks. Similarly, an assessment for excavation and treatment of gasoline-impacted soils and groundwater at IRP Site 7C is being considered. Relatively simple excavation and ex situ treatment technologies for soil impacts at IRP Sites 1 (pistol range), 13, 14, and 16, as well as impacted sediments within storm sewer manholes (part of IRP Site 18) are also being considered.

Other early actions planned include bench- and pilot-scale treatability studies at IRP Sites 1, 2, 3, 4, 5, 13, and 17. The treatability studies at these sites will be conducted by local university laboratories, UC Berkeley and Lawrence Livermore Labs, hereinafter referred to as the UCB group. At IRP Sites 1 and 2, the treatability study may evaluate an in situ biological curtain or "funnel and gate" technology to capture and treat leachate-impacted groundwater migrating from beneath the landfills. Screening and pilot-scale treatability studies at IRP Sites 4 and 5 involve in situ bivalence technologies to treat hexavalent chromium in soil beneath the plating shops. Enhanced steam stripping technologies may be evaluated at IRP Sites 3 and 13 that may work to mobilize hydrocarbon

liquids and vapors from soil for capture and treatment. Serious review of potential early treatability studies for the Seaplane Lagoon (IRP Site 17) sediments is being conducted, with input from the UCB group and from the Navy research and development group in NAVFAC's Southwest Division in San Diego.

Four OUs have been established to expedite the cleanup process at the 23 IRP sites. The OUs were developed based on the criteria and strategy discussed in more detail in Section 4.1. OU 1 includes IRP Sites 3, 4, 7A, 7B, 7C, 9, 10B, 11, 13, 16, and 19. OU 2 includes IRP Sites 5, 6, 8, 10A, 14, and 15. OU 3 includes IRP Sites 1 and 2. OU 4 includes IRP Sites 17, 20, the West Beach Landfill wetlands, and the runway area wetlands.

The field work being completed will provide data necessary for the preparation of an RI report, a human health risk assessment, and an ecological assessment for each OU. Currently, work plans are being developed for the human health risk assessments and ecological assessments. Also, the preliminary draft site conceptual models (text presented in Appendix C) are being further developed as data become available.

By consensus, the BCT has decided to respond to certain compliance-related releases under the IRP. In cases where significant groundwater contamination has resulted from activities within an existing OU, managed under compliance programs other than the IRP, the overall groundwater plume remedial response will be addressed under the IRP for that particular OU. RCRA closure activities will remain compliance issues. The status of compliance activities at NAS Alameda is outlined under Section 3.2. Similarly, as discussed in Section 3.4 parcels within existing OUs that are assessed to have soil and/or groundwater impacts will be incorporated (on a case-by-case basis) into one of the four OUs in which they are geographically located (see Chapter 4 for further discussion of IRP and RCRA program integration).

3.1.3 Source Discovery and Assessment Status

Source discovery and assessment activities were initiated under the original NACIP IAS and are currently ongoing as part of a base-wide environmental baseline survey (EBS). In 1983, an IAS was completed for NAS Alameda to identify and assess source areas that might pose a potential threat to human health or the environment as a result of contamination from past hazardous materials operations. The IAS compiled information from historical records, aerial photographs, field inspections, and personnel interviews. No sampling or analysis was performed under the IAS. As previously discussed, 12 sites were identified that might represent a threat to human health or the environment. It was concluded that no sites posed an immediate threat to human health or the environment; however, seven sites were recommended for further investigation and confirmation by field sampling and monitoring to assess the extent of any problems that may exist. The subsequent CS verification step identified only two sites for further investigation. Nevertheless, all but 2 of the 12 sites identified by the IAS are included in the 23 sites currently being investigated under the IRP.

A source discovery assessment was also conducted for RCRA facilities located at NAS Alameda as part of the facility's application for a RCRA Part B permit. In 1991, a DTSC RCRA facility assessment questionnaire was completed by NAS Alameda. The RCRA facility assessment identified 142 existing or closed solid waste management units (SWMU) as defined by RCRA as well as installations for the handling, storage, and management of hazardous materials as defined by CERCLA and RCRA. As a condition of issuing the RCRA permit in July 1993, the DTSC required that the Navy begin preparation of RCRA facility investigation (RFI) work plans for implementing corrective measures and/or closures at hazardous waste generator accumulation points, abandoned underground storage tanks (UST), and fuel spill sites. Before NAS Alameda became a base closure facility, these RCRA sites would have been addressed as part of standard RCRA compliance activities. Instead, the BCT has developed a strategy (as part of the EBS) for the appropriate investigation, and under either the UST program or IRP, the cleanup of all RFI sites requiring corrective actions and/or closure (see Sections 3.2 and Chapter 4).

Since NAS Alameda's listing as a closure base under BRAC III in September 1993, work began on a base-wide EBS. Originally, as required under the 1992 Community Environmental Response Facilitation Act (CERFA) amendment to CERCLA, the EBS was tasked to identify the environmental condition of properties that would be suitable for rapid transfer to the community, such as parcels that were "clean." (The Navy considers parcels on which no known storage, release, or disposal of hazardous substances or petroleum products had occurred "clean"). Initial results of the CERFA EBS indicated that only 6 of the original 214 parcels identified at NAS Alameda were "clean" and that the remaining 208 parcels would require additional investigation before they could be found suitable for lease or transfer. (Six different parcels, numbers 172 through 177, are being investigated as part of a separate EBS by the Navy at the Alameda Annex, as shown on Figure 3-1).

As part of the literature search process for the EBS, potential areas of concern have been identified that are not currently being investigated under the IRP or RCRA program. The initial phase (phase I) of the EBS was completed in 1994 as described in Section 3.4. The installation's strategy to evaluate the potential source areas identified under phase I of the EBS is described in Section 4.3.

3.2 COMPLIANCE PROGRAM STATUS

The status of environmental compliance programs at NAS Alameda is summarized in the following sections.

3.2.1 Storage Tanks

Tanks are used at NAS Alameda for the storage of fuels, petroleum, oil, lubricants and wastes. The storage tank regulations and status at NAS Alameda are described below.

3.2.1.1 Storage Tank Regulations

USTs in California are regulated under Title 23 of the California Code of Regulations (CCR). The CCR Title 23 standards were established to protect waters of the state from discharges of hazardous

substances from USTs. These regulations establish construction standards for new USTs, monitoring standards for new and existing USTs, procedures for unauthorized release reporting; repair and upgrade requirements for existing USTs, closure requirements for existing USTs, and corrective action requirements. UST monitoring, closure, corrective action, and investigation activities at NAS Alameda are being conducted in accordance with the California UST regulations.

The EPA has developed regulations similar to UST regulations for existing aboveground storage tanks. The regulations describe the installation, monitoring, and closure of aboveground storage tanks. EPA developed these regulatory programs in response to a directive at Part 311 of The Clean Water Act that required regulation of discharges of oil and hazardous substances into waterways by nontransportation onshore and offshore facilities into U.S. surface waters and surrounding shorelines, including wetlands. The following paragraphs outline the existing regulations governing aboveground storage tanks.

EPA has regulated aboveground storage tanks under The Oil Pollution Prevention regulation (40 CFR Part 112), also known as Spill Prevention, Control and Countermeasure (SPCC) since 1973. The SPCC regulation was amended in 1976. As of October 1992, EPA again began developing proposals that would revise the SPCC regulation in two phases with a general emphasis in strengthening the old provisions and promoting good engineering practices. Principally, Phase I of the SPCC plan will require that certain provisions are now mandatory and no longer discretionary.

The Oil Pollution Act (OPA) of 1990 [32 U.S.C. § 2701 et seq.] places removal cost and damages liability on onshore aboveground storage tank facility owners and operators if oil or other hazardous substances are discharged into navigable waters and adjoining shorelines. The U.S. Coast Guard holds primary enforcement authority of OPA. In January 1993, EPA revised OPA regulations, which now require that aboveground storage tank facility owners and operators submit response plans to EPA. In general, the new rule contains language that mandates that tank owners have a means of containing an aboveground storage tank facility leak or release.

Parts 262, 264, and 265 of RCRA apply to aboveground storage tanks for the treatment or storage of hazardous wastes.

SARA requires nonpetroleum tank owners and operators to report spills of hazardous wastes, regulates responsible party liability and cost recovery for cleanups, and has established cleanup requirements.

The Occupational Safety and Health Administration (OSHA) has developed national standards (29 CFR 1910, 106) for the handling, storage, and use of flammable and combustible liquids. On January 14, 1993, OSHA released 29 CFR Section 1910.146, "Permit Required Confined Spaces for General Industry," also potentially applicable to aboveground storage tank facility owners and operators.

While the National Pollutant Discharge Elimination System (NPDES) does not regulate aboveground storage tanks specifically, it does regulate discharge of pollutants into surface waters. For aboveground storage tank facilities, this may mean runoff from diked areas could not be directed immediately into a storm sewer if quality standards have not been met. In this case, aboveground storage tank facilities may be required to use separators or other forms of water treatment before discharging runoff into storm sewers.

On March 16, 1993, a bill was introduced in the U.S. House of Representatives (H.R. 1360) and in the U.S. Senate (S.588) that would require leak detection, corrosion protection, registration fees, structural integrity and secondary containment for aboveground storage tanks. The bill, however, exempts a portion of aboveground storage tanks with less than 12,000-gallon capacities.

In the state of California, the California Health and Safety Code, Chapter 6.67, Division 20, at Section 25270 regulates aboveground storage tanks. In April 1991, Senate Bill 1050 was added to Section 25270 of the Code. The Public Resource Code, Section 3106 also regulates aboveground storage tanks.

3.2.1.2 Storage Tank Status

Underground Storage Tanks and Fuel Lines

Table 3-3 provides an inventory of the active and abandoned/removed USTs at NAS Alameda. Table 3-3 also reflects the status of a program begun at NAS Alameda in August 1994 to remove inactive USTs. According to the program schedule, all inactive USTs will be removed by March 1995.

At the outset of the inactive UST removal program, a tank closure plan was filed with the Alameda County Department of Health Care Services Agency, Department of Environmental Health. As indicated in the plan, a clean closure letter will be pursued for those tanks without evidence to indicate a leak.

If, upon removal, it appears that an inactive tank has leaked, contractor ERM-West will determine the lateral and vertical extent of affected soil and groundwater through sampling. The site will then be referred to RWQCB for oversight during its remediation. Under the inactive UST removal program, soils that come from tank pits with apparent tank leaks are being stockpiled in Building 410, an old paint stripping hangar. The strategy for remediating these soils is discussed in Section 4.2

Of the 19 active USTs at NAS Alameda, 16 belong to NAS Alameda and 3 belong to the Navy Exchange (at the current gas station). As the Navy downsizes and USTs become inactive, the USTs will be scheduled for removal.

In addition to the active or abandoned/removed USTs, NAS Alameda has five empty underground tanks, which exist for emergency purposes only. These are referred to as exempted tanks because they are unregulated.

Plans and specifications are currently being prepared to remove approximately 30,000 feet of abandoned fuel lines. Upon completion of the plans and specifications, a construction contract will be awarded to remove these fuel lines. Plans and specifications will be initiated for the approximately

4,500 feet of active fuel lines. Upon completion of the plans and specifications or deactivation of these fuel lines, whichever is later, a construction contract will be awarded to remove these lines. Contamination confirmation sampling will be conducted during the construction to determine if leakage from the fuel lines occurred. If contamination is found, further remedial investigation and cleanup may be required.

Aboveground Storage Tanks

Table 3-4 provides an inventory of active aboveground storage tanks present at NAS Alameda.

3.2.2 Radiological Work

Radiological work at NAS Alameda is assessed under two Navy programs: The Naval Nuclear Propulsion Program and General Radioactive Material Program. The Naval Nuclear Propulsion Program established and enforces standards and regulations for radiological work associated with nuclear powered warships. The Navy's General Radioactive Material Program involves facilities and equipment that have been used for radiological work not associated with the Naval Nuclear Propulsion Program.

Naval Nuclear Propulsion Program

The Naval Nuclear Propulsion Program controls the facilities and equipment necessary to perform the nuclear powered warship work. Nuclear powered ships covered under the Naval Nuclear Propulsion Program have used Alameda docks and facilities. Facilities are surveyed to assess whether nuclear powered warships, during construction, maintenance, overhaul, or refueling, had an adverse radiological impact on the environment. Surveys are currently underway in the areas used by nuclear powered ships at NAS Alameda.

General Radioactive Material Program

The General Radioactive Material Program includes radiographic sources used for nondestructive testing; radiological sources used for instrument calibration; electrical instruments containing radiological sources, radium illumination dials and gauges. Future radiological surveys will be undertaken as a result of record search recommendations. Radiological surveys are currently planned for IRP Sites 1 and 2.

3.2.3 Hazardous Materials/Waste Management

NAS Alameda operates storage and treatment units for hazardous waste management under a Part B permit issued by the DTSC, EPA identification number CA 2170023236. The permit specifies operating requirements for two container storage areas (Building 13 and Yard D-13), a tank storage area (Structure 598, outdoor in Area 37), and four waste treatment facilities (IWTP 5, 24, 25, 32) that are part of the industrial wastewater treatment system. The permit has been issued under section 25200 of the California Health and Safety Code. The permit effective date was July 24, 1993, and the permit expires on July 24, 2003. Closure plans exist for all Part A and B permitted facilities.

NAS Alameda operates 22 active generator accumulation points where wastes are stored less than 24 hours (72 hours on weekends) before they are transported to one of the permitted waste storage units. The Naval Aviation Depot operates 60 generator accumulation points and generates wastes at one additional laboratory site. Hazardous material products are stored and dispensed from two delivery areas operated by NAS Alameda and the Naval Aviation Depot, respectively. In 1992, NAS Alameda developed and implemented a hazardous material inventory control program to minimize hazardous material inventories in use areas and to decrease waste generation associated with shelf-life expiration of hazardous materials.

Before 1974 all industrial wastewaters generated at NAS Alameda were discharged directly to the storm drains, and the storm drains, in turn, discharged to the Seaplane Lagoon and Oakland Inner Harbor.

NAS Alameda currently maintains an industrial wastewater discharge permit from the East Bay Municipal Utility District (EBMUD). Industrial wastewater must be treated before it is discharged to the publicly owned treatment works (POTW) to meet effluent concentrations and total flow limits established under the categorical standards for applicable industrial classifications. NAS Alameda must comply with the pretreatment standards for the metal finishing category. The industrial wastewater discharge permit for NAS Alameda is held by the Navy Public Works Center (PWC) in Oakland, California. The PWC is responsible for operation and maintenance of the industrial pretreatment processes, including the monitoring and record keeping requirements. The operation of the pretreatment system and management of treatment residuals is also controlled by the California DTSC Hazardous Waste Permit issued to the facility.

3.2.4 Solid Waste Management

Solid waste consists of discarded material excluding wastes that are considered hazardous under RCRA Subtitle C or hazardous substances defined by CERCLA and the state of California Carpenter-Presley-Tanner Hazardous Substance Account Act. The following sections describe the regulation for solid waste and the status of solid waste management at NAS Alameda.

3.2.4.1 Solid Waste Regulation

Solid waste management regulations applicable to Navy bases can be divided into four categories: federal, state, county, and Navy.

The federal RCRA establishes public safety and health standards for the disposal of solid waste. RCRA and the Military Construction Codification Act (MCCA) of 1982 provide for various means of recovering value from solid waste. Wastes may be recycled, reclaimed, used as a fuel supplement, or sold for profit.

California Assembly Bill (AB) 939 requires counties in the state of California to divert 25 percent of their solid waste from landfills by 1995 and 50 percent by year 2000. California Senate Bill (SB)

1223 establishes comprehensive state programs designed to increase recycling and encourage the development of commercial markets for recyclable materials. In general, the state places the burden of action and responsibility on the county to meet the state requirements.

OPNAV Instruction 5090.1B, chapter 14, requires all Navy installations to comply with federal, state, and local solid waste management requirements. Each installation shall also develop a qualified recycling program (QRP) to reclaim scrap metal, high-grade paper, corrugated containers, aluminum cans, and to compost yard waste where feasible (NEESA 1991).

3.2.4.2 Solid Waste Status

General refuse and garbage are collected from bins and dumpsters by a commercial contractor and hauled off site on a daily basis. NAS Alameda operated a state-permitted solid waste landfill until 1978. The on-site landfill has been closed and is being investigated as Site 2 under the IRP. All nonhazardous solid waste is currently removed from the base and disposed of in a municipal solid waste landfill. The solid waste disposal contract is managed by the PWC. Some waste materials are also managed under a Defense Reutilization and Marketing Office (DRMO) disposal contract for recycling and reuse.

3.2.5 Polychlorinated Biphenyls

Polychlorinated biphenyls (PCBs) are a specialized class of manufactured chemicals able to withstand high temperatures and insulate electrical currents. PCBs were traditionally used in electrical transformers, capacitors, lighting ballasts and other similar equipment. However, PCBs were found to bioaccumulate in animal and human tissue and produce highly toxic dioxin compounds in fires (Carson and Cox 1992). Consequently, PCB use is regulated. The following sections present the primary regulations for PCBs and the status of PCB equipment at NAS Alameda.

3.2.5.1 PCB Regulations

PCBs are regulated under the Toxic Substances Control Act in 40 CFR Part 761. Toxic Substances Control Act classifications are as follows:

Concentration of PCBs in Contaminated Material	Classification
Less than 50 parts per million (ppm)	Non-PCB
Greater than 50 ppm but less than 500 ppm	PCB contaminated
Greater than or equal to 500 ppm	PCB

These classifications are used throughout this section.

Toxic Substances Control Act requires that material contaminated with PCBs at concentrations of 50 ppm or greater be disposed of in an incinerator or alternative method of equivalent performance. Liquids at concentrations above 50 ppm but less than 500 ppm, and soils contaminated above 50 ppm may be disposed of in a chemical waste landfill (EPA 1990).

PCBs are a hazardous substance under CERCLA. Toxic Substances Control Act is an applicable or relevant and appropriate requirement (ARAR) for CERCLA sites contaminated with PCBs.

PCBs alone are not a RCRA hazardous waste; however, if the PCBs are mixed with a RCRA hazardous waste, they must be handled as hazardous waste and may be subject to land disposal restrictions. RCRA is applicable to PCBs when liquid waste that is hazardous under RCRA contains PCBs at concentrations greater than 50 ppm or when nonliquid hazardous waste contains total halogenated organic compounds (HOC) at concentrations greater than 1,000 ppm. Land disposal restriction require treatment or a treatability variances before disposal of these wastes (EPA 1990).

The state regulations for disposal of PCBs are found in the CCR, Title 22, Section 66261.24 (a) (2). California regulates PCB waste liquid at 5 ppm or greater. The transformer fluids at levels higher than 5 ppm must be handled or disposed of in accordance with current state laws and regulations.

3.2.5.2 PCB Status

Table 3-5 presents the transformer inventory from the draft EBS database (ERM-West 1993) and includes the parcel number, location, transformer number, and general remarks. The use of PCBs in primary transformers has been phased out at NAS Alameda. PWC has planned a survey to determine the status of PCB oil in secondary transformers. The soil at present and former PCB transformer locations is being investigated in the EBS phase II sampling. PCBs have been identified in soil and groundwater at several IRP Sites, most notably Site 1, the 1945-1956 Disposal Area (Navy 1990).

3.2.6 Asbestos

Asbestos is a naturally occurring mineral in fiber form that is resistant to heat and chemicals. Asbestos fibers are flexible and break down into fine fibers when handled. The fibers can become airborne and may present a health hazard when inhaled or ingested. Until this hazard was recognized in the early 1980s, asbestos was widely used in fire resistant building products, insulation, brake pads, thermal insulation for steam lines (Carson and Cox 1992).

3.2.6.1 Asbestos Regulations

Federal regulations address the manner in which asbestos can be used or handled. This discussion focuses on regulations dealing with worker protection and the disposal of asbestos waste materials. Three federal agencies have regulatory jurisdiction over asbestos: the U.S. Department of Transportation, the EPA, and OSHA.

Department of Transportation regulations specified in the Hazardous Materials Transportation Act consider asbestos a hazardous material, categorize asbestos for transportation requirements, establish a reportable quantity (RQ) of 1 pound, specify asbestos shipping container requirements, and establish standards intended to limit exposure of transportation personnel (Carson and Cox 1992).

EPA regulates asbestos under the National Emission Standards for Hazardous Air Pollutants (NESHAP), as authorized by the Clean Air Act. These regulations address asbestos industries, application of asbestos-containing material in new buildings, and the handling of asbestos-containing material during demolition. Specific regulations for asbestos-containing material in buildings are listed below (EPA 1985):

- Before a building including more than 260 linear feet of asbestos pipe insulation or 160 square feet of asbestos is demolished, surfacing material are removed; advance notice must be filed with the EPA regional office or state or both.
- Asbestos-containing material can be removed only with wet removal techniques. Dry removal is allowed only under special conditions and with written EPA approval.
- No visible emissions of dust are allowed during removal, transportation, and disposal of asbestos-containing material.

EPA also regulates asbestos in schools under the identification and notification rule for friable asbestos-containing material promulgated under the Asbestos School Hazard Abatement Act.

OSHA regulations for asbestos specify airborne exposure standards for asbestos workers, engineering and administrative controls, workplace practices and medical surveillance, and worker protection requirements.

3.2.6.2 Asbestos Status

The Navy will be following recent final DoD guidance (November 1994) for asbestos issues at NAS Alameda. A basewide asbestos-containing material survey was completed at NAS Alameda. The asbestos-containing material survey was conducted by Mare Island Naval Shipyard personnel. The information collected in the asbestos-containing material survey will be available by May 1995 and incorporated into the EBS.

Some asbestos removal actions have been conducted at various buildings when asbestos-containing material was encountered during construction, maintenance, and repair activities performed at the

base. A program to abate any friable asbestos which causes a threat to human health is currently underway. A program to abate asbestos in unoccupied buildings as well as any non-priority areas of concern which do not currently pose a threat to human health and the environment is now being coordinated.

3.2.7 Radon

Radon is a decay product of uranium that is naturally occurring in some geologic formations. Building products, especially cinderblocks made from materials high in uranium, may release radon gas. Radon may pose a hazard in airtight buildings where the gas can accumulate (Carson and Cox 1992).

The regional geologic setting has been evaluated, and NAS Alameda is not susceptible to radon accumulation in buildings because of low concentrations of radioactive isotope in rocks and sediments underlying the base. Also, according to the EBS database (ERM-West 1994), a radon survey was performed in some of the base housing units, and radon gas levels were acceptable. Recent DoD guidance (November 1994) will be followed for radon issues.

3.2.8 RCRA Facilities

In May 1991, NAS Alameda completed an EPA and DTSC RCRA facility assessment questionnaire as a requirement for operating hazardous waste facilities subject to permits. The results of the RCRA facility assessment questionnaire are summarized in a report prepared by the DTSC in December 1991. The RCRA facility assessment report summarizes all existing or closed SWMUs at NAS Alameda not shown in existing Part A or B applications. As defined in the RCRA facility assessment questionnaire, a SWMU is:

> any discernible unit at which solid wastes [solid, liquid, semisolid, and gaseous materials] have been placed at any time, irrespective of whether the unit was intended for the management of solid hazardous wastes. Such units include any area at a facility at which solid wastes have been routinely and systematically released.

A SWMU does not include leakage from product storage, contamination from one-time spills, or firing ranges and impact areas (DoD 1993). The RCRA facility assessment identified 142 SWMUs in the following categories at NAS Alameda:

- Landfills
- Aboveground storage tanks
- USTs
- Container storage areas
- Transfer stations and generator accumulation points
- Waste recycling operations
- Air emission control by-product accumulation areas

The 142 SWMUs are listed in Table 3-6.

Subsequent to the RCRA facility assessment, NAS Alameda acquired a hazardous waste facility permit, including a Part B application approval for seven hazardous waste facilities. The hazardous waste facility permit included a Corrective Action Schedule of Compliance. The Corrective Action Schedule of Compliance identifies 25 of the 142 RCRA sites for which an RFI must be conducted (see Table 3-6). In addition, the Corrective Action Schedule of Compliance specified corrective actions needed and corrective action procedures for adding additional SWMUs. The 25 RFI sites include 16 SWMUs identified in the RCRA facility assessment and 9 areas of concern at which wastes may have been released to the environment. The 16 SWMUs include 6 generator accumulation point sites and 10 UST sites, and the nine areas of concern include one building and eight UST sites. To accelerate cleanup and facilitate property transfer, the BCT has developed a strategy by which the RFI sites will be investigated as part of the EBS; therefore, no formal RFI will be completed. This strategy is discussed in detail in Chapter 4.

The Corrective Action Schedule of Compliance also indicates that corrective action is required for SWMUs IR-1 through IR-23, which have released or have the potential to release wastes to the soils and groundwater (see Table 3-1). However, as stated in the permit, these SWMUs (the 23 IRP sites) are currently being investigated by NAS Alameda with the DTSC's Site Mitigation Program under the IRP (DTSC 1993). Therefore, corrective action requirements for these SWMUs are being addressed under CERCLA rather than RCRA guidance. The IRP sites are discussed in Section 3.1.

3.2.9 NPDES Permits

Industrial activities at NAS Alameda generate wastewaters that require treatment or disposal or both. The following sections describe the regulations that address storm water and the status of water permits at NAS Alameda.

3.2.9.1 NPDES Regulation

The Clean Water Act regulates all discharges to navigable waters of the U.S. through a permitting process. California has been granted NPDES permitting authority by EPA and has implemented a permitting program through the California State Water Resources Control Board (CSWRCB). The CSWRCB delegates the authority to implement and enforce NPDES permitting requirements through nine RWQCBs. In addition to NPDES permits granted for discharges from point sources (any discernible, confined and discrete conveyance from which pollutants may be discharged), the CSWRCB has adopted a general permit for storm water discharges associated with industrial activity. Facilities that discharge storm water associated with industrial activity are required to obtain an individual permit or to comply with the CSWRCB general permit requirements.

3.2.9.2 NPDES Permit Status

NAS Alameda discharges stormwater associated with industrial activity, and therefore must be covered by an NPDES permit. The storm drains, in turn, discharge to the Seaplane Lagoon and Oakland Inner Harbor. In California, the Navy has chosen to comply with the State Water Resources

Control Board general permit requirements rather than apply for individual permits for each facility. NAS Alameda must comply with the general permit requirements as implemented by the RWQCB, San Francisco Bay Region. The general permit requires development and implementation of a stormwater pollution prevention plan. NAS Alameda has prepared a stormwater pollution prevention plan for compliance with the general permit requirements (PRC/MW 1993e). The facility has developed plans for sampling and monitoring activities, prevention of illicit discharges, implementation of best management practices, record keeping, and inspections.

On September 18, 1994 the Navy, the ARRA and its contractors met to discuss coordination of environmental compliance issues and reuse. At that time the Navy provided the ARRA a copy of all the Clean Water Act Permits. Those permits consist of the Main Pump Station Wastewater Discharge Permit, four Industrial Wastewater Treatment Plants, pH adjustment at Building 360, Industrial Stormwater NPDES permit and ten Zero Discharge Permits. It has been determined that Clean Water Act permits are not transferrable; however, the permits that are currently active will provide the ARRA with a solid example of what types of permits may be required to support similar operations at Alameda.

3.2.10 Oil/water Separators

Oil/water separators, waste oil rafts, and a bilge and oily wastewater treatment system are used at NAS Alameda to separate petroleum, oil, and lubricants from wastewater. Table 3-7 presents the oil/water separator inventory and includes the parcel number and building number and detailed location. Waste oil rafts, referred to as "donuts," are being replaced by the bilge and oily wastewater treatment system at Pier 2. All donuts are scheduled to be out of the water by April 1995. The donuts are being decontaminated, and the sludge and rinsewater are being treated and landfilled off site. The cleaned donuts will be turned over to DRMO for sale as scrap metal.

3.2.11 Air

Many activities at Navy installations create air emissions and require permitting. These include combustion, fuel tank, solvent, and painting sources. The following sections describe air permit regulation, status, and air sampling performed at military housing.

3.2.11.1 Air Permit Regulation

The Clean Air Act and the California Clean Air Act of 1988, which amended the Air Pollution Control Program, regulates air pollution from stationary and mobile sources. The California standards are generally more stringent than the federal standards implemented by the California Air Resources Board, Air Pollution Control Districts, and regional air quality management districts. The authority and enforcement of air emission permits are held by the air quality management districts.

3.2.11.2 Air Permit Status

NAS Alameda has been issued a permit for approximately 505 permitted or exempted stationary sources at NAS and NADEP Alameda by the Bay Area Air Quality Management District. Nas Alameda has the following Banking Certificates (see Emissions Banking below) from the Bay Area Air Quality Management District:

- Certificate #351 - 22.79 ton/year Precursor Organic Compounds (POC), 54.6 ton/year Non-Precursor Organic Compounds (NPOC)
- Certificate #205 - 6.03 ton/year NPOC
- Certificate #333 - 13.49 ton/year POC

All required operating permits for NAS Alameda operations are on file at the base. Compliance is demonstrated by a Yearly Emission Inventory, which tracks the potential hazardous sources of air pollutants at NAS Alameda.

NAS Alameda's permit establishes emission limits for particulates, total organic compounds, oxides of nitrogen, sulfur dioxide, carbon monoxide, and 13 volatile organic compounds (VOC). Under the California Air Toxics Hot Spots Information and Assessment Act of 1987, NAS Alameda submitted the air toxics hot spot inventory plan to the Bay Area Air Quality Management District on August 27, 1993. The facility has complied with the health risk assessment and public notice requirements of the act. The latest health risk assessment completed in 1993 indicated an excess cancer risk of 1.1×10^{-5} caused primarily by benzene emissions from the gas station (IRP Site 7A). It is estimated that cancer risks will be reduced to 5×10^{-6} in 1996, when new regulations reduce the allowable benzene content of gasoline.

On October 19, 1994, NAS Alameda hosted an Air conference to discuss the issues of air permit and credit transference. BAAQMD, the Navy, and the ARRA isolated several issues which need to be addressed in the closure environment at NAS Alameda. First, an inventory of the current sources of air emissions must be made. An assessment of emissions credits gained by air pollution reduction, voluntarily reduce emissions gained by adding better equipment or by changing processes will be done. Last, a strategy is being developed to examine the banking and transferring potential for each permit.

Each air permit may either be transferred or banked under the Emissions Banking Program with BAAQMD. However, to transfer a permit, the new company's emissions must meet permit restrictions. As reuse options become evident, the Navy, in conjunction with the community, will assess the potential for the transfer of the air permit on a case by case basis. If it is determined that the permit is not transferrable, the permit credits may be banked. The specific permit would then be banked as generic emission credits and the potential to be reused in a multitude of different air permits. There are disadvantages to banking permits. If a permit is banked, BAAQMD allows only the current emission not the actual permitted emission to be banked. Further, the emission reduction credits have the potential to be used for other federal facilities or for federal remediation projects. The decision to transfer these credits to other federal facilities will be made in conjunction with the ARRA. Last, at the time that the community may chose to use banked emission credits, the BAAQMD may assess a deduction in credits so that regional attainment goals may be met. While it

is more efficient to transfer credits, banking credits will be an option for the future reuse of facilities on base.

3.2.11.3 Air Sampling and Analysis of Military Family Housing

Air sampling and analysis assessment of potential residential exposure to benzene and other VOCs were performed in 1990 at military housing units in five buildings on Kohlman Circle, and background levels at Monterey Circle at NAS Alameda North Housing Site were also determined (PRC 1990a). Benzene and VOCs were suspected to be present in the DRMO scrapyard.

The DRMO scrapyard is part of the Fleet Industrial Supply Center Oakland Alameda Annex. The Fleet Industrial Supply Center Oakland Alameda Annex is constructed on sand fill and heterogeneous backfill materials underlain by bay mud. Since the time the area was filled in the late 1930s and early 1940s, there has been considerable consolidation and settlement of the underlying sediments, causing differential settlement between building walls and floors in Buildings 368, 369, 370, and 371. Because of the varied industrial operations occurring on the Fleet Industrial Supply Center Oakland Alameda Annex site during the previous 40 years, there is a considerable potential for soil contamination. The warehouse area at Fleet Industrial Supply Center Oakland Alameda Annex is now the location of a military housing project.

The following three conclusions were derived from this study (PRC 1990a).

- A pattern suggesting migration of airborne benzene and VOCs from groundwater associated with the DRMO into housing units on Kohlman Circle was not demonstrated by air sampling and analyses during this project.
- A comparison of the air sampling and analyses results with previous Bay Area air monitoring data showed that, with the exception of methylene chloride, the air concentrations found for benzene and VOCs at the NAS Alameda North Housing Site were far below Bay Area results.
- The levels of airborne benzene and VOCs found in housing units on Kohlman Circle do not represent an appreciable health hazard when compared with recognized health exposure standards for inhalation.

3.2.12 Dredging

Two types of dredging have occurred or been planned in the NAS Alameda area: maintenance dredging and new construction dredging, also called milcon dredging.

A 1994 plan for maintenance dredging was canceled in September 1994; however, the permitting process is continuing in the event a future need for maintenance dredging occurs. In July 1994 the Navy conducted additional sediment testing. The dredging project was planned for the berthing areas at NAS Alameda and the berthing and channel areas at Naval Fleet and Industrial Supply Center Oakland. The maintenance dredging project was canceled mainly because base closure and dredging schedules would ultimately only allow for one carrier to berth in the NAS Alameda area before base closure.

New construction dredging of the channel is being conducted under the Army Corps Engineers.

3.2.13 Lead Paint

The following sections present the regulations and the status of lead paint at NAS Alameda.

3.2.13.1 Lead Paint Regulation

BRAC residential properties transferred after December 31, 1994, must comply with certain provisions of the federal residential lead-based paint hazard reduction act of 1992, 42 U.S.C. Section 4822, which takes effect January 1, 1995.

Under this statute, housing constructed before 1960 and disposed of after January 1, 1995, must be inspected for lead-based paint hazards, and such hazards must be abated. Risk assessment surveys must be conducted no later than January 1, 1996.

Housing constructed after 1960 must be inspected, but abatement is not required under the regulation. The results of the inspections must be disclosed to prospective purchasers of the property, identifying the presence of lead on a surface-by-surface basis. Prospective purchasers must be given a lead hazard information pamphlet. The contract for sale must include a lead warning statement.

DTSC plans to promulgate a set of comprehensive lead-based paint regulations in the next few years. The federal lead-based paint hazard reduction act made federal agencies subject to all federal, state, interstate, and local requirements. Therefore there may be more stringent state and local requirements applicable to federal property transfers.

There are currently no federal, state, or local requirements to survey and abate lead paint hazards in nonhousing facilities.

The following regulations govern lead-based paint in residential housing:

- Lead-based paint housing reduction act of 1992 (Title X)
- 15 U.S.C. Section 2688
- Lead-based paint poisoning prevention in certain residential structures 24 CFR 35, Subtitle A, Subpart E
- 42 U.S.C Section 4822, Chapter 63 FHA procedures for eliminating lead-based paint

DTSC issued a letter in response to a Navy request for a regulatory interpretation of the way to properly classify and dispose of lead-painted demolition debris. DTSC does not generally consider intact painted building materials to be hazardous wastes. As such, the DTSC would not require hazardous waste disposal. The determination is dependent, in part, upon the physical state of the waste. If the paint is separated from the building material during the demolition or dismantling of the buildings, (that is, chemically or physically removed), the paint waste should be evaluated independently from the building material to determine proper management (DTSC 1992).

Conversations held by DTSC with staff from both EPA Region IX and EPA Headquarters indicate that this is also the federal interpretation of the way lead paint building debris should be managed. EPA's verbal guidance on this issue is to analyze the waste. If during the renovation and demolition, project materials are generated and destined for disposal, they should be representatively sampled and characterized if the entire waste stream could potentially exhibit a hazardous waste characteristic (DTSC 1992).

3.2.13.2 Lead Paint Status

A base-wide lead paint survey has not been performed at NAS Alameda. However, some paint chips have been tested for lead. Paint from the following buildings were sampled and analyzed for lead by EPA Method 6010: buildings 4, 8, 14, 39, 40, 41, 78, 101, 112, 114, 153 and hangars 20, 21, 23, 39, 40, 41, and 78. Lead concentrations in these samples ranged from 127 ppm to 130,000 ppm. The EBS is noting areas of peeling paint in industrial buildings. If a building was constructed before 1978, the peeling paint is suspected of containing lead.

Building 101 has undergone abatement for lead paint so that building renovation could be completed. No other lead paint abatement has been completed at the base. Recently issued DoD guidance (November 1994) for lead based paint issues will be followed by the Navy, in conjunction with other applicable regulations for lead based paint issues. The Navy in conjunction with PWC will assess and abate lead based paint in all residential structures as defined in the reuse plan.

3.2.14 Lead in Drinking Water

Results of a study conducted in 1994 show that lead and copper in drinking water at NAS Alameda do not exceed action levels. The results were published in *"Initial Sampling Report for Lead and Copper in Drinking Water, NAS Alameda,"* March 1994, by Radian Corporation. Future sampling, with California Department of Health Services oversight, will be conducted as a routine compliance activity.

3.2.15 Outdoor Small Arms Ranges

The outdoor small arms range or pistol range at NAS Alameda will undergo a removal action to remove lead from soil.

3.2.16 Indoor Small Arms Ranges

No indoor small arms ranges exist at NAS Alameda.

3.2.17 Septic Tanks

At least one septic tank is present at NAS Alameda and it will be addressed in the EBS. NAS Alameda discharges wastewater to the sanitary sewer under a discharge permit from EBMUD.

3.2.18 One-Time Compliance

One-time compliance refers to final cleaning of buildings before they are closed and transferred. The final cleaning includes cleaning air ducts, decontaminating and removing equipment, washing the facility and disposing of the wash water. A protocol has been designed for one-time compliance activities at NAS Alameda. The strategy for one-time compliance activities is described in Section 4.2.18.

3.2.19 Operational Compliance Permits

NAS Alameda requires environmental permits to maintain current operations. These permits consist of RCRA Part B Permits, Clean Air Act Permits, Clean Water Act Permits, and Tiered Permits. These permits will be maintained by the Navy while in use and will be assessed for the potential transfer on a case by case basis.

On September 18, 1994 the Navy met with the reuse group to develop a permit strategy for community reuse. At this meeting copies of all permits were made available so that ARRA might use them as a guide for assessing any future permitting needs. The potential to transfer permits is in some cases provided in the provisions for that permit. A case by case analysis for each permit will be necessary to determine the feasibility of transferring the permit. The status of those permits is presented in the following sections.

3.2.19.1 Hazardous Waste Permits

The Navy and DTSC convened a meeting on September 6, 1994, to discuss the transfer of these permits. Likewise, the Navy has been closely working with the reuse groups and their contractors to coordinate the issue of permit transference.

NAS Alameda operates storage and treatment units for hazardous waste management under a Part B permit issued by the DTSC, EPA identification number CA 2170023236. The permit specifies operating requirements for two container storage areas (Building 13 and Yard D-13), a tank storage area (Structure 598, outdoor in Area 37), and four waste treatment facilities (IWTP 5, 24, 25, 32) that are part of the industrial wastewater treatment system. The permit has been issued under section 25200 of the California Health and Safety Code. The permit effective date was July 24, 1993, and the permit expires on July 24, 2003. Closure plans exist for all Part A and B permitted facilities.

NAS Alameda operates 22 active generator accumulation points where wastes are stored less than 24 hours (72 hours on weekends) before they are transported to one of the permitted waste storage units. The Naval Aviation Depot operates 60 generator accumulation points and generates waste at one additional laboratory site. Hazardous material products are stored and dispensed from two delivery areas operated by NAS Alameda and the Naval Aviation Depot, respectively. In 1992, NAS Alameda developed and implemented a hazardous material inventory control program to minimize hazardous material inventories in use areas and to decrease waste generation associated with shelf-life expiration of hazardous materials.

These permitted facilities treat and store hazardous waste and thus require Hazardous Waste Facility Permits (RCRA Part B Permit). While these permits have the potential to be transferred, several provisions, which are stated in the permit must be met before a transfer may occur.

On September 6, 1994 the Navy and DTSC met to coordinate the issue of permit transference. One of those provisions was that the reuse operations must be similar. For instance, if the permits at yard B-13 and D-13 are to be transferred, the reuse must be that of a hazardous waste storage area with similar waste streams which may or may not suit reuse needs. On the other hand, the IWTPs whose operations are more closely related to the facility that they service may have a higher potential for transference due to the fact that the potential reuse will most likely be very similar to the current use and therefore compliance with the permit provisions for transfer is much more easily accomplished. Discussion will continue with the ARRA about the potential to transfer the Part B permit if applicable to the reuse needs.

3.2.19.2 Clean Air Act Permits

On October 19, 1994, NAS Alameda hosted an Air conference to discuss the issues of air permit and credit transference. BAAQMD, the Navy, and the ARRA isolated several issues which need to be addressed in the closure environment at NAS Alameda. First, an inventory of the current sources of air emissions must be made. An assessment of emissions credits gained by air pollution reduction, voluntarily reduce emissions gained by adding better equipment or by changing processes will be done. Last, a strategy is being developed to examine the banking and transferring potential for each permit.

Each air permit may either be transferred or banked under the Emissions Banking Program with BAAQMD. However, to transfer a permit, the new company's emissions must meet permit restrictions. As reuse options become evident, the Navy, in conjunction with the community, will assess the potential for the transfer of the air permit on a case by case basis. If it is determined that the permit is not transferrable, the permit credits may be banked. The specific permit would then be banked as generic emission credits and the potential to be reused in a multitude of different air

permits. There are disadvantages to banking permits. If a permit is banked, BAAQMD allows only the current emission not the actual permitted emission to be banked. Further, the emission reduction credits have the potential to be used for other federal facilities or for federal remediation projects. The decision to transfer these credits to other federal facilities will be made in conjunction with the ARRA. Last, at the time that the community may chose to use banked emission credits, the BAAQMD may assess a deduction in credits so that regional attainment goals may be met. While it is more efficient to transfer credits, banking credits will be an option for the future reuse of facilities on base.

3.2.19.3 Clean Water Act Permits

On September 18, 1994 the Navy, the ARRA and its contractors met to discuss coordination of environmental compliance issues and reuse. At that time the Navy provided the ARRA a copy of all the Clean Water Act Permits. Those permits consist of the Main Pump Station Wastewater Discharge Permit, four Industrial Wastewater Treatment Plants, pH adjustment at Building 360, Industrial Stormwater NPDES permit and ten Zero Discharge Permits. It has been determined that Clean Water Act permits are not transferrable; however, the permits that are currently active will provide the ARRA with a solid example of what types of permits may be required to support similar operations at Alameda.

3.3 NATURAL AND CULTURAL RESOURCES STATUS

The status of natural and cultural resources at NAS Alameda is described in the following sections.

3.3.1 Natural Resources Status

Natural resource management activities have been underway at NAS Alameda since 1980 and are documented in the NAS Alameda natural resource management plan (USDA 1986). Natural resources at NAS Alameda include tidal wetlands, brackish ponds, rural areas, grasslands, bird

nesting and roosting areas, neighboring San Francisco Bay waters, and all the species associated with these habitats (Feeney 1994).

The status of natural resources at NAS Alameda are described in the following sections and summarized in Table 3-8. As noted in Table 3-8 and discussed in Section 4.3, an environmental impact statement will be prepared upon receipt of the community's reuse plan. As part of the environmental impact statement process, further delineation of natural resources will be performed if necessary. Table 3-9 lists natural resource trustees associated with NAS Alameda. Natural resource trustees are being consulted regarding IRP and compliance programs affecting natural resources.

3.3.1.1 Threatened or Endangered Species

The current identification of threatened and endangered species at NAS Alameda is based on the U.S. Fish and Wildlife species list (March 1994); the CDFG Natural Diversity Database (CDFG 1994a); the CDFG Natural Heritage Division Special Plant List (CDFG 1994b). Table 3-10 lists the CDFG Endangered, Threatened, and Rare Plant List (CDFG 1994c) and the CDFG Special Animals List (CDFG 1994d) species identified as likely to occur at NAS Alameda.

Review of published literature, interviews with botanists and zoologists familiar with the area, and on-site surveys may be necessary to determine whether any of these species currently exist, or have ever existed, on land occupied by NAS Alameda. As discussed in Section 4.3, this will occur during development of the environmental impact statement to be conducted in accordance with NEPA.

The endangered California least tern courts, breeds and nests at NAS Alameda. The NAS Alameda nest site is the northernmost nesting colony and the only currently stable nesting colony in the San Francisco Bay area, and the largest colony north of Venice Beach (Caffrey 1994). The colony at NAS Alameda is consistently one of the top ten colonies in the state in numbers of breeding pairs, and in the top five in the state in number of young fledged. This high rate of reproductive success is especially important in El Nino years when southern Californian colonies are subject to major reproductive failures (Caffrey 1994). The nearest California least tern colony at the Oakland Airport

has been largely unsuccessful for several years because of extensive predation. The NAS Alameda colony has increased from 47 nesting pairs in 1984 to 128 nesting pairs in 1993. This increase has been primarily attributable to an active management program, including taking a daily census of least terns and active management and removal of predators affecting least tern nesting success.

In 1994, the Navy conducted a study to compare factors affecting the management of the least tern at NAS Alameda with management requirements of least tern in other parts of the state. This study will be available in April 1995.

The California brown pelican utilizes NAS Alameda for roosting. Up to 400 pelicans were observed roosting on the breakwater island; this is considered one of the only night roost for pelicans in San Francisco Bay (Jacques-Strong 1994).

3.3.1.2 Rare or Sensitive Habitat

Wetlands and the California least tern nesting habitat (open, sparsely vegetated flat terrain) are located on base; both the wetlands and nesting grounds are considered sensitive habitats. Other sensitive habitats on site include grasslands and federal areas that provide forage for northern harriers and other raptors. The breakwater island, while not a natural habitat, is a rare roosting and nesting habitat for birds (pelicans, gulls, and many others) and an important haulout for marine mammals (such as elephant harbor seals). A total of 39 species of waterbirds use the breakwater and its surrounding waters; 20 species of waterbirds roost on the breakwater (Bailey 1994) The entire San Francisco Bay can be considered a sensitive habitat, but its condition is affected by many factors beyond the control of the Navy.

3.3.1.3 Wetlands

Wetlands have been delineated in two major areas at NAS Alameda: the West Beach Landfill wetland and the runway wetland. The wetlands were delineated using current U.S. Army Corps of Engineers criteria (PRC/KLI 1993).

3.3.1.4 Surface Waters

The facility is surrounded by the San Francisco Bay on three sides and contains no fresh or saline bodies of surface water (PRC/KLI 1993). Waters of the Central Bay, where Alameda is located, have high densities of fish and invertebrates relative to North and South Bay locations; these groups are important food resources for seabirds nesting and roosting at NAS Alameda (Hieb 1994; Kitting 1994).

3.3.1.5 Floodplains

According to topographic maps, no areas of NAS Alameda are below sea level, but some areas are observed to flood at high tides. The U.S. Army Corps of Engineers will be contacted regarding floodplain status.

3.3.1.6 Migratory Birds

Several species of migratory bird have been observed in the wetland and breakwaters at NAS Alameda (PRC/KLI 1993), and lists of migratory birds have been compiled for NAS Alameda, including those in the NAS Alameda natural resource management plan (1988) and by the Golden Gate Audubon Society. A 1991 survey of the West Beach Landfill wetland recorded 1,020 nests of Caspian terns; this is the largest colony on the Pacific coast of North America (Bailey 1994). Caspian terns have been threatened by the introduction of red foxes into their traditional nesting grounds in the southern parts of San Francisco Bay; the colony at NAS Alameda has thus far been protected from such threats. A colony of approximately 60 pair of Canadian geese also use NAS Alameda for feeding and nesting during migration. The second largest colony of Western gulls in northern California nests on the breakwater island (Feeney and Collins 1993). All these species are protected by the Migratory Bird Treaty Act.

3.3.1.7 Fisheries

Pacific herring spawn in the shoals at NAS Alameda, and mussels have been found in the bay surrounding the site (PRC/KLI 1993). High densities of fish are found in seasonal and annual midwater trawls and beach seines in the Central Bay; midwater trawl catches are dominated by northern anchovy and Pacific herring while beach seine catches have abundant Pacific herring, jacksmelt, topsmelt, and gobies (Hieb 1994). Specimens identified as dropped fish on the least tern feeding grounds include Pacific herring, northern anchovy, coho salmon, chinook salmon, delta smelt, plainfin midshipman, jacksmelt, topsmelt, staghorn sculpin, white croaker, four surfperches (walleye, shiner, pile, white), yellowfin goby, arrow goby, golden shiner, and several flatfishes (Pleuronectidae) (Feeney and Collins 1993). In addition, fish caught by people from the shore of NAS include leopard shark, bat ray, and striped bass (Feeney and Collins 1993).

3.3.1.8 Marine Mammals

According to the status and trends reports (NOAA 1988), marine mammals occasionally spend time on the breakwater. Harbor seals with pups were observed using the island breakwater at NAS Alameda during least tern surveys and other studies (Kopec 1994). Marine mammals observed in open water around NAS Alameda include Steller's sea lion, California sea lion, harbor porpoise, and Pacific white-sided dolphin.

3.3.1.9 California Special Animals

California special animals is a broad term used by the CDFG Natural Heritage Division to refer to invertebrate and vertebrate species of concern, regardless of their legal status. The list includes populations that are (1) rare, restricted, or declining; (2) peripheral to the main population but threatened within California; or (3) closely associated with habitats that are declining in California (for example, wetlands, riparian, old growth forest). The list includes species legally listed as endangered or proposed for listing, as well as candidate species, CDFG species of special concern, and species designated as "sensitive" by federal land managers.

Bird Species of Special Concern nesting at NAS Alameda include northern harrier, burrowing owl, and California gull. Other species of concern have not yet been identified.

3.3.1.10 California Special Plants

California special plants includes species that (1) are listed as endangered or threatened by the state or federal government; (2) are candidates for listing; (3) meet the criteria for listing as described in § 15380 of California Environmental Quality Act (CEQA) guidelines; (4) are listed in the California Native Plant Society as rare or endangered; (5) are rare, restricted, or declining; (6) are peripheral to the main population but threatened within California; (7) are closely associated with habitats that are declining in California (for example, wetlands, riparian, old growth forest); or (8) have been designated as "sensitive" by federal land managers. The occurrence of special plants at NAS Alameda has not yet been documented.

3.3.1.11 Plants or Animals of Public Interest

The current status of plants or animals of public interest has yet to be determined. However, U.S. Fish and Wildlife Study has reported that two species of native bat, both federal Candidate 2 species, may occur in the area of NAS Alameda. In the San Francisco Bay Area, members of an active nonprofit group, the Bat Conservation Fund, work to ensure that bats are protected from direct or indirect harm. Bats have been sighted at NAS Alameda during least tern monitoring, but the extent to which they use the area is unknown.

NAS Alameda provides nest habitat for several species of birds that are rare in the rest of the city of Alameda, including loggerhead shrike, horned lark, and black-necked stilt (Feeney and Collins 1993).

3.3.2 Cultural Resources Status

The status of cultural resources at NAS Alameda is described below and summarized in Table 3-11.

3.3.2.1 Archeological Resources

The Navy has determined, in consultation with the California State Historic Preservation Officer, that there is no potential for uncovering significant archeological properties at NAS Alameda.

3.3.2.2 Historical Structures

None of the buildings at NAS Alameda was found to be individually eligible for listing on the National Register of Historic Places. However, of the 70 buildings documented at the central core, 38 were found to contribute to a historic district. An additional 47 buildings located in the officer housing area also contribute, making a total of 85 buildings in the historic district. The principal streets defining the district are the north-south running First, Second, Third, Fourth, and Fifth Streets and east-west running Avenues A, B, C, D, E, and F. The contributing buildings are, in numerical order: 1, 2, 3, 4, 6, 8, 9, 16, 17, 18, 20, 21, 22, 23, 30, 31, 39, 40, 41, 42, 43, 44, 60, 63, 75A, 77, 91, 92, 94, 101, 102, 114, 115, 116, 130, 135, and 137. In addition to these 37 numbered buildings, the historic district includes the 47 officer housing buildings, which are unnumbered, and a flag pole. Figure 3-2 illustrates the location of the historic district.

The proposed NAS Alameda historic district is eligible for listing on the National Register of Historic Places. The Navy has consulted with the Advisory Council on Historic Preservation and the California State Historic Preservation Officer pursuant to the National Historic Preservation Act.

No survey has been conducted to determine the historical significance of the Navy housing located east of NAS Alameda, as part of the Alameda Annex facility. The buildings are not expected to qualify for listing in the National Register of Historic Places, because the housing area was built after 1950. However, as part of the environmental impact statement to be prepared on the community's reuse plan, a survey will be conducted to study whether the Navy housing qualifies as a historical resource.

3.3.2.3 Native American Resources

There are no indications that Native American resources exist at this installation. However, as part of the environmental impact statement to be prepared on the community's reuse plan, a new literature search will be conducted.

3.3.2.4 Paleontological Resources

There are no indications that significant paleontological resources exist at this installation.

3.4 ENVIRONMENTAL CONDITION OF PROPERTY STATUS

At each closing base, an EBS must be conducted. The EBS is an inventory of all base property, and the environmental condition of the property is identified on a parcel-by-parcel basis. As such, it identifies areas at the base that involved the handling of hazardous materials. The EBS at NAS Alameda is being conducted in two phases, as described below.

- Phase I consists of reviewing documents and aerial photographs, interviewing current and past employees associated with each of the 214 property parcels at NAS Alameda, and inspecting sites within parcels.

- Phase II consists of collecting environmental samples from parcels from which additional information is deemed necessary by the BCT and project team. At the conclusion of phase II, each property parcel will be placed in one of seven categories outlined below, and each property parcel requiring investigation or cleanup will be integrated into an appropriate program (see Chapter 4).

  Category 1. Areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).

  Category 2. Areas where only storage of hazardous substances or petroleum products has occurred (but no release or disposal or migration from adjacent areas has occurred).

Category 3. Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred, but at concentrations that do not require a removal or remedial action.

Category 4. Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken.

Category 5. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, removal and/or remedial actions are underway, but all required remedial actions have not yet been taken.

Category 6. Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been taken.

Category 7. Areas that are have not been evaluated or require additional evaluation.

Phase I of the EBS at NAS Alameda is complete and the results are presented in Table 3-12. Phase I of the EBS identified the following parcels as meeting the qualifications of category 1 described above: parcels 39, 60, 63, 93, 101, 194. These parcels may be considered "uncontaminated" as defined by the federal law, the Community Environmental Response Facilitation Act (CERFA). Current and former employees were identified and interviewed by the contractor during development of the phase I EBS. Other efforts to reach employees with knowledge relevant to the EBS included outreach efforts by the restoration advisory board (RAB) and display ads in local newspapers.

In addition, the EBS contractor has identified a contact to receive additional information from current or former employees. All interviews are confidential and information will be incorporated into the EBS as it is received. Any current or former employee with information relevant to the EBS is urged to contact Sherri Withrow, NAS Alameda Public Affairs Office, (510) 263-3724, and ask to obtain the name and telephone number of the EBS contractor.

Phase II of the EBS is being conducted in two parts:

- Phase IIA includes designing parcel-specific evaluation plans (PEP) and conducting the sampling required to place each parcel in one of the seven categories.
- Phase IIB will address any additional sampling required to categorize property parcels and integrate each into a cleanup program if necessary.

Parcel evaluation plans (PEPs) for conducting phase IIA are currently being created, reviewed, approved by the BCT and project team, and implementation began in October 1994 on a priority basis (see Chapter 4). PEPs for conducting phase IIB will be created, reviewed, and implemented as the need for additional sampling is identified. The priority scheme and strategy are described in Section 4.4, and a schedule for implementation is presented in Chapter 5.

3.5 STATUS OF COMMUNITY INVOLVEMENT

NAS Alameda has established, and currently implements, a very proactive community involvement program. Although NAS Alameda is not a Superfund site, the Navy's IRP follows community involvement requirements set forth in CERCLA, SARA, and the NCP, as well as state requirements and guidelines.

The following sections describe the key aspects of the Navy's program for involving the community in environmental restoration activities at NAS Alameda. Key aspects of the program include preparation of a community relations plan, IRP display, and fact sheets, plus a series of technical review committee (TRC) and RAB meetings and general public meetings. However, the community involvement program is not limited to these activities. The program is designed to remain flexible to changing site conditions and community concerns. Additional activities, such as workshops and site tours, may be implemented as necessary. The Navy intends to continue its proactive community outreach policy by committing the personnel and resources necessary to maintain an open, responsive, and participatory community relations program at NAS Alameda.

The designated NAS Alameda contacts are listed below.

Environmental Community Relations Activities:	Sherri Withrow Public Affairs Specialist, Environmental Office NAS Alameda 250 Mall Square Building 1 Alameda, CA 94501-5000 (510) 263-3724
Base Closure Community Relations Activities:	Bill Valenti Public Affairs Officer NAS Alameda 250 Mall Square Building 1, Room 161 Alameda, CA 94501-5000 (510) 263-3079
Technical Questions and Questions Related to Cleanup Activities:	Lieutenant Commander Michael Petouhoff BRAC Environmental Coordinator NAS Alameda 250 Mall Square Building 1 Alameda, CA 94501-5000 (510) 263-3726

Community relations activities that have taken place at NAS Alameda to date include the following.

- **Community Relations Plan.** Community relations plan was prepared for Western Division (WESTDIV) in February 1989 by ICF Technology, under contract to Canonie. The community relations plan outlines a strategy for involving the community in base-wide cleanup activities at NAS Alameda. The purpose of the community relations plan is to facilitate communication among the Navy; other federal, state, or local agencies; and interested groups and community residents concerning current and planned cleanup activities at NAS Alameda. The community relations program addresses all stages of IRP and compliance investigation and cleanup.

  The community relations plan describes the way the Navy will monitor issues of community concern on a frequent and regular basis and modify its community relations program as appropriate to address changes in cleanup activities and community concerns. The community relations plan also presents the way the Navy

will satisfy federal and state community involvement and hazardous waste guidelines and statutes.

As a result of revisions to the NCP (March 1990), and NAS Alameda's new status as a BRAC facility, the community relations plan is currently being updated. Revisions to the community relations plan are discussed in Section 4.5.

- **Information Repositories.** Public repositories that house information for public review have been established at the Alameda public library and in Building 1 on base. They contain information related to environmental activities at NAS Alameda, including the IRP, compliance, and BRAC programs and are updated regularly with new information by the Navy.

- **Administrative Record.** An administrative record file has been established at NAS Alameda in accordance with CERCLA requirements. The administrative record file is continually being reviewed and updated. A copy of the administrative record file index is on file at EPA Region 9 headquarters. A review process for key documents has been established including draft document review and comment, and submittal to the administrative record for community review. A flow chart of the decision document review process is presented in Figure 3-3. The following documents require a 30-day public comment period:

  - Draft record of decision ("proposed plan")

  - Amended record of decision (if significant amendments are necessary)

  - Engineering evaluation/cost analysis (EE/CA) for non-time-critical removal actions beyond 120 days

- **Technical Review Committee.** In accordance with the NCP, a TRC was established in September 1990. The TRC functioned as a technical advisory body for the cleanup activities at NAS Alameda and provided input into the selection of remedial action alternatives, proposed removal actions, and recommendations for no further action, and as monitored the cleanup process. The TRC was chaired by the Navy and was composed of representatives from the following groups.

  - DTSC
  - RWQCB
  - EPA
  - EBMUD
  - Bay Area Air Quality Management District
  - Bay Conservation and Development Commission (BCDC)
  - IRP RI/FS Project Team
  - Citizens Advisory Committee
  - City of Alameda

- California Department of Fish and Game
- U.S. Fish and Wildlife Service
- U.S. Department of the Interior
- U.S. Army Corps of Engineers
- National Oceanic and Atmospheric Administration
- NAS Alameda
- Treasure Island Naval Base, San Francisco

TRC meetings were held quarterly at a location determined by the Navy. The agenda for each TRC meeting was distributed by NAS Alameda (Public Affairs Officer) approximately 30 days before each meeting. In accordance with BRAC guidelines, the NAS Alameda TRC has been expanded into a RAB.

- **Restoration Advisory Board.** The BCT has facilitated the establishment of a RAB at NAS Alameda to provide a formal mechanism for community involvement in the NAS Alameda cleanup, closure, and restoration process. The goal of the RAB is to involve a cross-section of community members in the decision-making process, solicit their input on technical documents and planned actions, and ensure that ongoing dialogue between the BCT and the community occurs throughout the cleanup, closure, and reuse process. The RAB provides a valuable forum for ongoing discussions between the Navy, regulators, and the community, in addition to the formal public notice and comment period required for specific documents under the NCP. Membership on the RAB includes core members from the previously existing TRC, reuse groups, and regulatory agencies. RAB community membership was established through several steps consistent with federal and state guidelines.

  Community members were notified of the formation of the RAB through mailings to 14,000 residents and 900 businesses within a 1/4-mile radius of NAS Alameda. A fact sheet was also published in local newspapers and posted at community distribution points in December 1993.

  The first transitional meeting between the TRC and the RAB was held January 12, 1994. The topics of the RAB fact sheet and the January meeting were the role of the RAB and membership application solicitation.

  A selection panel was formed that included the BCT, the chairman of the Alameda Base Reuse Advisory Group (BRAG) environmental sub-committee, and the chairperson of the TRC's Citizens Advisory Committee.

  The application period closed February 28, 1994, and RAB members were selected using 13 categories identified in the DTSC RAB guidance.

  RAB membership was approved in March 1994 by members of DTSC, EPA, and the Navy.

The RAB has met monthly since April 1994. RAB meetings are normally held on the first Tuesday of every month; public notification of each RAB meeting is printed in the *Alameda Journal*, the *Alameda Times Star*, and the *Oakland Tribune*.

Community RAB members chose a community representative to co-chair the advisory board along with the Navy co-chair, the BRAC environmental coordinator. The RAB has established six focus groups, each with its own area of expertise: (1) early actions, (2) natural resources, (3) organizational issues, (4) public outreach, (5) reuse, and (6) innovative technology.

Additionally, the Navy provided a presentation for the RAB on the basics of CERCLA, SARA, and the NCP, as well as implementation of the IRP at NAS Alameda. All RAB meetings are open to the public. The Navy has also issued base passes to RAB members to facilitate their access to the document library in Building 1, and a copy center has been established at a local copy store to assist the RAB in copying relevant documents.

Finally, the BCT has invited RAB members to participate in some BCT and project team technical meetings, such as meetings held to conduct on-board reviews of the EBS phase IIA PEPs.

- **Mailing list.** A mailing list of community interest groups, residents, businesses, government agencies, elected officials, and news media is maintained by the base and is currently being updated.

- **Fact sheets.** Fact sheets are used to inform the public of progress at NAS Alameda, to address ongoing issues of concern such as the potential effects of contamination on public health or the San Francisco Bay, and to present the selected remedial alternatives. These fact sheets are required or recommended by both state and federal regulations at key milestones of the cleanup process. Some of these milestones are listed below.

  - Commencement of the RI/FS (recommended only)
  - Completion of a draft ROD ("proposed plan")
  - Completion of a final ROD (if it differs significantly from the draft ROD)
  - Completion of a final remedial design

  The following six fact sheets have been published and are available at the information repositories.

  - Fact Sheet #1: RI/FS Update March 1990
  - Fact Sheet #2: RI/FS Update September 1990
  - Fact Sheet #3: RI/FS Update May 1991
  - IRP Update Spring 1993
  - Fact Sheet #4: IRP Update March 1993

- Restoration Advisory Board Fact Sheet December 1993

- **Public Notice.** Consistent with federal and state requirements, the Navy has consistently issued public notice to announce removal actions underway at NAS Alameda. Public notice is required to announce removal actions; a 30-day public comment period on planned removal actions is only required if the planned removal is expected to last longer than 120 days.

  Additionally, public notification regarding toxic air emissions was issued by the Navy on November 1, 1993. A community meeting was held on December 8, 1993, to discuss the potential for exposure to routine emissions of toxic air contaminants and explain the findings of an associated health risk assessment. Following the meeting, the health risk assessment was revised to address public concerns, and steps were taken to reduce air emissions and potential public health risks.

- **FFSRA process.** A draft NAS Alameda FFSRA has been prepared by the Navy, EPA, and the CAL-EPA.

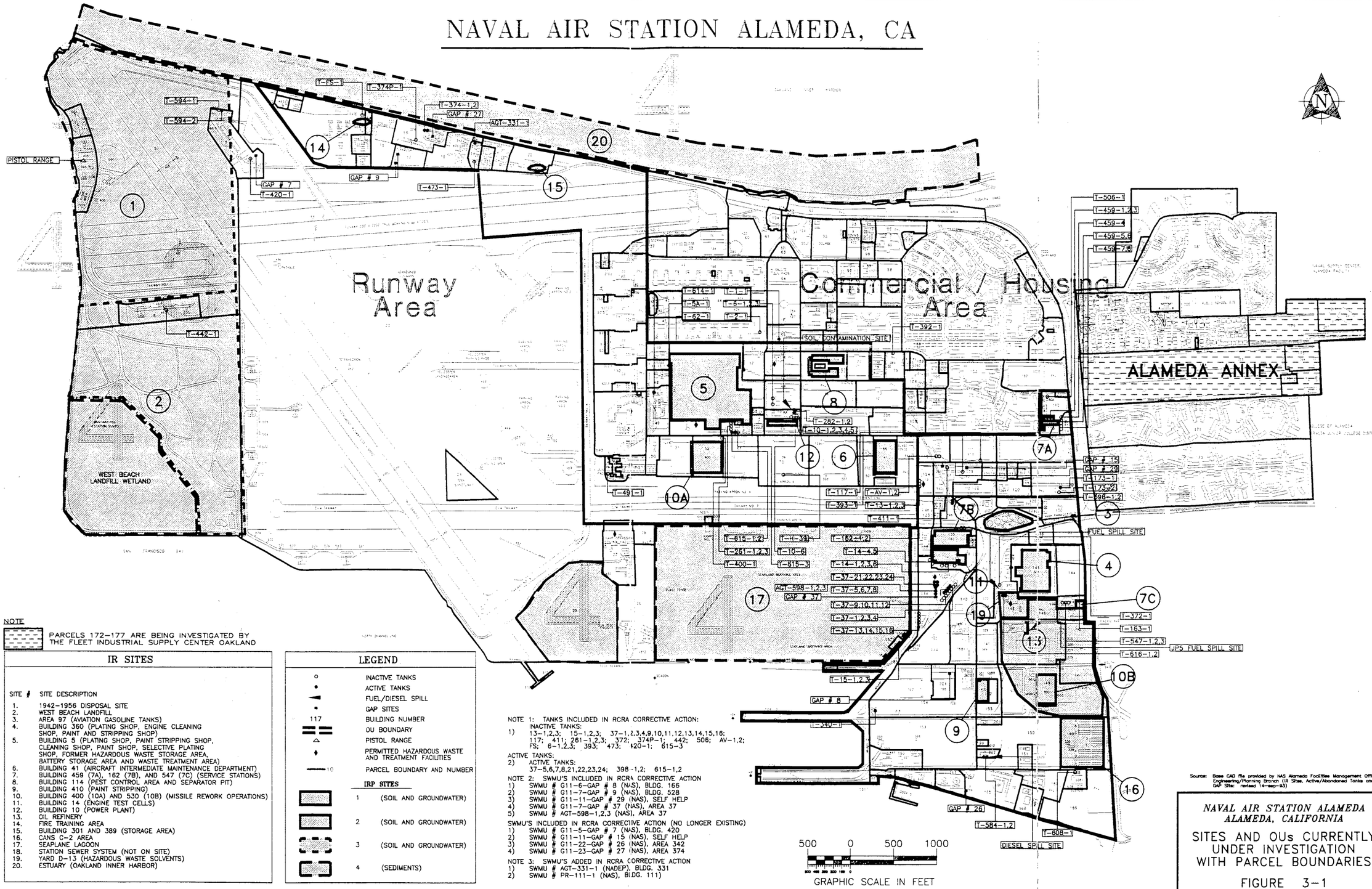
- **Public Displays.** To maintain open communications and to ensure that all interested parties are provided accurate, consistent information related to cleanup activities, the Navy uses supplemental techniques to reach interested members of the Alameda, Oakland, and other Bay Area communities. In particular, large four-panel IRP displays have been produced to depict the history of NAS Alameda, the IRP process, IRP sites and their associated problems, and the community involvement program. The displays are updated regularly and have been periodically posted at several locations during 1992 and 1993. Before the placement of an IRP display at a particular location, notice is made in several local newspapers. A summary of past display locations and dates is provided below.

-	Trans Pacific Bank, Alameda	June 1992
-	Navy Exchange, NAS Alameda	July 1992
-	City Bank, Alameda	August 1992
-	Alpha Federal Credit Union, NAS Alameda Branch	September 1992
-	Alpha Federal Credit Union, South Shore Alameda Branch	October 1992
-	Alameda City Hall	November 1992
-	Marina Village Shopping Center, Earth Day Celebration (staffed booth)	April 1993

-	NAS Alameda, Building 1 Command Headquarters (month-long display)	July 1993
-	College of Alameda Earth Day	April 1994
-	South Shore Shopping Center	April 1994
-	Fleet Week, San Francisco	October 1994

The display is currently being revised and updated.

NAVAL AIR STATION ALAMEDA, CA



NOTE

PARCELS 172–177 ARE BEING INVESTIGATED BY THE FLEET INDUSTRIAL SUPPLY CENTER OAKLAND

IR SITES

SITE #	SITE DESCRIPTION
1.	1942–1956 DISPOSAL SITE
2.	WEST BEACH LANDFILL
3.	AREA 97 (AVIATION GASOLINE TANKS)
4.	BUILDING 360 (PLATING SHOP, ENGINE CLEANING SHOP, PAINT AND STRIPPING SHOP)
5.	BUILDING 5 (PLATING SHOP, PAINT STRIPPING SHOP, CLEANING SHOP, PAINT SHOP, SELECTIVE PLATING SHOP, FORMER HAZARDOUS WASTE STORAGE AREA, BATTERY STORAGE AREA AND WASTE TREATMENT AREA)
6.	BUILDING 41 (AIRCRAFT INTERMEDIATE MAINTENANCE DEPARTMENT)
7.	BUILDING 459 (7A), 162 (7B), AND 547 (7C) (SERVICE STATIONS)
8.	BUILDING 114 (PEST CONTROL AREA AND SEPARATOR PIT)
9.	BUILDING 410 (PAINT STRIPPING)
10.	BUILDING 400 (10A) AND 530 (10B) (MISSILE REWORK OPERATIONS)
11.	BUILDING 14 (ENGINE TEST CELLS)
12.	BUILDING 10 (POWER PLANT)
13.	OIL REFINERY
14.	FIRE TRAINING AREA
15.	BUILDING 301 AND 389 (STORAGE AREA)
16.	CANS C–2 AREA
17.	SEAPLANE LAGOON
18.	STATION SEWER SYSTEM (NOT ON SITE)
19.	YARD D–13 (HAZARDOUS WASTE SOLVENTS)
20.	ESTUARY (OAKLAND INNER HARBOR)

LEGEND

- INACTIVE TANKS
- ACTIVE TANKS
- FUEL/DIESEL SPILL
- GAP SITES
- 117 BUILDING NUMBER
- OU BOUNDARY
- PISTOL RANGE
- PERMITTED HAZARDOUS WASTE AND TREATMENT FACILITIES
- 10 PARCEL BOUNDARY AND NUMBER

IRP SITES

- 1 (SOIL AND GROUNDWATER)
- 2 (SOIL AND GROUNDWATER)
- 3 (SOIL AND GROUNDWATER)
- 4 (SEDIMENTS)

NOTE 1: TANKS INCLUDED IN RCRA CORRECTIVE ACTION:
INACTIVE TANKS:
1) 13–1,2,3; 15–1,2,3; 37–1,2,3,4,9,10,11,12,13,14,15,16; 117; 411; 261–1,2,3; 372; 374P–1; 442; 506; AV–1,2; FS; 6–1,2,3; 393; 473; 420–1; 615–3

ACTIVE TANKS:
2) ACTIVE TANKS:
37–5,6,7,8,21,22,23,24; 398–1,2; 615–1,2

NOTE 2: SWMU'S INCLUDED IN RCRA CORRECTIVE ACTION
1) SWMU # G11–6–GAP # 8 (NAS), BLDG. 166
2) SWMU # G11–7–GAP # 9 (NAS), BLDG. 528
3) SWMU # G11–11–GAP # 29 (NAS), SELF HELP
4) SWMU # G11–7–GAP # 37 (NAS), AREA 37
5) SWMU # AGT–598–1,2,3 (NAS), AREA 37

SWMU'S INCLUDED IN RCRA CORRECTIVE ACTION (NO LONGER EXISTING)
1) SWMU # G11–5–GAP # 7 (NAS), BLDG. 420
2) SWMU # G11–11–GAP # 15 (NAS), SELF HELP
3) SWMU # G11–22–GAP # 26 (NAS), AREA 342
4) SWMU # G11–23–GAP # 27 (NAS), AREA 374

NOTE 3: SWMU'S ADDED IN RCRA CORRECTIVE ACTION
1) SWMU # AGT–331–1 (NADEP), BLDG. 331
2) SWMU # PR–111–1 (NAS), BLDG. 111)

500 0 500 1000
GRAPHIC SCALE IN FEET

Source: Base CAD file provided by NAS Alameda Facilities Management Office, Engineering/Planning Branch (IR Sites, Active/Abandoned Tanks and GAP Sites: revised 14-sep-93)

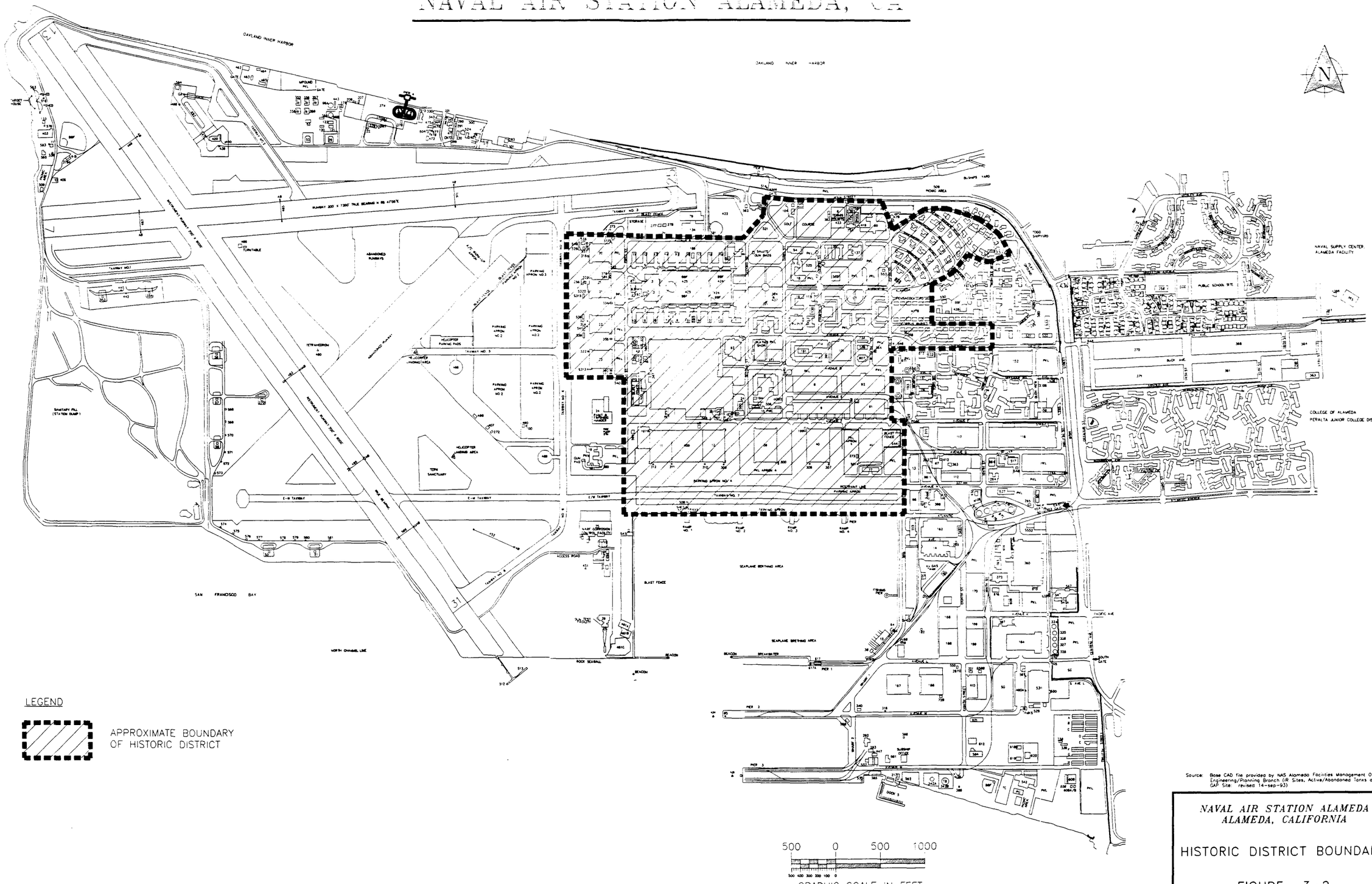
NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

SITES AND OUs CURRENTLY UNDER INVESTIGATION WITH PARCEL BOUNDARIES

FIGURE 3–1

ALAM-AL.DWG REV 02/02/95 PLOT 1=500

NAVAL AIR STATION ALAMEDA, CA

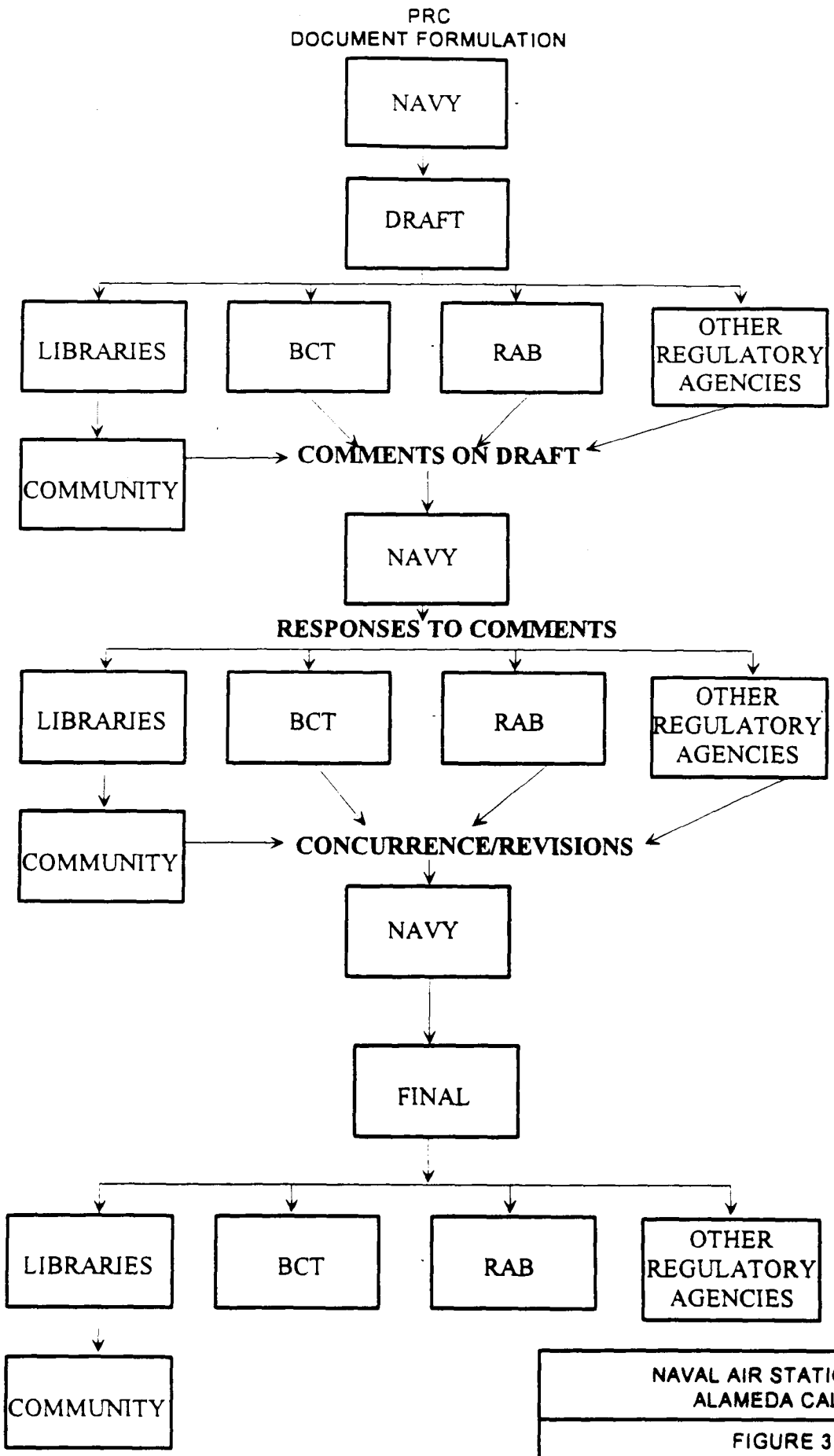


Source: Base CAD file provided by NAS Alameda Facilities Management Office, Engineering/Planning Branch (IR Sites, Active/Abandoned Tanks and GAP Site) revised (4-sep-93)

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

HISTORIC DISTRICT BOUNDARY

FIGURE 3-2



NAVAL AIR STATION ALAMEDA
ALAMEDA CALIFORNIA

FIGURE 3-3
DECISION DOCUMENT REVIEW
PROCESS FLOW CHART

TABLE 3-1

NAVAL COMPLEX ALAMEDA
INSTALLATION RESTORATION PROGRAM SITE SUMMARY

Sheet 1 of 4

IRP Site Number	OU	Parcel	Alias Names	Site Name/ Description	Material Disposed of	Date of Operation	Status of Response	Cleanup Program Overlap	Risk to Human Health and the Environment*
1	3	1, 2, 5, 8	IAS Site 2	1943 - 1956 disposal area (landfill)	Industrial and nonindustrial wastes	1943 to 1956	RI/FS		CSRS Score = 36 (from IAS)
2	3,4	5, 6, 7	IAS Site 1	West Beach Landfill and wetlands	Industrial and nonindustrial wastes	1952 to 1978	RI/FS		CSRS Score = 38 (from IAS)
3	1	131	IAS Site 4	Area 97 - Abandoned Fuel Storage Area	AVGAS	1940s to Early 1970s	RI/FS		CSRS Score = 17 (from IAS)
4	1	143	IAS Site 7 (plating shop only)	Building 360 - Plating, Engine Cleaning, Paint, and Paint Stripping Shops	Industrial and nonindustrial wastes	1954 to Present	RI/FS		CSRS Score = 8 (from IAS)
5	2	54	None	Building 5 - Plating, Paint Stripping, Cleaning, and Paint Shops	Industrial and nonindustrial wastes	1942 to Present	RI/FS		To be determined
6	2	196	None	Building 41 - Aircraft Intermediate Maintenance Facility	Industrial and nonindustrial wastes	1942(?) to Present	RI/FS		To be determined
7A	1	112, 113, 114	None	Building 459 - Navy Exchange Service Station	Petroleum products	1966 to Present	RI/FS IRA EE/CA		To be determined
7B	1	135	None	Building 162 - Shipfitting - Small Engine Repair	Petroleum products	Unknown	RI/FS		To be determined

* An assessment of risk to human health and the environment will be conducted at all IRP sites consistent with CERCLA/NCP guidance, as part of the RI/FS. CSRS Scores (Confirmation Study Ranking System) as per NEESA Report 20.2-042

TABLE 3-1

NAVAL COMPLEX ALAMEDA
INSTALLATION RESTORATION PROGRAM SITE SUMMARY

IRP Site Number	OU	Parcel	Alias Names	Site Name/ Description	Material Disposed of	Date of Operation	Status of Response	Cleanup Program Overlap	Risk to Human Health and the Environment*
7C	1	145	None	Building 547 - Former Service Station	Petroleum products	1971 to 1988	RI/FS		To be determined
8	2	75	None	Building 114 - Pest Control area and Separator Pit	Pesticides and herbicides	1942(?) to 1974	RI/FS		To be determined
9	1	152	None	Building 410 - Paint Stripping	Industrial and nonindustrial wastes	1950s(?) to 1990	RI/FS		Building cleared, remnant condition to be determined
10A	2	52	None	Building 400 - Missile Rework Operations	Industrial and nonindustrial wastes	mid-1950s to Present	RI/FS		To be determined
10B	1	148	None	Building 530 - Missile Rework Operations	Industrial and nonindustrial wastes	1972 to Present	RI/FS		To be determined
11	1	137	None	Building 14 - Engine Test Cell (and laboratories)	AVGAS, JP-5, JP-7, solvents including PD-680 and BNB 3100, catane, 10-10 oil, lubrication oil, synthetics, and mercury	1946 to Present	RI/FS		To be determined
12	2	69	None	Building 10 - Power Plant	Oil	1940s to Present	RI/FS		To be determined
13	1	142, 146, 145, 147, 148, 211	IAS Site 11	Former Oil Refinery	Oil	1879 to 1903	RI/FS IRA (IMF)		To be determined

* An assessment of risk to human health and the environment will be conducted at all IRP sites consistent with CERCLA/NCP guidance, as part of the RI/FS. CSRS Scores (Confirmation Study Ranking System) as per NEESA Report 20-2042

TABLE 3-1

NAVAL COMPLEX ALAMEDA
INSTALLATION RESTORATION PROGRAM SITE SUMMARY

Sheet 3 of 4

IRP Site Number	OU	Parcel	Alias Names	Site Name/ Description	Material Disposed of	Date of Operation	Status of Response	Cleanup Program Overlap	Risk to Human Health and the Environment*
14	2	12, 14	IAS Site 12	Fire Training Area	Contaminated fuel oil	1973 to 1987 (IAS from 1950s [?])	RI/FS		To be determined
15	2	22, 31	IAS Site 5	Buildings 301 and 389 - Former Transformer Storage Area	PCBs	1950s to 1974	RI/FS IRA EE/CA		CSRS Score = 14 (from IAS)
16	1	149	IAS Site 6	CANS C-2 Area	PCBs, paints, solvents, acids, and bases	1963 to Present	RI/FS		CSRS Score = 20 (from IAS)
17	4	NA	IAS Site 3	Seaplane Lagoon	Industrial and nonindustrial wastes	1940 to 1975 (IAS from 1943 to 1975)	RI/FS		CSRS Score = 40 (from IAS)
18	within 1,2,3	Numerous[a]	None	Station Sewer System	Industrial and nonindustrial wastes	1943 to Present	RI/FS		To be determined
19	1	142	None	Yard D-13 - Hazardous Waste Storage	Industrial and nonindustrial wastes	1981 to Present	RI/FS		To be determined
20	4	NA	IAS Site 8	Estuary, Oakland Inner Harbor	Industrial and nonindustrial wastes	1943 to 1975	RI/FS		To be determined
None	NA	NA	IAS Site 9	Piers and Turning Basin	Shipboard and industrial wastes	1943 to 1974	No further action		To be determined
None	NA	NA	IAS Site 10	Fuel Lines	Fuel	1943 to 1978	No further action		To be determined

[a] The station sewer system is being investigated at all IRP sites. See specific sites for parcel information.

* An assessment of risk to human health and the environment will be conducted at all IRP sites consistent with CERCLA/NCP guidance, as part of the RI/FS. CSRS Scores (Confirmation Study Ranking System) as per NEESA Report 20.2-042

TABLE 3-1

NAVAL COMPLEX ALAMEDA
INSTALLATION RESTORATION PROGRAM SITE SUMMARY

AVGAS	Aviation Gasoline
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSRS	Confirmation Study Ranking System
EE/CA	Engineering Evaluation/Cost Analysis
FFSRA	Federal Facility Site Remediation Agreement
IAS	Initial Assessment Study
IMF	Intermediate Maintenance Facility
IRA	Interim Remedial Action
IRP	Installation Restoration Program
NA	Not Available
NACIP	Navy Assessment and Control of Installation Pollutants
NAS	Naval Air Station
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
OU	Operable Unit
PCB	Polychlorinated Biphenyl
RI/FS	Remedial Investigation and Feasibility Study

An assessment of risk to human health and the environment will be conducted at all IRP sites consistent with CERCLA/NCP guidance, as part of the RI FS. CSRS Scores (Confirmation Study Ranking System) as per NEESA Report 20-2-042

TABLE 3-2

NAVAL COMPLEX ALAMEDA
ENVIRONMENTAL RESTORATION EARLY ACTIONS STATUS

IRP Site No.	Action	Purpose	Status
2	Fencing and methane venting	• Secure landfill area • Prevent buildup of methane gases	• Completed
7A	Multiple tank removal; associated soil and groundwater removal	• Eliminate contaminant source • Determine extent of impact to groundwater • Recover and treat or remove contaminated groundwater	• Initial field investigation began January 1994 • EE/CA report due July 1995
13	Soil and storm drain removal at Building 397	• Reduce contaminant source • Mitigate JP-5 fuel spill	• Spill investigation conducted from 1991 to 1992 • Soil and storm drain removal completed in March 1993
13	Free product removal at IMF site	• Reduce contaminant source	• Installation of extraction system completed in March 1993 • Currently in operation; less than 10 gallons found and extracted
13	Soil removal at IMF site	• Remove low pH and high lead soils • Reduce potential groundwater contaminant source	• Soil excavation completed in October 1994 • Confirmation sampling conducted in October 1994
15	Soil removal	• Determine extent of and remove contaminant source	• Completed field screening for PCBs in December 1993 • Soil excavation/ex situ treatment began in December 1994, scheduled for completion in July 1995

EE/CA Engineering Evaluation/Cost Analysis
IMF Intermediate Maintenance Facility
PCB Polychlorinated Biphenyls

TABLE 3-3

NAVAL COMPLEX ALAMEDA
UNDERGROUND STORAGE TANK INVENTORY

Tank Number	SWMU Site No.	Parcel	Location	Year Installed	Capacity (gal), Tank Material	Substance Stored	Status	General Comments	Future Actions[a]
6-1, 2, 3	UST-2	68	Building 6	Unknown	All three tanks are 1,000 gallons; steel Tanks 6-2, 3 are single walled	Tanks 6-1 and 2 stored solvents; Tank 6-3 stored waste oils, some documents also show storage of solvents	Inactive	SWMU. This area was not visited during RCRA facility assessment. Waste has been pumped into tanker truck and disposed as hazardous waste.	Scheduled removal in 1995
13-1, 2, 3, 4, 5	UST-5	124	Building 13	Unknown	Tanks 13-1, 2, 3, are 2,400 gallons; steel 13-4 & 5 are 6,000; steel	Lubricating oil	Removed 10/13/94 & 10/20/94	Each tank contained approx. 1 inch of residual product.	Follow-up investigation required
37-1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24	UST-7	138	Area 37	1941	Tanks 1, 3, 4, 13, 14, 15, 16 are 25,000 gallons; single walled steel Tanks 2, 5, 6, 7, 8, 9, 10, 11, 12, 21, 22, 23, 24 are 25,000 gallons; steel	Combustible liquid wastes, JP-5, diesel, heavy oils, spilled solvents, fuel and aviation gas	Tanks 1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21 - Inactive Tanks 5, 6, 7, 8, 22, 23, 24 - Active	SWMU. See page 14 of RCRA Part B permit - Appendix 2 for detailed waste types. Closure plans with public comment required for tanks 3, 4, 13, 14, 15 and 16	Scheduled for removal Jan/Feb 95

TABLE 3-3

NAVAL COMPLEX ALAMEDA
UNDERGROUND STORAGE TANK INVENTORY

Tank Number	SWMU Site No.	Parcel	Location	Year Installed	Capacity (gal), Tank Material	Substance Stored	Status	General Comments	Future Actions[a]
117	UST-8	111	Building 117	Unknown	1,000 gallons; steel	Diesel waste (diesel and water)	Removed 8/25/94	Contained fuel oil	Investigation will be done in 1995, free product present
374P-1	UST-10	16	Oakland Inner Harbor, Area 374	Unknown	4,400 gallons; concrete	Fuel and water mixture	Inactive	SWMU. Waste was pumped into tankers and disposed of.	Scheduled for removal 1995. Investigation TBD
393	UST-11	123	Avenue G, Building 393	Unknown	500 gallons; steel	Waste paint and oil	Removed 11/17/94	SWMU. Waste was pumped into a tanker and disposed of.	Investigation TBD
420-1	UST-13	8	Building 420	Unknown	less than 1,000 gallons; steel	Tank 420-1 stored diesel product	Removed	SWMU. Wastes were pumped into a tanker and disposed of. Area around Building 420 is restricted.	Scheduled for closure 1995. Investigation TBD
442	UST-14	8	Building 442	Unknown	150 gallons; steel	60 gallons of diesel and water	Removed 10/20/94	Waste presumably pumped into tankers and disposed of	Investigation needed.

TABLE 3-3

NAVAL COMPLEX ALAMEDA
UNDERGROUND STORAGE TANK INVENTORY

Tank Number	SWMU Site No.	Parcel	Location	Year Installed	Capacity (gal), Tank Material	Substance Stored	Status	General Comments	Future Actions[a]
506	UST-16	112	Commissary	Unknown	1,000 gallons; steel	800 gallons of waste oil	Inactive	SWMU. Waste oil pumped into tankers and disposed of.	Scheduled for removal 3/14/95 Investigation TBD
614-1		49	614	Unknown	20,000 gallon	Empty, used for emergencies (exempt)	Active	?	Abandon in place when inactive
615-1, 2, 3	UST-19	57	Building 615	Tanks 615-1, 2 installed in 1981 Tank 615-3 unknown	Tank 615-1 is 10,000 gallons; phenolic lining, single walled, steel Tank 615-2 is 15,000 gallons; single walled, stainless steel Tank 615-3 was an oil/water separator	Tanks 615-1, 2 empty - used for emergencies (exempt)	Tanks 615-1, 2 are active Tank 615-3 removed 12/94	SWMU. Tanks used for spill control. NADEP received variance from county to exempt tanks from being considered USTs.	Abandon in place when inactive
616-1,2		142	616	Unknown	Tank 616-1 is 5,000 gallons Tank 616-2 is 10,000 gallons	Empty, used for emergencies (exempt)	Active	SWMU. Contingency tanks for rainwater runoff in hazardous waste storage yard D-13.	Abandon in place when inactive

TABLE 3-3

NAVAL COMPLEX ALAMEDA
UNDERGROUND STORAGE TANK INVENTORY

Tank Number	SWMU Site No.	Parcel	Location	Year Installed	Capacity (gal), Tank Material	Substance Stored	Status	General Comments	Future Actions[a]
15-1, 2, 3	NA	155	Building 15	Unknown	2,000 gallons; steel/iron	Tank 15-1 stored diesel product Tanks 15-2, 3 unknown (most likely fuel)	Removed 12/20/94	UST 15-1 failed leak test in 1991.	Investigation TBD
411	NA	126	Building 411	Unknown	10,000 gallons; single wall steel	Various solvent products	Removed 10/25/94	AOC	Closure in 1995
372	NA	134	Building 372	1953	6,000 gallons; steel	Waste gear oil	Inactive	AOC. Tank was emptied on 11/20/89.	Scheduled for removal 1995 Investigation TBD
261-1, 2, 3	NA	55	Building 261	1943	Tanks 261-1, 2 are 500 gallons; single walled and unlined steel Tank 261-3 is 4,500 gallons; unlined steel	Tanks 261-1, 2 stored kerosene Tank 261-3 stored P-D-680	Removed 12/8/94	AOC. Tanks 261-1, 2 emptied on 11/20/89. Tank 261-3 emptied on 12/21/89.	No further action as tanks were set inside a concrete vault.
398-1, 2	NA	127	Building 398	1969 (prior tanks)	Tanks 398-1, 2 are 10,000 gallons; stainless steel	Tank 398-1 contained JP-5 product Tank 398-2 contained JP-TS product	Inactive 11/1/94	AOC.	Removal scheduled in March 1995 Investigation TBD
473	NA	19	Building 473	1948	250 gallons; steel, single walled and unlined	Fuel (most likely diesel)	Removed 11/94	AOC. Emptied in 11/20/89.	Closure scheduled 1995.

TABLE 3-3

NAVAL COMPLEX ALAMEDA
UNDERGROUND STORAGE TANK INVENTORY

Tank Number	SWMU Site No.	Parcel	Location	Year Installed	Capacity (gal), Tank Material	Substance Stored	Status	General Comments	Future Actions[a]
AV Lube 1 and 2	NA	NA	Building 271	Unknown	AV Lube 1 is 22,000 gallons; unknown. AV Lube 2 is 2,200 gallons; single walled steel.	AV Lube 1 contained automotive lubricant. AV Lube 2 is empty, previous contents unknown.	Removed 9/13/94	AOC. Waste was pumped into tanker for disposal.	Investigation
FS	NA	12	Oakland Inner Harbor, Area 357	Unknown	1,000 gallons; steel	Product (assumed to be diesel fuel) and water	Inactive	AOC. Close proximity to Oakland Inner Harbor.	Scheduled for removal 1995 Investigation TBD
282-1, 2	NA	186	Building 282	NA	5,000 gallons each	U/L gas, diesel	Active, leak tested 11/94	Affected soils discovered during cathodic protection installation	Investigation will be done
1	NA	55	Building 1	NA	500 gallons	Mo. gas	Active, leak tested 11/94	NA	NA
H-39	NA	70	Hangar 39	NA	500 gallons	Diesel	Removed 10/15/94	Soil affected	Investigation will be done
62	NA	59	Building 62	NA	2,000 gallons	Diesel	Active, leak tested 11/94	Backup generator fuel supply	NA
392	NA	189	Building 392	NA	500 gallons	Unknown	Removed 9/13/94	No release	Petition for clean closure
491	NA	NA	Area 591	NA	1,000 gallons	Mo gas	Removed 8/25/94	Soil affected	Investigation will be done
594-1, 2	NA	8	Area 594	Unknown	1,000 gallons each one steel UST one fiberglass UST	594-1 Diesel 594-2 Mo gas	Removed 10/25/94	No release	Petition for clean closure

TABLE 3-3

NAVAL COMPLEX ALAMEDA
UNDERGROUND STORAGE TANK INVENTORY

Tank Number	SWMU Site No.	Parcel	Location	Year Installed	Capacity (gal), Tank Material	Substance Stored	Status	General Comments	Future Actions[a]
608	NA	168	Building 608	Unknown	600 gallons	Waste oil	Inactive	NA	Scheduled for removal 1995
374-1, 2	NA	138	Area 374	Unknown	512,000 gallons each	JP-5	Active, leak tested 11/94	Fuel receipt point for NAS	NA
459-1, 2, 3, 7	NA	113, 114	Building 459	Unknown	All 10,000 gallons except UST 459-7 (less than 500 gal)	Unleaded, premium, unleaded, waste oil	Active; 459-7 (waste oil) inactive	UST 459-7 failed a leak test in 1991	459-7 scheduled for removal January 1995
400	NA	52	Building 400	Unknown	500 gallons	Diesel	Inactive	NA	Scheduled for removal 1/24/95
584-1, 2	NA	202	Building 584	1977	4,000 gallons each; fiberglass	Diesel	Removed 10/20/94	Tanks did not leak, overfills affected soil	RFI will be done
340	NA	154	Building 340	NA	1,200 gallons	Diesel	Active	NA	Removal in 1995
173-1, 2, 3	NA	115	Building 173	Unknown	1 is 2,000 gallons Fiberglass	Diesel	Removed 9/13/94	Only one fiberglass tank found. Soils affected.	Investigation will be done
2	NA	45	Building 2	NA	500 gallons	Diesel	Removed 8/25/94	No release	Petition for clean closure
10-1, 2, 3, 4, 5, 6	NA	69	Building 10	Unknown	1 is 24,000 gallons 2 & 3 are 16,400 gallons 4 & 5 are 17,600 gallons 6 are 4,000 gallons	Appears to have contained heavy fuel oils	Inactive, filled with sand	UST 10-6 pulled out in 1993. Soil and water tests for remainder disclosed low concentrations.	Petition for in place closure because removal would damage Building 10

TABLE 3-3

NAVAL COMPLEX ALAMEDA
UNDERGROUND STORAGE TANK INVENTORY

Tank Number	SWMU Site No.	Parcel	Location	Year Installed	Capacity (gal), Tank Material	Substance Stored	Status	General Comments	Future Actions[a]
459-4, 5, 6, 8	NA	113, 114	NEX gas station	Unknown	5 is 10,000 gallons 6 is 8,000 gallons 8 is <500 gallons 4 is 10,000 gallons	5, 6, 4 are unknown; 8 is solvents 4 is water	Inactive (5 & 6 cemented over)	NA	Scheduled for removal Feb/Mar 1995
547-1, 2, 3	NA	145	Area 547	Unknown	12,000 gallons each	Fuel - leaded gasoline	Removed 11/94	NA	Investigation required
14-1, 2, 3, 4, 5, 6	NA	137	Building 14	Unknown	1, 2, 3 are 10,000 gallons; 4 is 1,000 gallons 5 is 3,500 gallons 6 is 600 gallons	14-1, -2, -3 are waste oil 14-4 is JP-5 14-5 is waste oil 14-6 is gasoline	Inactive (1 & 2 are water; 3, 4, 5, 6 are empty)	NA	Apply for closure
162-1, 2	NA	135	Building 162	Unknown	1 is 100 gallons 2 is 150 gallons	Gasoline	Inactive: one empty, one filled with concrete	AVGAS for carburetor float testing	Scheduled for removal 12/94
5A	NA	54	Building 5	NA	40 gallons	Heating oil	Removed 10/25/94	Contamination confirmed	Investigation needed

a A corrective action schedule included in a NAS Alameda Part B permit calls for RCRA facility investigations (RFI) at several solid waste management units (SWMU) including underground storage tanks. However, as part of the NAS Alameda BRAC Cleanup Team's (BCT) strategy to accelerate cleanup and facilitate property transfer, the requirements of the RFI will be covered by investigative work performed under the environmental baseline survey (EBS).

AOC	Area of Concern
NA	Not Available
NADEP	Naval Aviation Depot Alameda
NAS	Naval Air Station
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TBD	To Be Determined
UST	Underground Storage Tank

TABLE 3-4

NAVAL COMPLEX ALAMEDA
ABOVEGROUND STORAGE TANK INVENTORY

Location	Size/Former Contents[a]	Status
Area 37	Three 25,000 gallon Three 6,500 gallon (Baker tanks) Combustible liquid wastes, JP-5, diesel, heavy oils, spilled solvents and fuel	Baker tanks will be dismantled upon receipt of hazardous waste storage facility permit
Building 10	Four 25,000 gallon - fuel oils Two 12,000 gallon - fuel oils One 10,000 gallon - fuel oils Two 12,500 gallon - fuel oils	RCRA facility investigation[1]
Building 25	One 10,000 gallon - fuel oil	RCRA facility investigation[b]
Area 342	One 315,000 gallon - diesel One 1,100,000 gallon - diesel	RCRA facility investigation[b]
DeGas Area	One 15,000 gallon - jet fuel One 10,000 gallon - 1010 oil	Active - To be out of service 01/97
Building 360	One 3,000 gallon - P-D-680 One 3,000 gallon - solvent	Inactive - Empty
Building 29	One 800 gallon - oil	NA
Building 5	Three 8,000 gallon - water & glycol One 5,000 gallon - glycol	Used for heat treat. Scheduled to be out of service 09/96
Building 331	One 500 gallon - diesel fuel	Inactive - To be removed 06/95

NA Not Available
RCRA Resource Conservation and Recovery Act
P-D-680 Nonhalogenated Solvent

a The aboveground storage tanks are currently empty and being retrofitted with secondary containment for future use.

b A corrective action schedule included in a NAS Alameda Part B permit calls for a RCRA facility investigation (RFI) at several solid waste management units (SWMU) including aboveground storage tanks. For completeness, the status column of this table indicates those tanks for which an RFI was scheduled. However, as part of the NAS Alameda BRAC Cleanup Team's (BCT) strategy to accelerate cleanup and facilitate property transfer, the requirements of the RFI will be covered by the environmental baseline survey (EBS); consequently no RFIs will be conducted.

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
2	576	S576	Located between 133 and S403, runs west across the road and joins with a N/S line - runs south and joins with an E/W line at 379A
2	576	S576	NA
2	133	6353862	NA
2	133	6353861	NA
2	133	6353859	NA
3	W of 26	NA	West side of B-26
5	SW corner of parcel	NA	NA
5	NW corner	NA	Pad mounted. Line runs S parallel to the road on the east side towards 379A
5	379A	NA	Line runs SW/NE until it hits runway B then turns West and across the runway and 466 into parcel 8
5	NW corner	NA	Pad mounted
5	North of 406	S576	North of 406 on east side of road
5	North of 379B	S576	NA
6	North end	NA	NA
8	420	NA	Junction 194 is south of B-420. A transformer is located on B-420 on the east side. Junction 194 joins the transformer from the north, the 194A-D underground cable from the west and west side of 420
8	420	NA	NA
11	West of 465	NA	NA
15	North side of 179	NA	NA
16	376	NA	East edge of 376
18	475	NA	West of 475 - Two meters - One transformer
18	474	H337891P73AA	NADEP
18	B-474	10927-A	Pad NADEP

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
20	291	NA	West of 291
20	525	70PG10048	East vault
21	North of 240	NA	North of 240
22	27	NA	NA
23	NE portion of runway	NA	SW of number 25 on the runway
23	NW corner of Seaplane Lagoon	NA	NA
23	E of 605	NA	NA
23	NE corner of Seaplane Lagoon	NA	NA
23	496	S496	Pad mounted. Underground cable runs NW to the runway 7 then N to parcel 8 at 194 (junction)
23	East of 56	NA	East of B-56 on the west side of the road
23	499	NA	NA
23	407	NA	NW of 407
23	490	NA	NA
23	NE of 483	NA	NE of 483
23	496	NA	Pad mounted west of S496
23	499	R15039	Inside the building
23	513	16858	Wheels watch Removed/stored - 5/19/87
Below parcel 25	513	NA	On the NE end of the pier
26	Western boundary of Seaplane Lagoon, E of 515	NA	NA
27	SE corner of 595	NA	NA
28	543	7221944	Jet test
28	543	177095	Jet test A
29	SW of 491	NA	NA
32	22	NA	2: 1 in NW corner and 1 in NE corner

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
32	22	2961105	NW vault
32	22	2960745	NE vault
32	22	2960739	NE vault
32	22	2960738	NW vault
32	22	2940737	NW vault
32	22	2960736	NW vault
32	22	2960383	NE vault
32	22	2960067	NE vault
32	22	2960057	NA
37	Center of fenced storage area	NA	NA
38	NE corner of 134	NA	NA
38	134	14VK9922AL3	Gym Removed/stored - 4/13/85
41	4	NA	Inside between wings 17 and 18
41	NE of 4	NA	West of 2nd Street
41	4	H337392P73AA	Located between wings 17-18
41	4	H337391P73AA	Located between wings 17-18
43	3	NA	East of building 63
43	3	H339055P73A	Located in the wing
43	3 wing	0981761	NA
43	3 wing	0981760	NA
43	3 wing	0981759	NA
43	3	981761-8	Galley
43	3	981760-8	Galley
43	3	981759-8	Galley
43	3	339055-P73AA	Galley
43	3	3163072	Wing
43	3	3163071	Wing

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
45	E of wing 9 of 2	NA	Pad mounted
45	2	H339054P73AA	Between wings 3-4
46	N of 42	NA	NA
47	E of 43 and SW corner of 43	NA	NA
48	44	6484996	Removed/stored - 6/12/87 NW pad
50	N of 599	NA	identified as 559 on electrical map
50	Substation 9	FS14426-65P	Removed/stored - 12/1/86 sent to disposal/date to Hauler - 3/9/87
50	559	3415270	Sub 9
51	SW and NW corners of 11	NA	NA
51	11	6353858	SW vault Removed/stored - 4/26/87
51	11	6353856	SW vault Removed/stored - 4/26/87
51	11	6353855	NW vault Removed/stored - 4/26/87
51	11	6353853	NW vault Removed/stored - 4/26/87
51	11	6353852	SW vault Removed/stored - 4/26/87
51	11	6353849	SW vault Removed/stored - 4/26/87
53	SW and NW corners of 12	NA	NA
53	12	6353854	NW vault Removed/stored - 4/26/87
53	12	6353848	NW vault Removed/stored - 4/26/87
53	12	6353863	NW vault Removed/stored - 2/8/75 Date to hauler - 3/10/86
53	12	6206831	South vault Removed/stored - 4/26/87

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
54	5	NA	Six transformers located within eastern half of
54	5	PFJ5183	Removed/stored - 12/15/86
54	5	PFJ5182	West pad
54	5	PF14725	West pad
54	5	7092453	NA
54	5	7092451	NA
54	5	6937295	Sub. and e. ped
58	NW of 500	NA	NA
65	Center of 1	NA	NA
66	NW portion of 32	NA	NA
67	East of 171	NA	NA
68	Middle of 6	NA	Three transformers and a substation
68	6	6353867	S central vault
68	6	6353866	S central vault
68	6	6353865	S central vault
68	6	500058	SW vault
69	10	NA	Three transformers and a substation
69	10	3415350	Removed/stored - 6/8/86 Date to hauler - 9/19/86
70	SW and NW corners of 39	NA	NA
71	E boundary of parking lot	NA	NA
73	E of 92	NA	Pad mounted
74	8	NA	Two inside
74	8	GTPJ8209	NA
74	8	7093991	NA
75	114	NA	Three transformers
77	101	NA	One inside and one outside

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
78	W of 73A	NA	NA
78	Between 73B and 607	NA	Pad mounted
78	73A	6487342	Removed/stored - 10/1/86 Date to hauler - 3/9/87
80	17	2960179	SW vault
83	16	NA	NA
84	18, west side	NA	NA
84	NE corner of 525	NA	NA
84	18	3263222	E vault
84	18	2675434	E vault
85	585	NA	NA
85	585	H885570	SE pad
87	W of 553	NA	NA
87	85W	62712B	NA
87	85W	62711B	NA
87	85W	62496B	NA
91	SW corner of golf course	NA	Pad mounted
95	S of 419	NA	Pad mounted
96	SE portion of parcel	NA	Pad mounted
97	177	NA	NA
98	NE corner of parcel (housing)	NA	NA
98	S of Buships yard, between Main Street and Barbers Pt Road	NA	Pad mounted
98	Center of block, between Pearl Harbor Road and San Pedro Road	NA	Pad mounted

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
98	S of first and fourth building on block, between San Pedro Road and San Diego Road	NA	Pad mounted
98	Center of block between Newport Road and Seattle Road	NA	Pad mounted
98	SE of at corner of Lemoore and Alameda Road	NA	Pad mounted
98	NE of Norfolk Road	NA	NA
98	Between second and third (from N) on E side of street	NA	NA
98	NE portion of parcel, west of Todd Shipyard	NA	NA
98	South of Pearl Harbor Road, between Alameda and Norfolk Roads	NA	Pad mounted
100	NE of 531	NA	NA
102	S of 152 and inside 152	NA	NA
103	N of 271	NA	NA
103	N of middle of 117	NA	NA
103	N of 118	NA	NA
103	Housing	NA	Two, Avenue C between El Toro and Norfolk Road Two, El Toro Road, between Avenue D and Avenue C One, Norfolk Road, N of Corpus Christi
108	E of 153	NA	Two transformers
108	S of 153	NA	Two pad mounted
111	SE portion of 117	NA	Pad mounted

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
113	N of 459	NA	NA
115	NW of 173	NA	NA
120	SW corner of parcel	NA	NA
120	W of 119	NA	NA
122	W of 337	NA	NA
123	67	NA	Two transformers and one substation, PCB transformers replaced in 11/90
123	67	316542	Inside, PCB transformers replaced in 11/90
123	67	2977050	Inside, PCB transformers replaced in 11/90
124	13	NA	NA
125	W of 66	NA	NA
125	66	7332160	Removed/stored - 2/10/85
125	66	7089030	Removed/stored - 2/10/85
125	66	7089027	Removed/stored - 2/10/85
126	411	NA	NA
129	527	NA	Two pad mounted transformers
130	SE of 90	NA	NA
130	90	6453552	E-pad
131	South area 97	NA	NA
131	175	615A1513	Removed/stored - 2/2/85
134	S of 372	NA	NA
135	SW portion of 16	NA	Three transformers
135	S of 349	NA	NA
137	14	NA	Four transformers
138	Western boundary of parcel		
138	105 Pier	6487341	Removed/stored - 11/19/86 Date to hauler - 3/9/87 Located on the Pier

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
138	105 Pier	6487340	Removed/stored - 11/19/86 Date to hauler - 3/9/87 Located on the Pier
140	W of 170	NA	NA
140	168	NA	NA
140	168	1911893	E vault
140	168	1911892	NA
143	360	NA	Four transformers
143	E of 163	NA	NA
143	360	331111	W pad
143	360	13928	Located in the basement, PCB transformers replaced in 9/88
143	360	13927	Located in the basement, PCB transformers replaced in 9/88
143	360	13926	Located in the basement, PCB transformers replaced in 9/88
143	360	13925	Located in the basement, PCB transformers replaced in 9/88
143	360	13924	Located in the basement, PCB transformers replaced in 9/88
143	360	13923	Located in the basement, PCB transformers replaced in 9/88
143	360	13922	Located in the basement, PCB transformers replaced in 9/88
144	N, S, and SW corner of parcel	NA	NA
145	S of 547A	NA	NA
147	397	NA	NA
148	N of 561	NA	N of 561 at Avenue L and the northern turn of Avenue M
148	W of 529	NA	NA
149	338E	NA	W end of 338E
150	S of 584	NA	NA
152	410	14175	NW pad
153	351	NA	S of 351
154	SW corner, NE corner, 167, 166	NA	Six transformers
154	167	NA	NW side: Two transformers

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
154	166	NA	One transformer east of 166 and one transformer on west side of 166
154	340	NA	N side of 340
154	167	6820944	West pad
154	555	6335346	Sub 8 Removed/stored - 3/7/88
154	340	2735508	N pad
154	167	1911894	E vault Removed/stored - 8/2/87
155	W side of Wharf 2 between piers 2 and 3	NA	At pole 149
155	Pier 3	TV-1	East end of Pier 3
155	Pier 3	NA	Center pier: 13 transformers
155	Pier 2	TV-E	Pier 2 at pole 103
155	Pier 2	TV-D	Pier 2 at pole 102
155	Pier 2	TV-C	Pier 2 at pole 101 - two transformers
155	Pier 2	PFC1527	TV-2
155	Pier 1	34523	West end
155	Wharf 1	3416006	West end Removed/stored - 4/6/85
155	558	3031940	Sub 14
157	15	NA	E corner of 15, two transformers
157	15	1703467	NA
157	15	1703466	NA
157	15	1703465	
159	SE edge of parcel	NA	One pad mounted and two transformers (s)
159	SE corner at Avenue M and Wharf 2	NA	Within fenced area at NW corner of Parcel 159
160	Supship office	NA	SW corner of building next to Avenue M

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
160	551	NA	E side has one pad mounted
160	557	NA	Center of westernmost fenced yard, one transformer South edge of easternmost fenced yard, one transformer
165	TC, eastern portion of parcel 165	NA	NE corner of yard
168	608	NA	S of 608; W of 608A/B
170	Housing	NA	22 transformers
171	Housing		12 transformers
174	371	NA	One located N of 371 on Buck Avenue; one located S of 371 on Arnold Avenue
174	361	NA	Two pad mounted N of 361; one located S of 361
174	361	B489852R62	S Pad Removed/stored - 6/15/87 Disposed - 6/25/87
174	361	B489851R62	S Pad Removed/stored - 6/15/87 Disposed - 6/25/87
175	364	NA	W of 364
176	367	NA	S of 367
177	365	NA	Two transformers NE of B-365
179	Public school site	NA	S side of Singleton Avenue; pad mounted
180	Plot W of (P179) public school site	NA	S side of Singleton Avenue
185	12	6353897	Removed/stored - 4/26/87 NW vault
185	9	6456509	Pad
185	9	6456508	Pad
185	9	6456507	Pad storage
189	39	NA	NA
190	23	NA	Two: one in NW corner and one in NE corner
190	23	6820945	NE vault

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
190	23	2960747	NW corner Removed/stored - 4/29/87
190	23	2960741	NE vault
190	23	2960740	NE vault Removed/stored - 4/29/87
190	23	2960734	NE vault Removed/stored - 4/29/87
190	23	2960386	NE vault Removed/stored - 4/29/87
190	23	2960382	NE vault Removed/stored - 4/29/87
190	23	2960066	NW vault Removed/stored - 4/29/87
190	23	2961107	NW vault
191	21	NA	Two transformers: one in NW portion and one in NE portion of
191	553	6335347	Sub T pad Removed/stored - 8/22/87
191	21	3300220	NW vault
191	21	3278282	NW vault
191	21	3278282	NW vault
191	21	3278279	NW vault
191	21	2960387	NW vault
191	21	2960385	NE vault
191	21	2960381	NE vault
191	21	3300220	
192	20	NA	Two transformers inside
192	W of 378	NA	NA
192	20	2961108	NW vault
192	20	2960749	NW vault
192	20	2960748	NW vault
192	20	2960746	NW vault

TABLE 3-5

NAVAL COMPLEX ALAMEDA
FORMER PCB TRANSFORMER INVENTORY

Parcel	Location (No.)	Transformer No.	Remarks
192	20	2960743	NE vault
192	20	2960735	NE vault
192	20	2960384	NE vault
193	19, SW corner	NA	NA
193	19	G309920365K	
193	19	6309204-65K	
193	19	6309203-65K	
193	19	6309202-65K	
196	NW corner of 41	NA	NA
197	118	NA	Two inside
197	118	PAV108201	West side
198	385	NA	W of B-385
201	166	1911891	NE vault Removed/stored - 8/2/87
202	584	PAV290701	West pad
206	91	6488680	Removed/stored - 12/14/86
23, 5	Runway 25	R14921	NA
23, 5	Runway 31 NE	224856	NA
23, 5	513	R15040	Runway 31 Removed/stored - 5/19/87
900	E of 324	NA	NA
11, 10	465	NA	Cable line runs NE/SW from N of 465 to an oilswitch vacuum switch W side of 465. A transformer is also located on the W side of 465.
174, 181	Housing	NA	26 transformers in parcel 174; 25 transformers in parcel 181

Data from EBS database (ERM-West 1994).

NA Not Available
NADEP Naval Aviation Depot
PCB Polychlorinated Biphenyl

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response*
8	SWMU/GII-5	GAP 7	Building 420, NAS weapons	NAS	Unknown	Unknown	Solvents and thinners	No known releases	Inactive - no plans for closure	RFI
201	SWMU/GII-6	GAP 8	Building 166, COMNAVAIRP AC MATREP	NAS	Unknown	30 feet by 30 feet; on cement	Paint thinner and paint wastes, waste oil, solvents, and hydraulic fluid	No records of releases are available	Action - no plans for closure	RFI
17	SWMU/GII-7	GAP 9	Building 528, CBU 416	NAS	Unknown	20 feet by 10 feet; on sandy soil	Waste hydrocarbons, spent lead-acid electrolyte	No known releases	Active - no plans for closure	RFI
123	SWMU/GII-11	GAP 15 and GAP 29	Building 67 NAS Self Help	NAS	Unknown	GAP 15 is 10 feet by 10 feet; concrete ground. GAP 29 is 20 feet by 12 feet; on concrete	Waste paint material, solvents, thinner, rags, waste oil	No known releases	GAP 15: Closed, GAP 29: Active, no plans for closure	RFI
163	SWMU/GII-22	GAP 26	Tank - Area 342 NAS Fuels Division	NAS	Unknown	Unknown	Waste oil	No known releases	Unknown	RFI
16	SWMU/GII-23	GAP 27	Area 374 NAS Fuels	NAS	Unknown	Unknown	JP-5 jet fuel waste	Unknown	Unknown	RFI
68	SWUM/GAP 1	Unknown	Building 6	NAS	Unknown	Drums	Oily liquids	Unknown	Unknown	Unknown
69	SWMU/GAP 2	Unknown	Building 10	NAS	Unknown	Drum	Waste oil	Unknown	Unknown	Unknown
75	SWMU/GAP 3	Unknown	Building 114	NAS	Unknown	55-gallon drums, pallet	Paints, solvents, acids, freon, oil & grease, batteries, fluorescent lights, PCB capacitors	Unknown	Unknown	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response[a]
202	SWMU/GAP 4	Unknown	Building 584	NAS	Unknown	Drum	Waste oil	Unknown	Unknown	Unknown
45	SWMU/GAP 5	Unknown	Building 2	NAS	Unknown	55-gallon drums	Perchloroethane "muck," used dry cleaner filter elements	Unknown	Unknown	Unknown
41	SWMU/GAP 6	Unknown	Building 4	NAS	Unknown	1-gallon containers	Used solvents	Unknown	Unknown	Unknown
122	SWMU/GAP 10	Unknown	Building 112	NAS	Unknown	55-gallon drums, asbestos double bagged	Solvents, lubrication and hydraulic oil, asbestos	Unknown	Unknown	Unknown
135	SWMU/GAP 11	Unknown	Building 162	NAS	Unknown	Sump	Waste oils	Unknown	Unknown	Unknown
193	SWMU/GAP 12	Unknown	Building 19	NAS	Unknown	Bagged	Waste film, paper, silver solution, metallic sludge, flake storage	Unknown	Unknown	Unknown
83	SWMU/GAP 13	Unknown	Building 16	NAS	Unknown	Bagged in plastic	Scrap amalgam, X-ray film, waste X-ray solution	Unknown	Unknown	Unknown
188	SWMU/GAP 14	Unknown	Building 130	NAS	Unknown	Unknown	Dilute pesticide and rinse solution (less than 100 mL)	Unknown	Unknown	Unknown
113	SWMU/GAP 16	Unknown	Building 459	NAS	Unknown	Storage tank	Waste oil	Unknown	Unknown	Unknown
168	SWMU/GAP 17	Unknown	Building 608	NAS	Unknown	Tank	Waste oil	Unknown	Unknown	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response
157	SWMU/GAP 18	Unknown	Building 15	NAS	Unknown	Storage tanks, 55-gallon drums	Petroleum products, oily wastewater, adsorbent material w/ oil, paint wastes, solvents, thinners	Unknown	Unknown	Unknown
192	SWMU/GAP 19	Unknown	Building 20	NAS	Unknown	Bowser, 55-gallon drums	Oil, solvents, paint-related material, rags, hydraulic fluid	Unknown	Unknown	Unknown
191	SWMU/GAP 20	Unknown	Building 21	NAS	Unknown	Bowser, 55-gallon drums	Oil, solvent, paint-related material, rags, hydraulic fluid	Unknown	Unknown	Unknown
32	SWMU/GAP 21	Unknown	Building 22	NAS	Unknown	Bowser, 55-gallon drums	Oil, solvent, paint-related material, rags, hydraulic fluid	Unknown	Unknown	Unknown
190	SWMU/GAP 22	Unknown	Building 23	NAS	Unknown	Bowser, 55-gallon drums	Oil, solvent, paint-related material, rags, hydraulic fluid	Unknown	Unknown	Unknown
70	SWMU/GAP 23	Unknown	Building 39	NAS	Unknown	Bowser, 55-gallon drums	Oil, solvent, paint-related material, rags	Unknown	Unknown	Unknown
195	SWMU/GAP 24	Unknown	Building 40	NAS	Unknown	Bowser, 55-gallon drums	Oil, solvent, paint-related material, rags	Unknown	Unknown	Unknown
196	SWMU/GAP 25	Unknown	Building 41	NAS	Unknown	Bowser/drums, 55-gallon drums	Oil, solvent, thinner, hydraulic fluid, paint waste	Unknown	Unknown	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response
61	SWMU/GAP 28	Unknown	Building 514	NAS	Unknown	55-gallon drums	Paint-related material, rags	Unknown	Unknown	Unknown
54	SWMU/Unknown	Unknown	Container storage area, southeast corner of Building 5	NADEP	Unknown	Three covered storage areas for 55 gallon drums (60 ft. by 20 ft., 30 ft. by 20 ft., 40 ft. by 20 ft.). Total capacity is 5,000 gallons	Spent solvents (toluene, MEK, 1,1,1-TCA, methylene chloride), waste flammable liquids, beryllium, and mercury	Unknown	Has not been used for storage of hazardous waste for a number of years	Unknown
138	SWMU/Unknown	Unknown	Container storage area, Annex Area 37	NAS	Unknown	22 ft. by 15 ft., covered, surrounded by 8-in-high concrete berm. Storage capacity is 22,000 gallons	Spent solvents (toluene, MEK, 1,1,1-TCA, methylene chloride), waste flammable liquids, beryllium, and mercury	Unknown	Has not been used for storage of hazardous waste for a number of years	Unknown
--	SWMU/Unknown	Solvent stills Coolant Recovery Unit	Naval Aviation Depot, Alameda Waste Recycling Operations	NADEP	Some solvent distillation units installed in 1988, then 1990 (not all operational)	Eight solvent distillation units and one coolant recovery system (two tanks are 500 gallons each) used for recycling operations	P-D-680, 1,1,1-TCA, ethyl acetate, paint thinners, acetone, spent cutting & grinding coolant	No reported spills	Stills are operational but infrequently used, coolant unit is active	Unknown
124	SWMU/Unknown	Unknown	Hazardous materials delivery area (Bldg. 13)	NAS	Unknown	Storage capacity of 7,644 sq. ft.	Hazardous materials storage area	Unknown	Unknown	Unknown
143	SWMU/GAP 1	Unknown	Building 360, Shop 96234	NADEP	Unknown	Unknown	Aluminum oxides	Unknown	Removed	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response
143	SWMU/Unknown	Unknown	Building 360, pH unit	NADEP	Unknown	Unknown	pH adjustment	Unknown	Active	Unknown
54	SWMU/GAP 2	Unknown	Building 5A, Shop 95532	NADEP	Unknown	Unknown	Poly paint & thinner, naphtha wastes	Unknown	Removed	Unknown
54	SWMU/GAP 3	Unknown	Building 5A, Shop 95723	NADEP	Unknown	Unknown	MEK, Freon, engine oil, synthetic hydraulic oil	Unknown	Removed	Unknown
54	SWMU/GAP 4	Unknown	Building 5A, Shop 93532	NADEP	Unknown	15 gallons acid and 1 flat batteries	Battery acid, nickel-cadmium solution	Unknown	Active	Unknown
54	SWMU/GAP 5	Unknown	Building 5A, Shop 95531	NADEP	Unknown	Aerosol cans	Poly paint & thinner, aerosol paint	Unknown	Active	Unknown
30	SWMU/GAP 5	Unknown	Building 24	NADEP	Unknown	55-gallon drums, aerosol cans	Paint, primers, alcohol, acetone, aerosol paint	Unknown	Unknown	Unknown
51	SWMU/GAP 6	Unknown	Building 11NW, Shop 95823	NADEP	Unknown	Aerosol cans	Sweeping compound w/oil & fuel	Unknown	Active	Unknown
51	SWMU/GAP 7	A-6 Shop	Building 11SW, Shop 95821	NADEP	Unknown	55-gallon drums	Petroleum oil & JP-5, Freon 113	Unknown	Active	Unknown
54	SWMU/GAP 8	Unknown	Building 5A, Shop 95832	NADEP	Unknown	55-gallon drums	Hydraulic fluid, JP-5, engine & waste oil, petroleum products	Unknown	Active	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response
54	SWMU/GAP 10	Unknown	Building 5, Shop 93534	NADEP	Unknown	5-gallon containers, 55-gallon drums, and 30-gallon drums	Hydraulic & lube oil, MEK, P-D-680	Unknown	Combined with GAP 16	Unknown
49	SWMU/GAP 11	Unknown	Building 405, Shop 93532	NADEP	Unknown	55-gallon drums, aerosol cans, 30-gallon drums	Hydraulic, 1010, & lube oil, asbestos, Freon, JP-5, aerosol paint	Unknown	Active	Unknown
54	SWMU/GAP 12	Unknown	Building 5, Shop 93432	NADEP	Unknown	Aerosol cans, 30-gallon drums, 5-gallon containers, 55-gallon drums	Water base primer, poly paint & thinner, MEK, aerosol paint	Unknown	Active	Unknown
54	SWMU/GAP 13	Unknown	Building 5	NADEP	Unknown	55-gallon drums	Primer, thinner, acetone	Unknown	Active	Unknown
54	SWMU/GAP 14	Unknown	Building 5A, Shop 95621	NADEP	Unknown	55-gallon drums	Hydraulic fluid, JP-5, stripper, oil, fuel	Unknown	Active	Unknown
54	SWMU/GAP 16	Landing Gear Shop	Building 5, Shop 93431	NADEP	Unknown	55-gallon drums	Hydraulic oil, beryllium, contaminated wash water	Unknown	Active	Unknown
54	SWMU/GAP 17 Combined with 18	Unknown	Building 5, Shop 93433	NADEP	Unknown	30-gallon drums, 55-gallon drums, large bags	SWARF w/high nickel & chromium, some cadmium, aluminum oxide & silicone carbide	Unknown	Combined with GAP 18	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response
54	SWMU/GAP 18	Unknown	Building 5, Shop 65131	NADEP	Unknown	30-gallon drums, 55-gallon drums, large bags	Machine & grinding coolant, SWARF, heavy metal grindings	Unknown	Active	Unknown
54	SWMU/GAP 20	Unknown	Building 5, Shop 93332	NADEP	Unknown	5-gallon containers, 30-gallon drums, 55-gallon drums, large bags	Lead contaminated items	Unknown	Active	Unknown
54	SWMU/GAP 21	Unknown	Building 5, Shop 93333	NADEP	Unknown	Unknown	Lead dust	Unknown	Removed	Unknown
54	SWMU/GAP 22	Unknown	Building 5, Shop 93331	NADEP	Unknown	55-gallon drums	Asbestos	Unknown	Active	Unknown
54	SWMU/GAP 23	Unknown	Building 5, Shop 93422	NADEP	Unknown	55-gallon drums	Ethyl acetate	Unknown	Active	Unknown
54	SWMU/GAP 24 Combined with GAP 25	Unknown	Building 5, Shop 93422	NADEP	Unknown	Large bags	Blasting grit (glass, garnet, PMB)	Unknown	Combined with GAP 25	Unknown
54	SWMU/GAP 25	Unknown	Building 5, Shop 93422	NADEP	Unknown	55-gallon drums and large bags	Blasting grit (glass, garnet, PMB), ethyl acetate, aluminum oxide	Unknown	Active	Unknown
54	SWMU/GAP 26 Combined with GAP 25	Unknown	Building 5, Shop 93422	NADEP	Unknown	Large bags	Blasting grit (glass, garnet)	Unknown	Combined with GAP 25	Unknown
54	SWMU/GAP 27A	Unknown	Building 5, Shop 93440	NADEP	Unknown	Unknown	Blasting grit (all media)	Unknown	Removed	Unknown
49	SWMU/GAP 27	Unknown	Building 405, Shop 93531	NADEP	Unknown	55-gallon drums	Hydraulic oil	Unknown	Active	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response[a]
61	SWMU/GAP 28	Unknown	Building 29, Shop 93541	NADEP	Unknown	Unknown	Blasting grit (glass garnet mixed), aerosol paint, lube, solvents	Unknown	Active	Unknown
54	SWMU/GAP 29	Unknown	Building 5/2, Shop 93542	NADEP	Unknown	Aerosol cans	Aerosol paints	Unknown	Active	Unknown
54	SWMU/GAP 30	Unknown	Building 5/2, Shop 93545	NADEP	Unknown	55-gallon drums, 30-gallon drums	Hydraulic oil, Freon 113	Unknown	Active	Unknown
54	SWMU/GAP 31	Unknown	Building 5A, Shop 95625	NADEP	Unknown	55-gallon drums, 30-gallons drums	Hydraulic fluids, engine & lubrication oil, aerosol lubrication and solvents, some paint	Unknown	Active	Unknown
66	SWMU/32-1	Unknown	Building 32	NADEP	Unknown	55-gallon drums	Copper, silver, cyanide, sodium, and cadmium	Unknown	Active	Unknown
66	SWMU/32-2	Unknown	Building 32	NADEP	Unknown	55-gallon drums	Nickel sulfamate, chromic acid	Unknown	Active	Unknown
53	SWMU/GAP 33	S-3 Shop	Building 12, Shop 95923	NADEP	Unknown	5-gallon containers, aerosol cans, 30-gallon drums, 55-gallon drums	Aerosol paint & lacquer, some beryllium & stripper	Unknown	Active	Unknown
52	SWMU/GAP 36	Unknown	Building 400	NADEP	Unknown	55-gallon drums, 5-gallon containers	Aerosol paint, mixed solvents (MEK, acetone, naphtha)	Unknown	Active	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response[a]
52	SWMU/GAP 37	Unknown	Building 400/1, Shop 94212	NADEP	Unknown	55-gallon drums, 5-gallon containers	Aerosol paint, Calla 800 detergent, hydraulic & lube oil, 1,1,1-TCA, Freon TF	Unknown	Active	Unknown
52	SWMU/GAP 38	Unknown	Building 400/1, Shop 94216	NADEP	Unknown	5-gallon containers, 55-gallon drums	Water base primer, paints, & alcohol, poly thinner, epoxy paint & MEK	Unknown	Active	Unknown
52	SWMU/GAP 39	Unknown	Building 400/2, Shop 94132	NADEP	Unknown	55-gallon drums, 5-gallon containers	Aerosol paints, lacquer, zinc chromate primer, Freon 133, paint stripper sludge, synthetic hydraulic oil, silicone oil, P-D-680, alcohol, naphtha, paint & thinners	Unknown	Active	Unknown
52	SWMU/GAP 42	Unknown	Building 400/3, Shop 94215	NADEP	Unknown	55-gallon drums, 5-gallon containers, 1-gallon containers, boxes	Batteries, beryllium, aerosol paint, petroleum oil, silicone oil solvents, radioactive waste (solid), freon, hydraulic fluid, alcohol, mercury, PCBs	Unknown	Active	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response[a]
125	SWMU/GAP 43	Unknown	Building 66, Shop 96321	NADEP	Unknown	55-gallon drums, 5-gallon containers, aerosol cans	Aerosol paint, solvent, lacquer, JP-5, type II fuel, oil, trichlorotrifluo-rethane	Unknown	Active	Unknown
127	SWMU/GAP 44	Unknown	Building 398, Shop 96327	NADEP	Unknown	Tanks, 55-gallon drums, 30-gallon drums	Lubrication oil, JP-5, M-114 solvent	Unknown	Active	Unknown
127	SWMU/GAP 45	Unknown	Building 398, Shop 96327	NADEP	Unknown	Aerosol cans, 55-gallon drums	Aerosol paint, some oil	Unknown	Active	Unknown
135	SWMU/GAP 46	Unknown	Building 162, Shop 96324	NADEP	Unknown	Aerosol cans, 55-gallon drums, 5-gallon containers	Aerosol paint, 1,1,1-TCA, lube oil, P-D-680, acetone	Unknown	Active	Unknown
137	SWMU/GAP 47	Unknown	Building 14, Shop 96233	NADEP	Unknown	Unknown	Sump w/1010, mil-L-23699 lubrication and engine oil	Unknown	Removed	Unknown
137	SWMU/GAP 48	Unknown	Building 14, Shop 96233	NADEP	Unknown	55-gallon drums, aerosol cans	1010, lube & engine oil, P-D-680, aerosol paint and lubrication, solvents	Unknown	Active	Unknown
143	SWMU/GAP 49A	Unknown	Building 360, Shop 96212	NADEP	Unknown	Unknown	Aluminum oxide w/some ammonium chloride	Unknown	Removed	Unknown
143	SWMU/GAP 50	Unknown	Building 360, Shop 96223	NADEP	Unknown	Unknown	Blasting grit (glass), chromic acid	Unknown	Removed	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response
143	SWMU/GAP 51	Unknown	Building 360, Shop 96225	NADEP	Unknown	Aerosol cans, 5-gallon containers	Aerosol paint, epoxy paint & thinner	Unknown	Active	Unknown
143	SWMU/GAP 52	Unknown	Building 360, Shop 96231	NADEP	Unknown	Aerosol cans, 30-gallon drums, 55-gallon drums	Aerosol paint & lube, lube & engine oil, JP-5, P-D-680	Unknown	Active	Unknown
143	SWMU/GAP 53	Unknown	Building 360, Shop 96225	NADEP	Unknown	30-gallon drums, 55 gallon drums	Alseal 518, Sermetel J, Sermetel 196, Alseal 585 coatings	Unknown	Active	Unknown
143	SWMU/GAP 55	Unknown	Building 360, Shop 96215	NADEP	Unknown	55-gallon drums, large bags	Blasting grit (glass, plastic), aluminum oxide	Unknown	Active	Unknown
143	SWMU/GAP 56	Unknown	Building 360, Shop 96215	NADEP	Unknown	55-gallon drums, large bags	Blasting grit (glass, plastic), aluminum oxide	Unknown	Active	Unknown
54	SWMU/GAP 57	Unknown	Building 5, Shop 93432	NADEP	Unknown	Unknown	Plating solutions, cadmium solution	Unknown	Removed	Unknown
143	SWMU/GAP 57A	Unknown	Building 360, Shop 96215	NADEP	Unknown	Bins	Blasting grit (all media)	Unknown	Active	Unknown
143	SWMU/GAP 58	Unknown	Building 360, Shop 96211	NADEP	Unknown	Aerosol cans, 55-gallon drums	Aerosol (Turco Dy-check developer & remover)	Unknown	Active	Unknown
134	GAP 59	Unknown	Building 163, Shop 65132	NADEP	Unknown	30-gallon drums, 55-gallon drums	Petroleum oil & lube	Unknown	Active	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response[a]
134	SWMU/GAP 61	Unknown	Building 372, Shop 96232	NADEP	Unknown	Aerosol cans, 30-gallon drums, 55-gallon drums	JP-5 w/engine oil, mil-L-23699 lubrication, P-D-680	Unknown	Active	Unknown
147	SWMU/GAP 62	Unknown	Building 397, Shop 96231	NADEP	Unknown	55-gallon drums, 30-gallon drums	Mil-L-23699 lubrication and engine oil	Unknown	Active	Unknown
148	SWMU/GAP 63	Unknown	Building 530, Shop 94224	NADEP	Unknown	5-gallon containers, 30-gallon drums, 55-gallon drums	Acetone, naphtha w/solvents (MEK), poly paint & thinner, 1,1,1-TCA, MX-4M solvent	Unknown	Active	Unknown
148	SWMU/GAP 63A	Unknown	Building 530, Shop 94223	NADEP	Unknown	55-gallon drums	Hydraulic oil	Unknown	Active	Unknown
148	SWMU/GAP 64	Unknown	Building 530, Shop 94224	NADEP	Unknown	30-gallon drums, 55-gallon drums, aerosol cans	Aerosol paint, lube, solvents, rust remover, WD-40; MX-4M solvent, silicate ester, 1,1,1-TCA	Unknown	Active	Unknown
201	SWMU/GAP 65	Unknown	Building 166, Shop 96312	NADEP	Unknown	30-gallon drums, aerosol cans	Aerosol paint, some oil	Unknown	Active	Unknown
201	SWMU/GAP 66	Unknown	Building 166, Shop 96312	NADEP	Unknown	55-gallon drums	Lube & engine oil, P-D-680	Unknown	Active	Unknown
154	SWMU/GAP 67	Unknown	Building 167, Shop 96311	NADEP	Unknown	Unknown	Some oil, aerosol paint	Unknown	Removed	Unknown
154	SWMU/GAP 68	Unknown	Building 167, Shop 96314	NADEP	Unknown	30-gallon drums	Some oil	Unknown	Active	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response
154	SWMU/GAP 69	Unknown	Building 167, Shop 96313	NADEP	Unknown	Large tank	Corrosive waste w/heavy metals (caustic soda, nitric acid, chromic acid)	Unknown	Active	Unknown
54	SWMU/GAP 70A	Unknown	Building 5, Shop 93432	NADEP	Unknown	55-gallon drums, 30-gallon drums	Cyanide, chromic acid plating solutions, nickel chloride, metex acid, sulfamic acid	Unknown	Active	Unknown
154	SWMU/GAP 71	Unknown	Building 167, Shop 96313	NADEP	Unknown	Aerosol cans, 30-gallon drums, 55-gallon drums	Aerosol paint & lube, oil & solvent	Unknown	Active	Unknown
154	SWMU/GAP 72	Unknown	Building 167, Shop 96313	NADEP	Unknown	55-gallon drums	Hydraulic oil, P-D-680, lead	Unknown	Active	Unknown
205	SWMU/GAP 73	Unknown	Building 523, Shop 95521	NADEP	Unknown	Unknown	JP-5, engine, lube & hydraulic oil	Unknown	Removed	Unknown
28	SWMU/GAP 74	Unknown	Building 543, Shop 95522	NADEP	Unknown	55-gallon drums	Petroleum product waste (oil, hydraulic oil, JP-5)	Unknown	Active	Unknown
136	SWMU/GAP 76	Unknown	Building 113, Shop 96212	NADEP	Unknown	Aerosol cans, 55-gallon drums	Aerosol paint & rust remover, dope & lacquer thinner, some oil, enamel paint, 1,1,1-TCA	Unknown	Active	Unknown
136	SWMU/GAP 77	Unknown	Building 113, Shop 96215	NADEP	Unknown	Bags	Blasting grit	Unknown	Active	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response
18	SWMU/GAP 78	Unknown	Farm, Building 475, Shop 65234	NADEP	Unknown	55-gallon drums, aerosol cans	Aerosol paint, primer, alcohol, poly paint, naphtha, acetone	Unknown	Removed	Unknown
205	SWMU/GAP 79	Unknown	Farm, Building 605, Shop 65234,	NADEP	Unknown	Unknown	Blasting grit (media)	Unknown	Removed	Unknown
143	SWMU/GAP 80	Unknown	Building 360, Shop 96223	NADEP	Unknown	Unknown	Cyanide	180 gallons spilled into sump on 10/7/87	Removed	Unknown
27	SWMU/GAP A3	None	Corrosion Control, Building 25, Shop 95532	NADEP	1987	55-Gallon Drums	Glast Grit Paint stripper (Omega 38-12A) Paint Skins	None	Active	Unknown
82	SWMU/GAP 81	None	Lab, Building 7, Shop 0542	NADEP	1986	5-gallon containers	Water base primer, alcohol, poly paint & thinners, paint strippers	None	Active	Unknown
82	SWMU/GAP 83	None	Lab, Building 7/1, Shop 0541	NADEP	1986	5-gallon containers	Acidic metal etchant rinse water	None	Active	Unknown
82	SWMU/GAP 82	None	Lab, Building 7/2, Shop 0542	NADEP	1986	5-gallon containers	JP-5 & JP-4, ICAP & AA lab analyses wastes, hydraulic fluid, heavy metal solutions (titrations)	None	Active	Unknown
135	SWMU/Unknown	Oil Lab	Lab, Building 162/2, Shop 0542	NADEP	Unknown	5-Gallon can	Oil, some 1,1,1-TCA	Unknown	Removed	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response*
54	SWMU/Cleaning Room	Bearing Shop	Building 5, Shop 96127	NADEP	Unknown	12 100-gallon process tanks	VV-L-800, rust remover, P-D-680, Freon TF, alkaline solvent	Unknown	Active	Unknown
49	Material Supply	None	Hazardous Materials Storage B-614	NADEP	1982	960 sqft 5-gallon drums, 55-gallon drums	Acids Bases Adhesives paint	Unknown	Active	Active
57	Material Supply	None	Hazardous Materials Storage B-615	NADEP	1982	2400 sqft 1-qt to 1 gallon cans, aerosol cans	Acids Bases Aerosols Adhesives Paint	Unknown	Active	Active
142	SWMU	None	Yard D-13 Utility building B-616	NADEP	1982	1800 sqft, 600-gallon tank	Emergency shower water containment, Spill Control materials	Unknown	Active	RCRA
--	SWMU/Unknown	Unknown	Pistol Range, Building 111	Unknown	Unknown	Unknown	Unknown	Unknown	RCRA corrective action site	Unknown
4	SWMU/Unknown	Unknown	Aboveground Storage Tank, Building 331	NADEP	Unknown	500 gallons	Diesel fuel	Unknown	RCRA corrective action site	Unknown
202	SWMU/Unknown	Unknown	Diesel Spill Site, Building 584	Unknown	Unknown	Unknown	Diesel	Unknown	RCRA corrective action site	Unknown
134	SWMU/Unknown	Unknown	JP-5 Fuel Spill, Building 372	NAS	1992	≈ 3000 gallon release	JP-5	1992	RCRA corrective action site	Unknown
186	SWMU/B-282	Govt. Vehicle Gas Station	Contaminated Soil, Building 282	NAS	Unknown	Unknown	Gasoline	Unknown	Active, RCRA corrective action site	Unknown

TABLE 3-6

NAVAL COMPLEX ALAMEDA
RCRA SITE SUMMARY

Parcel	Site Class/Identification Number	Alias Names	Description/ Location	Owner	Startup Date	Dimensions/ Capacity/ Container	Type of Waste/ Substance Stored	History of Releases	Status	Status of Response[1]
147	AOC/Unknown	Test Cells 15 and 16	Aircraft engine testing, Building 397	NADEP	Building pre-1950s. Oil-water separators installed in 1990	No storage of fuel	Oil and fuel from engines	JP-5 release on 3/1/91. Approximately 5,000 gallons	Active, building not scheduled for closure, corrective action in April 1993	RFI
134	AOC/Unknown	Test Cells 13 and 14	Building 372, Engine Test Cells	NADEP	--	JP-5	No storage of fuel	Fuel Spill	Active	RFI

AA	Atomic Absorption
CBU	Construction Brigade Unit
GAP	Generator Accumulation Point
MEK	Methyl Ethyl Ketone
MX-4M	Solvent
NAS	Naval Air Station
NADEP	Naval Aviation Depot Alameda
PCB	Polychlorinated Biphenyl
P-D-680	Non-Halogenated Solvent
PMB	Plastic Media Blast
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWARF	Grinding Sludge
SWMU	Solid Waste Management Unit
1,1,1-TCA	1,1,1-Trichloroethane
TF	Trade Name for Freon-113
VV-L-800	Light Lubricating Oil

1 A corrective action schedule included in a NAS Alameda Part B permit calls for an RFI at SWMUs, as indicated in this column. However, as part of the BRAC Cleanup Team's strategy to accelerate cleanup and facilitate property transfer, the requirements of the RFI will be covered by the environmental baseline survey, and no formal RFI will be conducted.

TABLE 3-7

NAVAL COMPLEX ALAMEDA
OIL/WATER SEPARATOR INVENTORY

Parcel	Location (Building No.)	Detailed Location	Description
37	373	NA	1 oil/water separator
134	372-1	West side of Building 372	Inactive 3,750-gallon/oil water sump
137	14-3/4	South side of Building 14	Inactive 1,100-gallon oil/water separator
137	14-7/8	South side of Building 14	Inactive 1,100-gallon oil/water separator
137	14-11/12	Northeast corner of Building 14	Active 1,300-gallon oily water sump Aboveground oil/water separator
137	14-West	West side of Building 14	Inactive 135-gallon oil/water separator
147	397	North and South sides of Test Cells	2 Aboveground oil/water separators
147	397-15, 397-16	North and south sides of Building 397 Test Cells	Active 6,000-gallon dirty water sumps
153	588	SE corner of Building 588	NA
153	SE of 588	SE corner of Building 588	NA
155	38	Northwest corner of Building 38	1 Aboveground oil/water separator
163	342	NA	1 oil/water separator
187	63	SW corner of B-63	NA
187	63	SW corner of Building 63	NA
195	40	On Avenue F, north of B-40	NA
197	118	Near SE corner of 118 on Avenue G	NA
211	West of 529	W of tanks which are located W of 529. Oil separator is located at E end of Avenue M	NA
211	SW corner of 530	NW corner of fenced tank area, west of B-529	1 underground oil/water separator for DeGas yard

Data from draft EBS database (ERM-West 1993).

NA Not Available
NAS Naval Air Station

TABLE 3-8

NAVAL COMPLEX ALAMEDA
NATURAL RESOURCES SUMMARY

CURRENT STATUS				COMPLIANCE STRATEGY	
		Data Source			
Natural Resource	Status	Primary	Secondary	Comments	To Be Determined
THREATENED AND ENDANGERED SPECIES	P	California Least Tern Nesting Site Evaluation in Relation to Adjacent Land Uses and miscellaneous documents related to NAS Alameda	Status and Trends Report for San Francisco Bay (NOAA 1988)	California Least Tern recovery program active on base; California Brown Pelican uses breakwater. All data based on literature and field observations.	Further delineation, if necessary, will be conducted during the EIS. The Navy has an ongoing least tern management program. Real estate transfers will include agreements to continue this program to protect endangered species. USFWS has proposed to protect threatened and endangered species by adding a portion of the facility to the national wildlife refugee system.
RARE OR SENSITIVE HABITAT	P	PRC/KLI 1993	NA	California Least Tern nesting area and wetlands are located on base. Marine mammals and brown pelicans use the breakwater.	Further delineation, if necessary, will be conducted during the EIS.
WETLANDS	P	PRC/KLI (1993)	NOAA (1988)	Wetlands have been delineated on base using the current U.S. Army Corps of Engineers criteria.	Existing state and federal regulatory and planning programs are considered adequate to protect wetland values after property transfer.

TABLE 3-8

NAVAL COMPLEX ALAMEDA
NATURAL RESOURCE SUMMARY

CURRENT STATUS				COMPLIANCE STRATEGY	
		Data Source			
Natural Resource	Status	Primary	Secondary	Comments	To Be Determined
SURFACE WATERS (freshwater, marine)	**Marine**	PRC/KLI (1993)	NOAA (1988)	Base is surrounded on three sides by San Francisco Bay. No surface freshwater is present.	No further information needed.
FLOODPLAINS	NC			On topographic maps no areas lie being below sea level, however some areas on base flood.	Floodplain status will be evaluated during EIS
MIGRATORY BIRDS	P	PRC/KLI (1993)	NOAA (1988)	Several species of migratory birds are found in wetland areas and breakwaters.	As part of the EIS, a comprehensive site species list will be reviewed for presence of migratory birds.
FISHERIES (include harvested invertebrates)	P	PRC/KLI (1993)		Pacific herring use shoals for spawning. Mussels have been found in bay.	As part of the EIS, USFWS will be contacted for most recent fish surveys of area.

TABLE 3-8

NAVAL COMPLEX ALAMEDA
NATURAL RESOURCE SUMMARY

CURRENT STATUS				COMPLIANCE STRATEGY	
		Data Source			
Natural Resource	Status	Primary	Secondary	Comments	To Be Determined
MARINE MAMMALS	P		NOAA (1988)	According to the NOAA Status and Trends Report, marine mammals occasional occupy breakwater.	As part of the EIS, the conclusions of the NOAA Status and Trends Report will be reviewed, and a comprehensive site species list will be reviewed for the presence of marine mammals.
CALIFORNIA SPECIAL ANIMALS	P	PRC/KLI (1993)	NOAA (1988)	Brown Pelican and California Least Tern are present, and several other water fowl nest in breakwater.	As part of the EIS, a comprehensive site species list will be reviewed for presence of California special animals.
CALIFORNIA SPECIAL PLANTS	NC	PRC/KLI 1993	NOAA (1988)		As part of the EIS, a comprehensive site species list will be reviewed for presence of California special plants.

TABLE 3-8

NAVAL COMPLEX ALAMEDA
NATURAL RESOURCE SUMMARY

CURRENT STATUS				COMPLIANCE STRATEGY	
		Data Source			
Natural Resource	Status	Primary	Secondary	Comments	To Be Determined
PLANTS OR ANIMALS OF PUBLIC INTEREST (list group)	NC	PRC/KLI (1993)	NOAA (1988)		As part of the EIS, a comprehensive site species list will be reviewed for presence of plants or animals of public interest.

EIS	Environmental Impact Study
P	Present
NA	Not Applicable
NAS	Naval Air Station
NC	Not Confirmed
NOAA	National Oceanic and Atmospheric Administration
USFWS	U.S. Fish and Wildlife Service

TABLE 3-9

NAVAL COMPLEX ALAMEDA
RESPONSIBILITIES OF NATURAL RESOURCE TRUSTEES

Resource	NOAA	Navy[a]	Cal-EPA/DTSC[b]	CDFG	USFWS	Other
Wetland						
Commercial Fishes				X	X (diadromous)	COE & EPA under CWA Section 404
Native Fishes (non-game)	X			X	X (diadromous)	
Native Wildlife				X	X	
Threatened and Endangered Species				X	X	
Migratory Birds	X (NMFS)				X	
Native Plants				X	X	
Marine Mammals	X					
Water			X			
Air			X			Bay Area Air Quality Management District
Minerals						BLM
Soil			X			

a Global responsibility as land steward
b Global responsibility as lead CERCLA agency
BLM U.S. Bureau of Land Management
Cal-EPA California Environmental Protection Agency
CDFG California Department of Fish and Game
COE U.S. Army Corps of Engineers
CWA Clean Water Act
Diadromous Fish species that migrate between freshwater and seawater
DTSC California Department of Toxic Substances Control (a division of the California EPA)
EPA U.S. Environmental Protection Agency
NAS Naval Air Station
Navy U.S. Naval Facilities Engineering Command, Western Division
NMFS U.S. National Marine Fisheries (Division of NOAA)
NOAA U.S. National Oceanic & Atmospheric Administration
USFWS U.S. Fish and Wildlife Service

TABLE 3-10

THREATENED OR ENDANGERED SPECIES
LIKELY TO OCCUR AT
NAVAL COMPLEX ALAMEDA

SPECIES	STATUS
Birds	
California least tern	SE, FE
California brown pelican	SE, FE
Peregrine falcon	SE, FE
California horned lark	2
Loggerhead shrike	2
Mammals	
Steller, sea lion	FE
Fishes	
Delta Smelt	FPT
Plants	
Santa Cruz tarweed	1
Contra Costa goldfields	SE, 1
Northcoast bird's beak	2
Kellogg's wedge-leaved horkelia	2
Adobe sanicle	2, rare in California

Definitions:

SE - Listed as endangered by the state of California
FE - Listed as endangered by the federal government
FPT - Proposed as threatened by the USFWS
1 - Category 1 candidate for listing by the USFWS (sufficient biological information available to support a proposal to list species as endangered or threatened)
2 - Category 2 candidate for listing by the USFWS (existing information indicates species may warrant listing, but insufficient biological information exists to support proposal).

TABLE 3-11

NAVAL COMPLEX ALAMEDA
CULTURAL RESOURCES SUMMARY

Cultural Resource	Status	Data Source	Comments	To Be Determined
Archeological Resources	NP	California State Historic Preservation Officer	No potential for uncovering significant archeological properties	No further information needed
Historical Structures	P	Advisory Council on Historic Preservation and California State Historic Preservation Officer	85 buildings contribute to historic district	Pursuing agreement for Navy maintenance. District may be eligible for listing on National Register of Historic Places. Conduct survey to determine whether Navy housing qualifies as an historical resource.
Native American Resources	NP			
Paleontological Resources	NP			

P Present
NP Not Present
NAS Naval Air Station

TABLE 3-12

NAS ALAMEDA SUMMARY OF PARCEL CLASSIFICATIONS

		Chemical Storage & Use												Drains			Contamination Issues									Missing Data			
Parcel #	BRAC Area Type Classification	Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials/Mixed Wastes	Radioactive Sources	Oil-filled Transformer or Switch (nonPCB)	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	"Restricted Pesticide" Use	Underground Storage Tank	Aboveground Storage Tank	Fuel Lines	Potentially Contaminated Storm Drain	Potentially Contaminated Industrial Sewer	Potentially Contaminated Sanitary Sewer	Lead Issues (Paint, Shooting Range, etc.)	Friable Asbestos	Known Contamination, Not Under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Potential Historical Adverse Use	Other (See Comments)	No or Incomplete Lead-based Paint Survey	No or Incomplete Asbestos Survey	No Radon Survey	Comments
1	6	✓		✓					✓								✓			✓						✓	×	✓	×	Landfill #1
2	6			✓				✓	✓			✓					✓			✓						✓	×	✓	×	Landfill #1, Septic tank, Shooting range, Generator, Transformer not in use, Abandoned AST
3	7	✓	✓				✓		✓					✓							✓				✓	✓	×	✓	×	Former airport, Classified ordnance area inaccessible
4	7	✓										✓								✓	✓					✓	×	✓	×	Potentially buried railroad tracks, Staining
5	6			✓			✓					✓								✓		✓				✓	×	✓	×	Landfill #1, Arresting gear hydraulics, Potentially buried railroad tracks, Staining, Generator
6	6			✓				✓	✓		✓									✓						✓	×	✓	×	Landfill #2, Staining, Generator
7	6			✓																✓						✓	×	×	×	Landfill #2, Potentially contaminated fill
8	6	✓	✓	✓			✓		✓		✓			✓		✓				✓						✓	×	✓	×	Landfill #1, Staining, Oil staining at switch gear, Classified ordnance storage inaccessible
9	7																								✓	✓	×	✓	×	Former Airport, Potentially buried railroad tracks
10	7													✓											✓	✓	×	✓	×	Former Airport, Potentially buried railroad tracks
11	7	✓					✓							✓											✓	✓	×	✓	×	Former Airport, Potentially buried railroad tracks, Battery charging area
12	7								✓		✓	✓		✓						✓	✓				✓	✓	×	✓	×	Former Airport, Potentially buried railroad tracks, Staining, Potential impact from adj. parcel, One building inaccessible
13	7	✓							✓			✓		✓							✓				✓	✓	×	✓	×	Former Airport, Staining, Abandoned AST
14	6						✓							✓							✓				✓	✓	×	✓	×	Former Airport, Potentially buried railroad tracks, Old airplane storage
15	7	✓	✓				✓							✓						✓	✓				✓	✓	×	✓	×	Former airport, Potentially buried railroad tracks, Pan Am well, Oil-staining at switch gear, Generator, Old disposal area, Potential impact from adj. parcel
16	7	✓	✓				✓				✓		✓	✓							✓					✓	×	✓	×	Potentially buried railroad tracks, Fueling area

TABLE 3-12

NAS ALAMEDA SUMMARY OF PARCEL CLASSIFICATIONS

		Chemical Storage & Use											Drains			Contamination Issues										Missing Data			
Parcel #	BRAC Area Type Classification	Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials/Mixed Wastes	Radioactive Sources	Oil-filled Transformer or Switch (nonPCB)	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	"Restricted Pesticide" Use	Underground Storage Tank	Aboveground Storage Tank	Fuel Lines	Potentially Contaminated Storm Drain	Potentially Contaminated Industrial Sewer	Potentially Contaminated Sanitary Sewer	Lead Issues (Paint, Shooting Range, etc.)	Friable Asbestos	Known Contamination, Not Under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Potential Historical Adverse Use	Other (See Comments)	No or Incomplete Lead-based Paint Survey	No or Incomplete Asbestos Survey	No Radon Survey	Comments
17	7	✓	✓				✓					✓	✓	✓		✓					✓			✓	✓	✓	×	✓	×	Former AST, Former steel shop, Vehicle washdown, Staining
18	7	✓	✓				✓	✓				✓	✓								✓					✓	×	✓	×	Potentially buried railroad tracks, Staining, Sandblasting
19	7	✓					✓			✓	✓									✓	✓					✓	×	✓	×	Potentially buried railroad tracks, Staining, Sandblast grit
20	7						✓				✓	✓								✓	✓					✓	×	✓	×	Former AST, Potentially buried railroad tracks, Potential impact from adj. parcel
21	7	✓					✓							✓						✓	✓					✓	×	✓	×	Potentially buried railroad tracks, Potential impact from adj. parcel, Staining
22	6	✓					✓	✓						✓	✓	✓		✓		✓	✓				✓	✓	×	✓	×	Transformer storage area, Potentially buried railroad tracks, Area secured: inspected from outside of fence
23	7	✓	✓				✓	✓	✓			✓	✓	✓	✓	✓				✓	✓	✓			✓	✓	×	✓	×	Buried ships, AC rinse facility, Oil/water separator, Potentially buried railroad tracks, Fueling Area, Generator, Potential UST
24	7																				✓					✓	×	×	×	Area secured: inspected from outside of fence
25	7													✓						✓	✓						×	✓	×	
26	7	✓	✓				✓		✓			✓		✓	✓	✓	✓					✓				✓	×	✓	×	Oil/water separator, PPE required, Staining
27	7	✓	✓				✓					✓		✓	✓	✓										✓	×	✓	×	Staining, PPE required, Staining near transformer
28	7	✓	✓				✓	✓				✓		✓	✓	✓						✓				✓	×	✓	×	Staining
29	7						✓				✓	✓	✓	✓	✓	✓					✓					✓	×	✓	×	Generator, Staining
30	7	✓	✓								✓		✓	✓	✓	✓					✓			✓	✓	✓	×	✓	×	Staining, Potential impact from adj. parcels, Former aircraft painting
31	7	✓	✓										✓								✓			✓		✓	×	✓	×	Transformer storage area, Staining
32	7	✓	✓				✓	✓	✓				✓	✓	✓	✓					✓			✓		✓	×	✓	×	Aircraft washdown, Potential impact from adj. parcel
33	7												✓									✓		✓			×	✓	×	Small oil spill observed
34	7	✓	✓										✓											✓		✓	×	✓	×	Staining
35	7												✓	✓										✓			×	✓	×	
36	7																				✓					✓	×	✓	×	Located adjacent to aircraft washdown area
37	7	✓					✓				✓		✓													✓	×	✓	×	Fueling area, Stormwater UST, Oil/water separator

TABLE 3-12

NAS ALAMEDA SUMMARY OF PARCEL CLASSIFICATIONS

		Chemical Storage & Use												Drains			Contamination Issues									Missing Data			
Parcel #	BRAC Area Type Classification	Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials/Mixed Wastes	Radioactive Sources	Oil-filled Transformer or Switch (nonPCB)	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	"Restricted Pesticide" Use	Underground Storage Tank	Aboveground Storage Tank	Fuel Lines	Potentially Contaminated Storm Drain	Potentially Contaminated Industrial Sewer	Potentially Contaminated Sanitary Sewer	Lead Issues (Paint, Shooting Range, etc.)	Friable Asbestos	Known Contamination, Not Under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Potential Historical Adverse Use	Other (See Comments)	No or Incomplete Lead-based Paint Survey	No or Incomplete Asbestos Survey	No Radon Survey	Comments
38	7	✓					✓	✓												✓	✓						×	×	×	
39	1																										×	×	×	Concrete building
40	7	✓																								✓	×	✓	×	Washdown area, Staining
41	7	✓	✓				✓	✓						✓	✓	✓									✓		✓	✓	✓	Prior chemical use Building 4
42	7	✓																								✓	×	×	×	Staining
43	7	✓					✓	✓						✓							✓					✓	×	✓	✓	Staining
44	1																									✓	×	×	×	Monitoring well indicates low concentration of oil/grease
45	7	✓	✓				✓	✓			✓			✓	✓	✓					✓				✓	✓	✓	✓	✓	Dry cleaning plant, Former sterilizer and laundry, Staining near transformer
46	7	✓					✓		✓					✓		✓					✓				✓		×	✓	×	Former materials laboratory
47	7	✓					✓		✓							✓					✓					✓	×	✓	×	Ammo rework/overhaul shop, Former torpedo factory
48	7				✓		✓	✓						✓		✓					✓					✓	×	✓	×	Paint storage
49	7	✓	✓				✓				✓		✓	✓	✓	✓					✓					✓	×	✓	×	Staining
50	7					✓	✓	✓					✓	✓		✓					✓						×	✓	×	
51	7	✓	✓				✓	✓						✓	✓	✓					✓				✓	✓	×	✓	×	Staining, Former plating shop
52	6	✓	✓	✓			✓				✓			✓	✓	✓				✓	✓	✓		✓		✓	×	✓	×	Staining, Potential UST
53	7	✓	✓	✓			✓	✓						✓	✓	✓					✓			✓		✓	×	✓	×	Staining
54	6	✓	✓	✓	✓		✓	✓			✓	✓		✓	✓	✓				✓	✓	✓				✓	×	✓	✓	Railroad tracks, Staining
55	7	✓									✓			✓							✓					✓	×	✓	×	Staining
56	7	✓	✓													✓					✓					✓	×	✓	×	Railroad tracks
57	7	✓	✓								✓			✓	✓	✓					✓	✓			✓	✓	×	✓	×	Railroad tracks, Former corrosion control shop, Staining
58	7	✓	✓				✓	✓								✓					✓				✓	✓	×	✓	×	Staining near transformer, Former aircraft parts cleaning
59	7	✓					✓							✓	✓	✓					✓					✓	×	✓	×	Generator
60	1																										×	×	×	
61	7	✓					✓		✓					✓	✓	✓					✓					✓	×	✓	×	Generator, Potential UST
62	7						✓							✓												✓	×	×	×	Railroad tracks
63	1																										×	×	×	
64	7													✓		✓					✓						×	✓	×	
65	7	✓					✓	✓						✓	✓						✓					✓	×	✓	×	Incinerator, Stand-by generator
66	7	✓	✓				✓					✓		✓	✓	✓					✓					✓	×	✓	×	Railroad tracks, Staining
67	7						✓								✓	✓					✓					✓	×	✓	×	Staining
68	7	✓	✓				✓	✓			✓			✓	✓	✓		✓			✓	✓				✓	×	✓	×	Paint blowdown, Staining, Oil/water separator
69	6	✓	✓				✓	✓			✓				✓			✓		✓	✓					✓	×	✓	×	Railroad tracks, Staining, Generator, Oil/water separator

TABLE 3-12

NAS ALAMEDA SUMMARY OF PARCEL CLASSIFICATIONS

		Chemical Storage & Use											Drains			Contamination Issues									Missing Data			
Parcel #	BRAC Area Type Classification	Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials/Mixed Wastes	Radioactive Sources	Oil-filled Transformer or Switch (nonPCB)	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	"Restricted Pesticide" Use	Underground Storage Tank	Aboveground Storage Tank	Fuel Lines	Potentially Contaminated Storm Drain	Potentially Contaminated Industrial Sewer	Potentially Contaminated Sanitary Sewer	Lead Issues (Paint, Shooting Range, etc.)	Friable Asbestos	Known Contamination, Not Under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Potential Historical Adverse Use	Other (See Comments)	No or Incomplete Lead-based Paint Survey	No or Incomplete Asbestos Survey	No Radon Survey	Comments
70	7	✓	✓				✓	✓			✓		✓	✓	✓	✓					✓			✓		✓	×	✓	×	Staining
71	7	✓					✓						✓	✓	✓	✓					✓			✓	✓	✓	×	✓	×	Staining, Former x-ray room
72	7	✓						✓													✓			✓			×	✓	×	
73	7						✓							✓		✓					✓					✓	×	✓	×	Railroad tracks, Staining
74	7	✓					✓	✓						✓	✓	✓					✓					✓	×	✓	×	Railroad tracks, Staining
75	6	✓	✓				✓	✓		✓				✓	✓	✓		✓		✓	✓	✓				✓	×	✓	×	Staining, Sandblasting
76	7																	✓			✓						×	✓	×	
77	7	✓	✓				✓							✓		✓	✓	✓			✓						×	✓	×	
78	7	✓					✓	✓						✓		✓					✓				✓		×	✓	×	Former hobby shop
79	7						✓				✓					✓											×	✓	×	
80	7	✓					✓	✓						✓							✓					✓	✓	✓	✓	Staining
81	7	✓												✓		✓					✓						×	✓	×	
82	7	✓	✓		✓		✓				✓			✓							✓	✓					×	✓	×	
83	7	✓	✓		✓		✓							✓		✓					✓					✓	×	✓	×	Staining
84	7	✓					✓	✓						✓		✓										✓	×	✓	×	Staining
85	7	✓					✓	✓						✓												✓	×	✓	×	Staining
86	7													✓													×	✓	×	
87	7						✓	✓														✓					×	✓	×	
88	7																				✓						×	✓	×	Potential ACM- steam lines accessible
89	7	✓	✓																								×	✓	×	Potential ACM- steam lines accessible
90	7	✓												✓												✓	×	✓	×	Significant staining in bldg.
91	7	✓					✓																				×	✓	×	
92	7	✓	✓											✓												✓	×	✓	×	Staining
93	1																										×	×	×	
94	7																									✓	×	✓	×	Pool, building debris
95	7	✓					✓																				×	✓	×	Pool chemical storage
96	7	✓					✓							✓												✓	×	✓	×	Oil-staining near transformer, Staining
97	7						✓																			✓	×	✓	×	Army well
98	7	✓	✓				✓							✓												✓	✓	✓		Potentially contaminated fill, Staining in hazmat/waste area
99	7																								✓	✓	×	×	×	Former gun club, Potentially contaminated fill
100	7	✓					✓																			✓	✓	✓	✓	Potentially contaminated fill, Paint stains at storm drain
101	1																										×	✓	×	
102	7	✓	✓				✓					✓														✓	×	✓	×	Potentially contaminated fill, Staining

TABLE 3-12

NAS ALAMEDA SUMMARY OF PARCEL CLASSIFICATIONS

		Chemical Storage & Use											Drains			Contamination Issues									Missing Data			
Parcel #	BRAC Area Type Classification	Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials/Mixed Wastes	Radioactive Sources	Oil-filled Transformer or Switch (nonPCB)	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	"Restricted Pesticide" Use	Underground Storage Tank	Aboveground Storage Tank	Fuel Lines	Potentially Contaminated Storm Drain	Potentially Contaminated Industrial Sewer	Potentially Contaminated Sanitary Sewer	Lead Issues (Paint, Shooting Range, etc.)	Friable Asbestos	Known Contamination, Not Under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Potential Historical Adverse Use	Other (See Comments)	No or Incomplete Lead-based Paint Survey	No or Incomplete Asbestos Survey	No Radon Survey	Comments
103	7						✓								✓	✓					✓					✓	✓	✓	✓	Insect vector control, PWC storage, Potentially contaminated fill
104	7		✓																							✓	×	✓	×	Wastewater pretreatment, Potentially contaminated fill, Potential UST
105	7	✓					✓																			✓	×	✓	×	Potentially contaminated fill
106	7	✓												✓		✓										✓	×	✓	×	Railroad tracks, Electronics maint. shop, Potentially contaminated fill, Staining
107	7	✓					✓							✓		✓	✓				✓					✓	×	✓	×	Railroad tracks, Potentially contaminated fill, Staining
108	7	✓					✓																		✓	✓	×	✓	×	Cold storage warehouse, Potentially contaminated fill, Staining, Former railroad off-loading area
109	7													✓							✓					✓	×	✓	×	Railroad tracks, Incinerator, Potentially contaminated fill
110	7	✓									✓				✓						✓					✓	×	✓	×	Railroad tracks, Potentially contaminated fill, Staining
111	7	✓					✓				✓			✓		✓										✓	×	✓	×	Railroad tracks, Potentially contaminated fill, Staining
112	7	✓					✓				✓		✓	✓		✓					✓					✓	×	✓	×	Potentially contaminated fill, Potential UST
113	6	✓	✓				✓				✓			✓	✓	✓	✓			✓	✓					✓	×	✓	×	Potentially contaminated fill, Staining
114	7										✓		✓	✓							✓				✓	✓	×	✓	×	Former hobby shop, Potentially contaminated fill, Staining, Gas station
115	7	✓					✓	✓			✓	✓				✓										✓	×	✓	×	Potentially contaminated fill, Spill
116	7	✓														✓										✓	×	✓	×	Potentially contaminated fill, Suspected UST
117	7															✓									✓	✓	×	✓	×	Torpedo store house, Potentially contaminated fill
118	7	✓														✓										✓	×	✓	×	Potentially contaminated fill
119	7													✓		✓					✓					✓	×	✓	×	Potentially contaminated fill
120	7	✓					✓							✓		✓					✓				✓	✓	×	✓	×	Potentially contaminated fill, Former repair shop
121	7															✓					✓					✓	×	✓	×	Potentially contaminated fill
122	7	✓	✓				✓						✓	✓		✓					✓					✓	×	✓	×	Potentially contaminated fill, Staining

TABLE 3-12

NAS ALAMEDA SUMMARY OF PARCEL CLASSIFICATIONS

		Chemical Storage & Use											Drains			Contamination Issues									Missing Data			
Parcel #	BRAC Area Type Classification	Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials/Mixed Wastes	Radioactive Sources	Oil-filled Transformer or Switch (nonPCB)	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	"Restricted Pesticide" Use	Underground Storage Tank	Aboveground Storage Tank	Fuel Lines	Potentially Contaminated Storm Drain	Potentially Contaminated Industrial Sewer	Potentially Contaminated Sanitary Sewer	Lead Issues (Paint, Shooting Range, etc.)	Friable Asbestos	Known Contamination, Not Under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Potential Historical Adverse Use	Other (See Comments)	No or Incomplete Lead-based Paint Survey	No or Incomplete Asbestos Survey	No Radon Survey	Comments
123	7	✓	✓				✓	✓			✓		✓	✓	✓	✓									✓	✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Staining in substation, Former railcar repair
124	7	✓	✓				✓				✓		✓			✓					✓					✓	×	✓	×	Railroad tracks, Staining
125	7	✓	✓	✓			✓	✓					✓	✓		✓					✓					✓	×	✓	×	Railroad tracks
126	7	✓					✓				✓		✓	✓							✓				✓	✓	×	✓	×	Railroad tracks, Former gas station, Staining at transformer
127	7	✓	✓				✓				✓		✓	✓	✓	✓					✓				✓	✓	×	✓	×	Railroad tracks, Former gas station, Staining
128	7												✓	✓		✓					✓					✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Fueling facility
129	7	✓					✓	✓						✓							✓					✓	×	✓	×	Potentially contaminated fill
130	7	✓					✓	✓													✓					✓	×	✓	×	Potentially contaminated fill, Railroad tracks
131	6						✓	✓					✓	✓		✓				✓	✓	✓				✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Abandoned oil-filled switches
132	7															✓					✓					✓	×	✓	×	Railroad tracks
133	7						✓									✓					✓					✓	×	✓	×	Railroad tracks, Staining at transformer
134	7	✓	✓				✓				✓		✓	✓	✓	✓					✓	✓			✓	✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Former borax works, Sandblast grit
135	6	✓	✓				✓	✓			✓		✓	✓	✓		✓			✓	✓					✓	×	✓	×	Railroad tracks, Staining, Oil/water separator, Sandblasting
136	7	✓	✓										✓	✓	✓						✓				✓	✓	×	✓	×	Railroad tracks, Staining, Sandblasting, Former spray booth
137	6	✓	✓				✓	✓			✓		✓	✓	✓	✓	✓			✓	✓					✓	×	✓	×	Oil/water separator, Railroad tracks, Staining
138	7	✓	✓				✓	✓			✓	✓	✓	✓		✓				✓	✓					✓	×	✓	×	Railroad tracks, Staining
139	7	✓	✓				✓						✓	✓		✓					✓				✓	✓	×	✓	×	Potentially contaminated fill, Former incinerator, Staining, Generator
140	7	✓					✓	✓					✓	✓		✓					✓			✓		✓	×	✓	×	Potentially contaminated fill, Staining
141	7													✓							✓					✓	×	✓	×	Potentially contaminated fill, Railroad tracks
142	6	✓	✓								✓		✓							✓	✓	✓			✓	✓	×	✓	×	Potentially contaminated fill, Former refinery, Railroad tracks
143	6	✓	✓			✓	✓	✓			✓			✓	✓	✓				✓	✓	✓			✓	✓	×	✓	×	Former Borax works, Staining, Sandblasting

TABLE 3-12

NAS ALAMEDA SUMMARY OF PARCEL CLASSIFICATIONS

Parcel #	BRAC Area Type Classification	Chemical Storage & Use											Drains			Contamination Issues									Missing Data			Comments
		Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials/Mixed Wastes	Radioactive Sources	Oil-filled Transformer or Switch (nonPCB)	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	"Restricted Pesticide" Use	Underground Storage Tank	Aboveground Storage Tank	Fuel Lines	Potentially Contaminated Storm Drain	Potentially Contaminated Industrial Sewer	Potentially Contaminated Sanitary Sewer	Lead Issues (Paint, Shooting Range, etc.)	Friable Asbestos	Known Contamination, Not Under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Potential Historical Adverse Use	Other (See Comments)	No or Incomplete Lead-based Paint Survey	No or Incomplete Asbestos Survey	No Radon Survey	
144	7						✓									✓					✓				✓		×	✓	×	Former maintenance shop
145	6	✓					✓				✓					✓				✓	✓				✓		×	✓	×	Former refinery, Former gas station
146	6													✓						✓	✓				✓	✓	×	✓	×	Potentially contaminated fill, Former refinery
147	6	✓	✓				✓					✓	✓	✓	✓	✓				✓	✓	✓			✓	✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Oil/water separator, Former ASTs, Former refinery, Staining
148	6	✓	✓											✓		✓				✓	✓				✓	✓	×	✓	×	Potentially contaminated fill, Former refinery, Staining
149	6	✓	✓				✓							✓						✓	✓			✓	✓	✓	×	✓	×	Former refinery, Staining
150	7	✓	✓				✓					✓	✓	✓						✓	✓	✓		✓	✓	✓	×	✓	×	Railroad tracks, Former refinery, Staining
151	7	✓												✓							✓	✓		✓	✓	✓	×	✓	×	Former refinery, Staining
152	6	✓						✓				✓		✓	✓	✓				✓	✓				✓	✓	×	✓	×	Potentially contaminated fill, Former aircraft stripping facility, Staining
153	7	✓	✓				✓					✓		✓	✓	✓					✓					✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Oil/water separator, Staining
154	7	✓	✓			✓	✓	✓					✓	✓	✓	✓					✓	✓		✓	✓	✓	×	✓	×	Potentially contaminated fill, Former GAP site, Staining, Sandblasting
155	7	✓	✓			✓	✓	✓			✓		✓	✓							✓					✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Oil/water separator, Leaking from capacitor
156	7	✓	✓																							✓	×	✓	×	Pier is above IR site
157	7	✓	✓				✓	✓			✓		✓													✓	×	✓	×	Oil/water separator
158	7	✓	✓				✓																			✓	×	✓	×	Railroad tracks, Pier is above IR Site
159	7	✓	✓				✓							✓							✓					✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Generator, Staining
160	7	✓					✓																		✓	✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Former boat repair shop, Generator, Staining near transformer
161	7	✓											✓													✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Staining
162	7	✓					✓						✓													✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Staining
163	7		✓								✓	✓	✓													✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Oil/water separator

TABLE 3-12

NAS ALAMEDA SUMMARY OF PARCEL CLASSIFICATIONS

Parcel #	BRAC Area Type Classification	Chemical Storage & Use											Drains			Contamination Issues									Missing Data			Comments
		Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials/Mixed Wastes	Radioactive Sources	Oil-filled Transformer or Switch (nonPCB)	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	"Restricted Pesticide" Use	Underground Storage Tank	Aboveground Storage Tank	Fuel Lines	Potentially Contaminated Storm Drain	Potentially Contaminated Industrial Sewer	Potentially Contaminated Sanitary Sewer	Lead Issues (Paint, Shooting Range, etc.)	Friable Asbestos	Known Contamination, Not Under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Potential Historical Adverse Use	Other (See Comments)	No or Incomplete Lead-based Paint Survey	No or Incomplete Asbestos Survey	No Radon Survey	
164	7	✓	✓				✓														✓					✓	×	✓	×	Potentially contaminated fill, Railroad tracks
165	7						✓					✓	✓								✓				✓	✓	×	✓	×	Former refinery, Potentially contaminated fill, Fueling station
166	7													✓							✓				✓	✓	×	×	×	Former refinery, Potentially contaminated fill
167	7	✓					✓							✓							✓				✓	✓	×	✓	×	Former refinery, Potentially contaminated fill
168	7	✓	✓				✓				✓	✓		✓							✓				✓	✓	×	✓	×	Former refinery, Potentially contaminated fill, Staining
169	7						✓							✓							✓				✓	✓	×	×	×	Former maint. shop/sand blast shelter, Former refinery, Potentially contaminated fill
170	7						✓																		✓	✓	✓	✓		Railroad tracks, Former housing maint. shop
171	7						✓													✓						✓	✓	✓		Railroad tracks
172	7						✓							✓						✓							×	✓	×	
173	7											✓								✓							×	✓	×	
174	7	✓	✓				✓	✓				✓		✓						✓						✓	×	✓	×	Railroad tracks
175	7	✓					✓							✓						✓						✓	×	✓	×	Railroad tracks
176	6			✓			✓							✓		✓				✓		✓				✓	×	✓	×	Scrapyard, Railroad tracks, Staining
177	6	✓					✓							✓		✓				✓		✓				✓	×	✓	×	Scrapyard, Generator, Staining, Abandoned transformers
178	7						✓													✓						✓	×	✓	×	Railroad tracks
179	7						✓													✓							×	✓	×	
180	7						✓										✓			✓							✓	✓	×	
181	7						✓										✓			✓							✓	✓		
182	7						✓														✓						×	✓	×	
183	7	✓					✓																				×	✓	×	
184	7																			✓							×	✓	×	
185	7	✓	✓				✓	✓							✓						✓					✓	×	✓	×	Railroad tracks, Staining
186	7		✓								✓		✓		✓						✓	✓				✓	×	✓	×	Staining
187	7	✓	✓											✓							✓					✓	×	✓	×	Oil/water separator, Potential UST
188	7	✓												✓													×	✓	×	
189	7						✓				✓	✓														✓	×	✓	×	Standby generator, Former concrete plant, Staining
190	7	✓	✓			✓	✓	✓	✓				✓	✓	✓	✓					✓			✓		✓	×	✓	×	Staining
191	7	✓	✓				✓	✓	✓				✓	✓	✓	✓								✓			×	✓	×	
192	7	✓	✓				✓	✓	✓		✓		✓	✓	✓	✓								✓	✓	✓	×	✓	×	Wash rack, Former maint. shop

TABLE 3-12

NAS ALAMEDA SUMMARY OF PARCEL CLASSIFICATIONS

		Chemical Storage & Use												Drains			Contamination Issues									Missing Data			
Parcel #	BRAC Area Type Classification	Chemical Storage	Hazardous Waste Generation and/or Storage	Radioactive Materials/Mixed Wastes	Radioactive Sources	Oil-filled Transformer or Switch (nonPCB)	Oil-filled Transformer or Switch (not PCB tested)	PCB-containing Transformer or Switch	Ordnance Storage or Use	"Restricted Pesticide" Use	Underground Storage Tank	Aboveground Storage Tank	Fuel Lines	Potentially Contaminated Storm Drain	Potentially Contaminated Industrial Sewer	Potentially Contaminated Sanitary Sewer	Lead Issues (Paint, Shooting Range, etc.)	Friable Asbestos	Known Contamination, Not Under Investigation	Current Documented Contamination Site	Potential Contamination Migration onto Parcel	Spills/Incidents without Approved Cleanup	Leaks/Spills/Incidents with Approved Cleanup	Significant Staining in Aerial Photo	Potential Historical Adverse Use	Other (See Comments)	No or Incomplete Lead-based Paint Survey	No or Incomplete Asbestos Survey	No Radon Survey	Comments
193	7	✓	✓				✓	✓						✓		✓										✓	×	✓	×	Staining
194	1						✓		✓																		×	✓	×	
195	7		✓				✓	✓					✓	✓	✓	✓					✓			✓		✓	×	✓	×	Fueling area, Oil/water separator, Staining
196	6	✓	✓				✓	✓						✓	✓	✓				✓	✓					✓	×	✓	×	Staining
197	7	✓	✓				✓	✓			✓			✓		✓					✓					✓	×	✓	×	Dry cleaning plant, Oil/water separator, Staining
198	7	✓					✓						✓													✓	×	✓	×	Potentially contaminated fill, Railroad tracks, Staining at transformer
199	7													✓							✓						×	✓	×	
200	7	✓					✓						✓	✓		✓					✓						×	✓	×	
201	7	✓	✓				✓	✓						✓	✓	✓	✓				✓			✓		✓	×	✓	×	Potentially contaminated fill, Staining, Sandblasting
202	7	✓	✓				✓	✓			✓		✓	✓				✓			✓	✓				✓	×	✓	×	Railroad tracks, Staining
203	7	✓	✓				✓									✓										✓	×	✓	×	Potentially contaminated fill
204	7														✓						✓					✓	×	✓	×	Staining
205	7	✓	✓																					✓			×	✓	×	
206	7	✓						✓													✓					✓	×	✓	×	Railroad tracks, Staining
207	7	✓																								✓	×	✓	×	Potential ACM- steam lines
208	7	✓	✓																		✓					✓	×	✓	×	Potentially contaminated fill
209	7																				✓					✓	×	✓	×	Potentially contaminated fill
210	6																				✓				✓	✓	×	✓	×	Potentially contaminated fill, Former refinery
211	7	✓	✓			✓	✓	✓						✓		✓				✓	✓			✓	✓	✓	×	✓	×	Potentially contaminated fill, Former refinery, Railroad tracks, Oil/water separator, Defueling facility
212	7	✓																								✓	×	✓	×	Potentially contaminated fill
213	7	✓	✓				✓							✓		✓					✓					✓	×	✓	×	Potentially contaminated fill
214	6																			✓					✓	✓	×	✓	×	Former refinery

✓ indicates parcel is affected
"blank" indicates parcel is not affected
× in Missing Data column indicates not applicable
Highlighted parcels are CERFA-eligible

CHAPTER 4

ENVIRONMENTAL RESTORATION STRATEGY

This chapter summarizes the environmental restoration strategy for accelerating environmental cleanup and property transfer at NAS Alameda. Subsections within this chapter describe the specific strategies for the Installation Restoration Program (IRP), compliance, natural and cultural resources, and community relations, that are integral components of this process. The BCTs cleanup strategy incorporates the following elements:

- Comprehensive assessment of parcels to identify those suitable for transfer without cleanup.
- Leasing as an interim measure to facilitate interim reuse prior to completion of cleanup.
- Begin cleanup where it is necessary with early actions.
  - Removal Actions
  - Interim Remedial Measures
- Apply common sense to cleanup.

The following paragraphs present a synopsis of the overall strategy for integrating all programs. Figure 4-1 provides a flow chart of program integration.

Program Integration

Before the official placement of NAS Alameda on the U.S. Department of Defense (DoD) base closure list, environmental restoration activities generally fell under two areas of regulatory cognizance. The existing IRP addressed Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) historic releases of hazardous materials and wastes. Compliance programs were also in place to address Resource Conservation and Recovery Act (RCRA) hazardous waste treatment, storage, and disposal issues, underground storage tanks, and other issues related to lead-based paint, asbestos, radon, and transformers containing polychlorinated biphenyls (PCB). As such, these programs only addressed known historic or ongoing compliance-related environmental issues for

specific sites within the facility in support of NAS Alameda's active mission to provide facilities and support to fleet aviation activities.

After NAS Alameda became a base closure facility in September 1993, the environmental restoration strategy has shifted to accelerate environmental restoration and also to facilitate accelerated property disposal and reuse opportunities. Existing environmental restoration and compliance programs will be integrated with accelerated property disposal and reuse through use of the results generated from an environmental baseline survey (EBS) being performed at NAS Alameda. The EBS process will be used to integrate the characterization of contaminant sources and impacted areas for real property not previously investigated under existing environmental programs, and in concert with existing environmental programs, provides an assessment of the environmental condition of all base property.

To facilitate this integration of programs, the NAS Alameda BCT has initiated the parcel evaluation plan (PEP) as a new approach to fast-track cleanup at NAS Alameda. The PEP approach described below presents opportunities to prioritize parcels (and parcel zones) of high reuse interest, and includes real-time decision making by the BCT during follow-on investigations of environmental impacts.

Environmental Baseline Survey

As mandated under BRAC, base closure facilities are required to perform an EBS to identify the environmental condition of every piece of property or parcel affected by base closure, and this information must be compared with the intended reuse for that specific parcel if known, so as to guide the BCT in its determination of that parcel's suitability for leasing or transfer.

The EBS process began at NAS Alameda in early 1994, following DoD guidance and CERCLA and RCRA regulations. Phase I of the EBS partitioned the base into 214 parcels (IRP and compliance site parcels were included). Each parcel was then categorized into one of seven categories (see Section 3.4 for definitions) based on review of past reports, records, and selected personnel interviews (equivalent to a preliminary assessment [PA] under CERCLA). Category 1 comprises parcels where no storage, release, or disposal of hazardous substances or wastes occurred; and as Community

Environmental Response Facilitation Act (CERFA)-qualified parcels, these parcels would be available for near immediate reuse and transfer (see Chapter 2 for a detailed discussion). The initial phase I screening identified only six parcels that were CERFA-qualified. As such, the remaining parcels require further investigation under subsequent phases of the EBS.

Further investigation of the remaining parcels is currently underway as phase II of the EBS and is planned to continue through early 1995. This additional characterization is being carried out with the goal of recategorizing the remaining parcels as either (1) suitable for transfer because "no action" is required based on results from chemical analyses of parcel soil and groundwater samples or (2) requiring additional investigation, resulting in the parcel's inclusion under an existing environmental restoration or compliance program, including an assessment of its suitability for interim leasing. Thus, the approach discussed below for conducting further investigations of the remaining parcels is key to meeting this goal.

Parcel evaluation plans (PEP) have been drawn up for 208 parcels (6 parcels, numbers 172 through 177, will be investigated by the Navy's Fleet Industrial Supply Center Oakland [FISCO]). The PEPs are the field sampling work plans (equivalent to performing a CERCLA-type site investigation) developed to strategically determine screening soil and groundwater sampling locations within each parcel. These PEPs have been grouped into 23 "zones" by the BCT to facilitate the PEP evaluation and subsequent implementation. Collectively referred to by the BCT as zone analysis plans (ZAP), these ZAPs and their implementation under phase IIA of the EBS will be the mechanism by which the remaining parcels are initially screened for the presence or absence of hazardous substances.

Partially driven by initial reuse interest priorities received from the Alameda Reuse and Redevelopment Authority (ARRA), the ZAPs are now being implemented on a "zone-by-zone" basis. Field work began at the housing areas east of Main Avenue in October 1994 (parcel zone 16; see Figure 2-2 in Chapter 2) and is currently continuing within parcel zones 6, 8, 10, 11, 13, and 22.

When sampling results from phase IIA field work are received, the BCT evaluates the data using a "real time decision-making" process to decide whether a particular parcel (or group of parcels within a "zone") requires further investigation or qualifies as a "no action" site. If the parcel is determined

to require additional characterization, phase IIB field work for that parcel will be implemented to characterize the lateral and vertical extent of contamination. A parcel evaluation report will be generated after either the phase IIA field work or after the phase IIB field work (depending on whether or not hazardous substances are found). The parcel evaluation report details the results (chemical concentrations, extent of impact, and preliminary risk assessment) and recommendations for each parcel. Based upon recommendations in the parcel evaluation report, cleanup program integration decisions occur at this point. Depending on the parcel's geographic location with respect to other impacted parcels, or with respect to known impacts from IRP or compliance program sites, the BCT will decide whether to integrate this parcel into an existing operable unit (OU) of the IRP or with other ongoing remedial actions under an ongoing compliance program.

Underground Storage Tank Integration

As the phase II EBS proceeds, the existing IRP and compliance programs continue as summarized here. The Navy's existing underground storage tank (UST) program is currently removing all known inactive USTs at NAS Alameda (including USTs identified as RCRA sites in the RCRA Part B permit). These sites are then characterized following Alameda County UST regulations and State of California underground storage tank regulations (California State Water Resources Control Board 1993). If a UST is found to have leaked, the site is further characterized under the UST program in conjunction with the Alameda County Department of Environmental Health and the Regional Water Quality Control Board (RWQCB). If a UST has not leaked, it will be closed as a "clean" tank site with a RWQCB closure letter. This closure letter will be included in the final record of decision (ROD) for the OU in which the UST is located. If a UST has leaked and the contaminant groundwater plume has commingled with a contaminant plume from an IRP site (or if the leaking UST services an IRP site), the UST and remedial actions for its impacts fall under the environmental actions (under CERCLA) ongoing at that IRP site (or OU). The results of the UST program will be integrated into the parcel evaluation report for which the UST is located within, and if applicable, into the appropriate OU remedial investigation and feasibility study (RI/FS) report.

All solid waste management units (SWMU), areas of concern, and generator accumulation points identified under the RCRA Part B permit for NAS Alameda, as well as all sites listed as part of the

original RCRA facility assessment, will also be investigated under the PEP for the parcel in which it is located. If the results of the PEP investigation indicate that a RCRA facility (other than UST sites) has impacted soil or groundwater or both, then that site will be integrated into the CERCLA IRP.

The results of the asbestos survey (now nearing completion), the lead-based paint survey, and the PCB transformer survey will be integrated with the parcel evaluation reports. If soil or groundwater impacts are revealed during these surveys, these parcels will be referred to the CERCLA IRP.

The EBS report for a parcel will be written as soon as data are available from the screening phase (IIA) of the PEP for that parcel. This will allow for early documentation of collected data for that parcel so as to facilitate decisions concerning FOSL. The phase IIB of the PEP will then be implemented. The parcel-specific EBS will be updated as new information becomes available through the PEP investigation or other phase II EBS program.

In summary, the overall EBS process, from the CERFA-qualified EBS to the parcel specific EBS, is the connecting strategy that will allow the BCT to assess the environmental condition of all base property, accelerate decisions on parcel suitability for leasing or transfer, and in conjunction with ongoing environmental restoration and compliance programs, integrate basewide environmental restoration activities.

4.1 INSTALLATION RESTORATION PROGRAM STRATEGY

This section discusses the strategy to manage the characterization and remediation of the 23 IRP sites at NAS Alameda. The 23 IRP sites have been grouped into OUs as a management tool to both expedite and facilitate the IRP cleanup. A description of the OUs designated at NAS Alameda and the OU strategy are summarized below, as are discussions on early action strategies, remedy selection approaches, and RODs.

4.1.1 Operable Unit Designations

As part of the IRP RI/FS process, OUs have been established to group the IRP sites into logical units to accelerate site investigation and cleanup. Current OU designations for NAS Alameda are illustrated on Figure 3-1. The OU designations are based on the revised National Oil and Hazardous Substance Pollution Contingency Plan (NCP) (40 CFR Part 300 1992).

An OU is defined in the revised NCP as "a discrete action that comprises an incremental step toward comprehensively addressing site problems." The cleanup of a site may be divided into several OUs depending on its complexity. The OUs may be defined on the basis of geography, specific site problems, or initial phases of a particular action. The objective of defining an OU is to manage migration and eliminate or mitigate a release, threat of release, or pathway of exposure.

At NAS Alameda, four factors were used for grouping sites into OUs as follows:

1. Geographic Location - By grouping sites in the same geographic area, the implementation of remedial technologies is optimized.

2. Reuse Potential - The timely transfer of property to the community is optimized by grouping sites according to the reuse potential. For example, the southeastern portion of the base offers good reuse potential as it contains some open space and several structures that can be removed to provide space for new buildings. This area also contains sites that will best be managed and remediated as a group.

3. Remediation Management - By grouping sites together if they contain similar contaminants and are located in the same geographic area, overall management of remedial actions is optimized.

4. Contaminant Type, Extent of Contamination, and Media - Where possible, in areas where soil or groundwater are impacted by similar contaminants, such as petroleum, oils, or lubricants in soil or chlorinated solvents in groundwater, the sites in that area were grouped together.

This approach will allow cleanup to begin at individual sites before the final base-wide ROD is completed.

Depending on the nature of contamination and potentially exposed populations at a particular site, it may be more appropriate to implement a removal action in accordance with Title 40 of the Code of Federal Regulations 300.415, to remove any immediate hazards to human health and the environment prior to or during the time the RI and FS reports are completed. In conducting removal actions early, the Navy may remediate a site more cost effectively because the costs of remedial design are reduced. Also, there is a chance the site could be made available for reuse earlier than if it is managed to completion under the RI/FS process. Three removal actions are already in progress at IRP sites 7A, 13, and 15. Several other removal action opportunities have been targeted and are planned at other IRP sites at NAS Alameda. Other sites may also fall into this category based on the results of the follow-on field investigation. The early action strategy is discussed in Section 4.1.3.

The 23 IRP sites at NAS Alameda are grouped into four OUs. Table 4-1 depicts the relationship between IRP sites, OUs, and current EBS parcel designations. The composition of each of these OUs is summarized as follows:

- **OU 1.** OU 1 addresses an area containing numerous open areas and parcels with older, simple structures that could easily be removed. The area is adjacent to the eastern edge of NAS Alameda with commercial, educational, and light industrial reuse possibilities expressed by the City of Alameda. The open areas and light industrial uses make long-term redevelopment ideal for these sites. Thus, OU 1 has high reuse priority and cleanup priority. The sites in OU 1 represent relatively small, uncomplicated sites, with the exception of IRP Sites 4 and 13. Because the remedial action anticipated for these sites is relatively simple, the BCP strategy is to begin remedial action before the ROD. This strategy will provide for immediate reduction of risk and will also accelerate the schedule for finding of suitability for transfer (FOST).

  OU 1 addresses the vadose zone soil and groundwater at IRP Sites 3, 4, 7A, 7B, 7C, 9, 10B, 11, 13, 16, and 19. (Table 4-1). These sites are grouped together primarily because of their strategic location along the eastern corridor of the base, thus the potential for their easy integration with existing City of Alameda development. Many of the sites have petroleum, oil, and lubricant-contaminated soil and groundwater, and several of the sites have chlorinated solvents in the groundwater. With the exception of Buildings 530 (IRP Site 10B) and 360 (IRP Site 4), these sites lie within an area with high potential for newer development because the existing structures are old and may be destroyed. Similarly, this is an area of early action opportunities, both removal actions for impacted vadose zone soil, and treatability studies of impacted soils and groundwater. Early actions are underway at IRP Site 7A and 13, and additional early actions are planned for IRP Sites 3, 4, 7C, 13, and 16.

- **OU 2.** OU 2 addresses the groundwater and vadose zone soil of IRP Sites 5, 6, 8, 10A, 12, 14, and 15 (Table 4-1). OU 2 has high reuse potential in its current configuration of primarily industrial and office buildings and its existing manufacturing/maintenance/repair infrastructure. Therefore, the primary factors guiding the development of OU 2 were the geographic location and reuse potential. The sites within OU 2 contain dissimilar contaminant types, yet the extent of contamination, in most cases, is minimal and may be remediated through removal actions. The sites undergoing removal actions will then become available for early lease. Sites 14 and 15 contain contaminated soil and are such sites. Site 15 already has a removal action underway. Site 5 contains both contaminated soil and groundwater and will undergo treatability studies for each media. Sites 6, 10A, and 12 contain minor levels of contamination and may require either minimal removal actions or will require no further action.

- **OU 3.** OU 3 is expected to have long-term reuse potential and consists of the two landfill sites, IRP Sites 1 and 2. Vadose zone soil and groundwater are contaminated at these sites. The following factors were considered in the development of OU 3:

  - Results of the site investigations indicated that groundwater contamination was detected downgradient of both IRP sites.

  - The sites are located adjacent to each other, are both landfills, and are geographically isolated from other IRP sites.

  - Both sites border San Francisco Bay and are a source of potential continuing contaminant release.

  - Long-term groundwater remediation is likely for these sites based on the results of the initial investigations.

  - A presumptive remedy of capping and containment is being considered for the landfills, along with innovative treatment technologies to capture, contain, and treat contaminated groundwater that may migrate to the San Francisco Bay. Presumptive remedy capping, if selected for IRP Site 2, will need to address possible impacts to the west beach wetland area (part of OU 4).

  - Early actions are planned at both sites, including a treatability study for groundwater capture, control, and treatment; and an action to address soil removal at the IRP Site 1 pistol range.

- **OU 4.** OU 4 has lower short-term but higher long-term reuse potential and consists of the two off-shore sites, the Seaplane Lagoon, portions of the Oakland Inner Harbor (IRP Sites 17 and 20), the wetland within the West Beach Landfill (IRP Site 2) and the runway area wetland (due west of the Seaplane Lagoon). These sites have been grouped together based on the following criteria:

- The marine sites affect the ecological system of the San Francisco Bay and Oakland Inner Harbor waters, include similar characteristics, and have similar disposal histories.

- The wetlands areas are sensitive ecological areas containing sediments and, along with the marine areas, are being investigated as part of an overall program for their complete ecological assessment.

Conceptual models of sources, contaminant migration, and receptors developed for these OUs will provide a basis for defining a comprehensive OU remediation strategy. Appendix C presents draft site-by-site conceptual model narratives for NAS Alameda and a regional conceptual site model that includes a description of regional geology and hydrology, groundwater occurrence, and groundwater quality. These site-by-site conceptual models do not yet include contaminant migration pathways or an evaluation of receptors. These factors are being studied currently and will be added to the site conceptual models to be included in the human health and ecological risk assessments for each OU.

4.1.2 Operable Unit Strategies

A comprehensive OU strategy has been developed by the NAS Alameda BCT. This strategy consolidates IRP sites into OUs to address all past releases associated with these sites. In addition to defining OUs, the environmental response strategy completes the following tasks:

- Targets sites with low levels of contaminants for removal actions or interim remedial measures to remediate the sites as early as possible, making them available for use.

- Streamlines the schedule and document review process by minimizing the number of OUs and thus minimizing the number of OU documents to be reviewed.

- Initiates treatability studies and early actions before the RI and FS reports are completed so that final designs can be in place as soon as possible after the ROD is signed. To ensure success with this initiative, NAS Alameda has maintained close communication with the restoration advisory board (RAB) to promote awareness and solicit general acceptance from the community.

The OU schedules are presented in Chapter 5. The primary activities for the OUs are summarized as follows.

- OU 1 (IRP Sites 3, 4, 7A, 7B, 7C, 9, 10B, 11, 13, 16, and 19):
  - Complete follow-on field investigation and quarterly groundwater sampling at all sites
  - Site 7A removal action
  - Site 13 removal action(s)
  - Sites 7C, 16 removal actions
  - Treatability studies at sites 3, 4, and 13
  - OU 1 RI/FS reports (includes RI report, human health risk assessment, ecological assessment, and FS report)
  - Interim ROD for OU 1
  - Remedial design - as required
  - Remedial action - as required
- OU 2 (IRP Sites 5, 6, 8, 10A, 12, 14, and 15):
  - Complete follow-on field investigation and quarterly groundwater sampling at all sites
  - Complete Site 15 removal action
  - Site 14 removal action
  - Site 5 removal action and treatability studies
  - OU 2 RI/FS report (includes RI report, human health risk assessment, ecological assessment, and FS report)
  - Interim ROD for OU 2
  - Remedial design - as required
  - Remedial action - as required
- OU 3 (IRP Sites 1, 2):
  - Complete follow-on field investigation and quarterly groundwater sampling at both sites

- Site 1 pistol range removal action
- Site 1 or 2 treatability study
- OU 3 RI/FS report (includes RI report, human health risk assessment, ecological assessment, and FS report)
- Interim ROD for OU 3
- Remedial design
- Remedial action

- OU 4 (IRP Sites 17, 20, and wetlands):
  - Complete initial ecological assessment report
  - Follow-on ecological assessment field work
  - Site 17 treatability study
  - OU 4 RI/FS reports (includes RI report, human health risk assessment, ecological assessment, and FS report)
  - Interim ROD for OU 4
  - Remedial design
  - Remedial action
- Base-wide
  - Risk assessment
  - Ecological assessment
  - Record of decision

4.1.3 Early Action Strategy

The NAS Alameda BCT is committed to beginning cleanup where necessary as early in the process as sensible and committed to keeping an open mind toward the potential advantages of innovative

technologies. This will result in a simpler, more streamlined ROD for any OU where early actions have taken place.

The BCT has begun implementing the EPA's Superfund Accelerated Cleanup Model (SACM) to make cleanup more timely and efficient. The SACM involves the following:

- A continuous process for assessing site-specific conditions and the need for action
- Cross-program coordination of response planning
- Protection of human health and the environment through early action
- Appropriate cleanup of long-term environmental problems
- Early public notification and participation

Due to past experience with a lengthy document review process (greater than 120 days), another acceleration strategy being considered under early actions includes the "30-30-30" strategy, whereby document review of, for example, a removal action EE/CA is accomplished in a 90-day period where the first 30 days represents regulatory agency and RAB review of the EE/CA; the second 30 days is the public comment period as required under CERCLA; and the last 30 days is the time to respond to agency and RAB comments.

Removal actions or interim remedial measures can accelerate FOSTs by initiating cleanup, and reducing the need for remedial design/remedial action after final ROD. Treatability studies will provide site-specific performance data for remedial technologies to optimize remedy selection.

Early actions are an important component of the IRP at NAS Alameda. Based on the results of the investigations conducted, over 12 sites have been targeted for non-time critical early actions. These actions range from removal actions where simple soil excavation and ex situ treatment can be conducted (if no groundwater impacts are present), to sites where early implementation of treatability studies will be used as a practical and effective means of remedy selection and optimization.

At IRP sites with localized contaminants in the vadose zone soil, it is anticipated that cleanup may be accomplished by removal actions. However, based on the findings of a preliminary evaluation of risk, some of the sites may not require any action. If the site does present a risk to human health or the environment, an engineering evaluation and cost analysis (EE/CA) may be prepared to present and

evaluate appropriate remedies. Participation by the community will occur during the review of the EE/CA. The sites that are currently planned for early actions are listed in Table 4-2.

Treatability studies and interim remedial measures are expected to be completed early to identify and optimize potentially viable technologies for accelerating the implementation of final cleanup remedies. Candidate sites for treatability studies and interim remedial measures are being evaluated; preliminarily, the IRP sites included are 1, 2, 3, 4, 5, 13, and 17. As noted previously, the University of California Berkeley (UCB) group and others will conduct treatability studies. In March 1995 a complete assessment of technologies and of their applicability to each site will occur. At the closure of this analysis, the BCT will decide on which technologies to pursue.

Currently a treatability study is planned at IRP Site 13 to investigate the feasibility of enhanced steam extraction. In addition to Site 13, the UCB group is developing a plan to characterize the bioavailability of the target pollutants at the Seaplane Lagoon. Both of these studies are expected to begin in early summer of 1995. Results of treatability studies are to be incorporated into, and will provide focus for, the feasibility studies. Based on regulatory review of treatability study results, the technologies will be available for inclusion on a full scale basis in the ROD. The advantage to this approach is the potential for early implementation of an interim remedial measure that can be accomplished before the ROD is finalized.

4.1.4 Remedy Selection Approach

The remedy selection strategy includes (1) the OU strategy discussed in Section 4.1.2, (2) the early action strategy discussed in Section 4.1.3, (3) the threshold and balancing criteria in the NCP, and (4) the reuse plans for the base. Each of these factors and their relationship to remedy selection are discussed below.

- **OU Strategy:** Included in the OU strategy is the development of applicable, relevant and appropriate requirements (ARARs), data evaluation and interpretation in the performance of risk assessments, applied treatability studies on site-specific media and contaminants, incorporation of data and treatability study results in feasibility studies, and the selection of remedies that are found to be effective and which meet the threshold and balancing criteria in the NCP.

- **Early Action Strategy:** As described previously, early actions include removal actions, treatability studies, and interim remedial measures. Removal actions at NAS Alameda, thus far, are all non-time critical; as such, they are, or may be, documented by EE/CAs and action memorandums. The sites undergoing removal actions are later analyzed in the feasibility studies, and then are recorded during the ROD. Interim remedial measures and treatability studies are also analyzed during the feasibility study and provide the opportunity to develop and/or optimize a remedial technology before the ROD. These early actions are expected to be consistent with the final remedy selected in the ROD.

- **Threshold, Balancing, and Modifying Criteria in the NCP:** The NCP provides nine criteria to guide evaluation and selection of remedies. The criteria are meant to promote complete analysis of the scope and complexity of the problem and the remedy, and the relative significance of each criteria should be considered. These criteria will be applied as early as possible during the feasibility study process, and should help to focus the feasibility studies. The nine criteria are as follows:

  Threshold Criteria:

  1. Overall protection of human health and the environment
  2. Compliance with ARARs

  Balancing Criteria:

  3. Long-term effectiveness of the remedy
  4. Reduction of mobility, toxicity, and volume of contaminant through treatment
  5. Short-term effectiveness of the remedy
  6. Implementability of the remedy
  7. Cost effectiveness of the remedy

  Modifying Criteria:

  8. State acceptance of overall remedy
  9. Community acceptance of overall remedy

- **Reuse Plans for Base:** The land use after cleanup is dependent on the residual risk, if any, at a site after cleanup is finished. The risk assessment will evaluate the risks to human health posed by the condition of each site, as determined through the remedial investigation. Based on the intended reuse of a site, the risk assessment then estimates the level of cleanup required to ensure the protection of human health and the environment. In the absence of a specific reuse for a site, the risk assessment will look at both residential and industrial land use scenarios. The risk assessment process will also include an evaluation of residual risk, or that risk posed by the level to which it is technically and economically feasible to clean up a site. The results of this evaluation are used in the feasibility study where the nine remedy selection criteria are applied. In some cases, land use restrictions may be invoked if the residual risk for a

particular use is unacceptable. Engineering or institutional controls (deed restrictions) may be required. In turn, the reuse plans for the base can be used to guide the cleanup levels and acceptable residual risk.

The Navy BRAC environmental coordinator will hold project team meetings and participate in RAB meetings to discuss conceptual remedies early in the FS process (initial screening of alternatives stage) to ensure that the FS focuses on the appropriate types of remedies for each site or OU.

4.1.5 Records of Decisions

The ROD is issued as the final remedial action plan for a site or OU. The ROD summarizes the problems posed by the conditions at a site, the alternative remedies considered for addressing those problems, and the comparative analysis of those alternatives against the nine evaluation criteria. The ROD then presents the selected remedy and provides the rationale for that selection, specifically explaining the way the remedy satisfies the requirements of Section 121 of CERCLA, as amended by Superfund Amendments and Reauthorization Act (SARA) (EPA 1990a).

RODs may be prepared to document the final remedy as described above, or to document three other types of remedial action decisions: (1) no action, (2) interim actions, and (3) contingency remedies. RODs are described in the following sections.

- **No Action RODs.** The BCT proposes using a no action ROD for those sites which are determined to require no action after ROD. The no action ROD would be the common end point for parcels where an identified environmental concern has been resolved or remediated before ROD and remedial design/remedial action would not be necessary. The no action ROD can be a "plug-in" ROD that is not necessarily associated with a particular site or OU. The no action ROD would include all the criteria necessary to meet the requirements of CERCLA 120 (h) (3) including ARARs and health-based criteria. After the public notice and public comment period, the no action ROD would become final.
  The BCT may determine that no action (that is, no treatment, engineering controls, or institutional controls) is warranted under the following general sets of circumstances (EPA 1991):

  - When the site or a specific problem or area of the site (for example, an operable unit) is evaluated through a baseline human health risk assessment

and ecological assessment and is found to pose no current or potential threat to human health or the environment

- When CERCLA does not provide the authority to take remedial action. For example, where a release involves only petroleum product, that condition is exempt from remedial action under CERCLA section 101.

- When a previous response eliminated the need for further remedial response

- **Interim Action RODs.** During scoping, or at other points in the RI/FS, the BCT may determine that an interim remedial action is appropriate. An interim remedial action is limited in scope and must be followed by other steps to provide definite protection of human health and the environment for the long term. Also, interim actions will be included in a final ROD which should (1) provide long-term protection of human health and the environment, (2) fully address the principal threats posed by the site or OU, and (3) address the statutory preference for treatment that reduces the toxicity, mobility, or volume of wastes. Examples of interim remedial actions include constructing a fence to restrict access to the site, pumping a groundwater aquifer to restrict migration of a contaminant plume, providing an alternative source of drinking water, or constructing a temporary cap.

  Interim remedial actions should not be confused with early actions, such as removal actions, which may be either interim or final. Because an early action may be taken to mitigate the more immediate threats, there may not be sufficient time to prepare a "formal" RI or "formal" FS report. Instead, an EE/CA is prepared. Preparation of an RI/FS report is not required for an interim remedial measure, but for the purpose of fulfilling the NCP's administrative record requirements, there must be documentation that supports the rationale for the action. A summary of site data collected during field investigations is provided in the EE/CA to document a problem in need of response; in addition, a short analysis of the remedial alternatives is provided to document the remedy selection.

- **Contingency Remedies RODs.** The BCT may decide to incorporate a contingency remedy in the ROD. Use of a contingency ROD may be appropriate when there is significant uncertainty about the ability of remedial options to achieve remediation levels.

  For example, a contingency ROD may be appropriate if the performance of an innovative treatment technology (or a demonstrated technology being used on a waste for which performance data are not available) appears to be the most promising option, but additional testing will be needed during remedial design to verify the technology's performance capabilities; in this case, a more "proven approach" could be identified as a contingency remedy.

Where applicable, the ROD should specify under what circumstances the contingency remedy would be implemented, (for example, failure to achieve desired performance levels). The criteria to be used by the BCT to decide to implement the contingency option as opposed to the selected remedy should be specified.

4.2 COMPLIANCE STRATEGY

The overall strategy for reaching closure is that compliance programs will be integrated through use of the PEP investigations into the IRP if the compliance program sites require further remedial action or the site contamination is commingled with a contaminant plume at an existing OU. Strategies for specific environmental compliance programs at NAS Alameda are presented in the following sections.

4.2.1 Storage Tanks and Fuel Lines

A program to remove inactive USTs began at NAS Alameda in August 1994 in conjunction with the RWQCB and Alameda County Department of Environmental Health, and removals are scheduled to be completed in March 1995. Following removal of the inactive tanks, three activities will begin or continue.

- Letters of clean closure will be pursued with RWQCB for those tanks that have not leaked (RWQCB approved action levels were not exceeded for soil and groundwater).
- A contractor has been engaged and is currently determining the lateral and vertical extent of contamination at locations where evidence of tank leaks exists (contract already exists).
- A strategy for disposing of or remediating stockpiled excavated soil will include the generation of a soil management plan. The soil management plan will address excavation and storage of petroleum-contaminated soils, the feasibility of remedial or disposal options, and handling of impacted soils from other activities such as fuel lines, oil spills, or other petroleum-impacted soils. Since petroleum is CERCLA-excluded and there are no RWQCB groundwater concerns for excavated soils, the soil management plan could be approved by the DTSC administratively. Soils are currently being stockpiled in Building 410, an old paint stripping hangar. One possible strategy for remediating contaminated soils is to segregate soil containing light hydrocarbons (gasoline, non-chlorinated solvents) and heavier hydrocarbons (diesel, fuel oil, and jet fuel) for on-site bioremediation followed by land disposal as ordinary fill. Soils affected by chlorinated solvents and metals would be remediated by other methods such as thermal treatment, and reused as aggregate in road

pavement. Such strategies for treatment or disposal of excavated soil would be addressed in the soil management plan and require approval by DTSC in conjunction with the RWQCB.

UST program activities will be coordinated with the ongoing IRP activities. The UST program will focus primarily on source area contaminant reduction (for example, contaminated soils and free product). Dissolved contamination in groundwater, if encountered, will be addressed on a site-by-site basis through the IRP or compliance program. A UST will be integrated into the IRP if the UST has groundwater contamination commingled with a contaminant plume at an existing OU or if it is physically or operationally associated with a known IRP site. UST sites that are not located within IRP OUs or where the contamination is not intermingled with IRP contamination will be handled through the RCRA compliance program or the UST program for petroleum products.

As the active USTs at NAS Alameda become inactive, they will be scheduled for removal and follow the closure or remediation path described previously. No strategy plans currently exist for removing program-exempt USTs at NAS Alameda (see Table 3-3 in Chapter 3).

Plans and specifications are being developed for removing approximately 30,000 feet of abandoned fuel lines. Upon completion of the plans and specifications, a construction contract will be awarded in 1995 to remove the abandoned fuel lines. Additionally, plans and specifications for the remaining 4,500 feet of active fuel lines will be initiated. During removal of fuel lines, confirmation sampling will be conducted to assess the extent of any releases from the lines that may have occurred. If contamination is present, further investigation and remediation may occur. These data will be folded into the parcel evaluation reports as part of the parcel-specific EBS. Impacts from aboveground storage tanks will be addressed as part of the PEPs.

Aboveground Storage Tanks

The likelihood of reuse for aboveground storage tanks will be evaluated, and the tanks will be removed if required by law. Currently, with the exception of some large aboveground storage tanks at the power plants and the semi-buried JP-5 tanks along the Oakland Inner Harbor, most

aboveground storage tanks at NAS Alameda are either small and associated with stand by generators or are process tanks that will be cleaned out during one-time compliance activities. Pollution control reports setting aside funds for these removals have either been or will be completed.

4.2.2 Radiological Issues

Under the current program, radiological issues will be surveyed through either the IRP or the compliance program. The results will then be incorporated into the EBS.

4.2.3 Hazardous Materials and Hazardous Waste Management

NAS Alameda will continue to manage hazardous materials and hazardous waste under current Navy procedures and in compliance with federal and state regulations. The Part B permit and the East Bay Municipal Utility District (EBMUD) discharge permit can be transferred to a new owner only if the new owner manages similar hazardous waste and generates wastewater of the same constituents as NAS Alameda. Therefore, ability to transfer permits will be evaluated on a lease by lease basis or when the community reuse plan is received. If not transferable, permits will be terminated by the permitting authority.

4.2.4 Solid Waste Management

NAS Alameda will continue to manage solid waste under the current solid waste management plan executed by Public Works Center (PWC). Solid waste generated during removal renovations and demolition may require the development of additional strategies to handle and dispose of large volumes of nonhazardous debris and other materials.

4.2.5 Polychlorinated Biphenyls

The locations of transformers formerly containing PCBs identified during the EBS (ERM-West 1993) are presented in Table 3-5. A compliance program task force was formed to develop a strategy for potential PCB sites. The compliance program task force developed a PCB strategy to define the

scope, schedule, funding requirements, and contracting mechanisms necessary to evaluate and remediate PCB sites in preparation for base closure.

The strategy for potential PCB sites includes the following

- The visual inspection, field screening, and soil sampling of PCB sites will be conducted under the EBS phase II.
- PCB actions levels for soils will be determined. Initial action levels would be based on EPA guidance (EPA 1990a), which recommends the following PCB soil action level depending on land use.

Land Use	PCB Action Level (ppm)
Residential	1
Industrial	10 to 25

- A plan will be developed for further investigating and cleaning up PCB sites exceeding action levels. The plan would be reviewed by the BCT and the appropriate state and federal authorities.
- PCB sites would be remediated in compliance with federal and state regulations. Remedy selection will consider presumptive remedies that could be used at all similar PCB sites to expedite PCB cleanup.

As reported December 1994, PWC has completed a survey and sampling at NAS Alameda of 763 known transformers, capacitors, oil switches, and circuit breakers known or suspected of containing PCB-enhanced oils. PCBs levels were measured for those containing oil, with values ranging from nondetect (or less than 1 ppm in most) to as high as 32,000 ppm (Building 511). Based on this recent survey, newly approved PEPs will include sampling at or around these electrical equipment sites to address possible releases from the equipment.

4.2.6 Asbestos

DoD policy (November 1994) with regard to asbestos-containing material is to manage asbestos-containing material in a manner protective of human health and the environment, and to comply with all applicable federal, state, and local laws and regulations governing asbestos-containing material hazards. If it is determined that the asbestos-containing material in a property poses a threat to human health, specifically if asbestos is damaged, exposed and friable, the asbestos-containing material will be remediated.

Unless it is determined that the asbestos-containing material in a property poses a threat to human health, all property will be conveyed, leased, or otherwise disposed of through the BRAC process as is. Before property disposal, all available information on the existence, extent, and condition of asbestos-containing material will be incorporated into the EBS report and provided to the transferee. At present, Navy personnel have completed an asbestos survey at NAS Alameda, with a final survey report expected in May 1995. The Navy personnel are in the process of abating any friable asbestos encountered during their survey. Areas of concern where friable asbestos poses a potential threat to human health and the environment are in the process of being developed. In addition to the current abatement program, a mechanism for the abatement of all non-priority buildings with areas of concern is being developed.

4.2.7 Radon

Because of the local geology, radon is not an environmental or health issue at NAS Alameda, and no compliance strategy is necessary.

4.2.8 RCRA Facilities

Compliance activities will continue at NAS Alameda RCRA facilities. To facilitate program integration, the BCT has chosen to fulfill the substantial requirements of the RCRA facility investigation (RFI) at selected SWMUs and generator accumulation points by conducting the necessary sampling under the PEPs as part of the phase II EBS. The general strategy for RCRA

facilities is similar to the strategy of coordination between the IRP and RCRA program for storage tanks. The soil and groundwater issues associated with RCRA facilities may be addressed by the IRP for (1) RCRA sites located within IRP OUs or (2) RCRA sites with contamination intermingled with IRP contamination. Essentially, there will be no RCRA facility investigations or corrective measures studies as all RFIs will be conducted as part of the PEPs.

NAS Alameda representatives met with DTSC permitting branch officials in September 1994 to discuss NAS Alameda's closure and permit strategy. NAS Alameda will continue to coordinate with appropriate regulatory agencies regarding permits throughout the downsizing, closure, and transfer activities.

4.2.9 NPDES Permit

Existing NAS Alameda wastewater and storm water permits will be maintained until base closure. These permits are not transferable so the Navy provided the ARRA with copies of these permits so that a plan for similar permits may be prepared by ARRA.

4.2.10 Oil/Water Separator

Oil/water separators at NAS Alameda will be addressed as SWMUs. Closure of oil/water separators will require removal, disposal, and confirmation soil sampling. Table 3-7 lists those oil/water separators that will require confirmation sampling following closure and removal. The EBS will examine all oil/water separator locations and identify if leaks have occurred. In the event of identified leaks, the BCT will evaluate the appropriate program under which to investigate. Also, when a building related to an oil/water separator closes, the oil/water separator will be closed according to one-time compliance program plans.

A bilge water and oily wastewater treatment system will be operational by March 1995. At that time all donuts will no longer be operational and will be removed from the water.

4.2.11 Air

NAS Alameda has an air permit from the Bay Area Air Quality Management District for approximately 505 permitted or exempt stationary sources at NAS and NADEP. The community has expressed interest in transfer. To facilitate the transfer or banking of these permits, the Navy hosted a conference with Bay Area Air Quality Management District and the local reuse authority in October 1994 to discuss issues related to air permits and emission reduction credits. To promote the transfer of air permits NAS alameda will assess the decrease in emissions due to downsizing the emissions reductions. NAS Alameda will also inventory all current emissions and establish a program for the appraisal to permit banking or transfer.

In addition to the transfer of the air permit, the community is interested in the transfer of emission reduction credits. As NAS Alameda is downsized, stationary sources of emissions will decrease. These emission reductions of hydrocarbons, particulates, sulfur dioxide, nitrogen oxides, and carbon monoxide can be banked as air emission reduction credits under the Bay Area Air Quality Management District Regulation 2, Rule 4, Emission Banking. Limits on NAS Alameda's air permit indicates only similar facilities within an air district will be able to use these emission reduction credits. For example, if the Navy discontinues the use of a boiler at NAS Alameda, only another boiler operator can use the emission reduction credits. NAS Alameda, by the reduction of emissions and the improvement of facilities has banked emission reduction credits. In addition to credits earned by improvement of facilities, an inventory of current emissions sources vs. permitted emissions will be done to allow for the banking of the difference between the permitted emissions and the actual emission. Once the current status and past banking have been assessed, air permits have the potential to either be transferred or "banked". When an air permit is to be transferred it must meet all the provisions specified within the specific permit. If, based on the reuse of the facility these provision will not be met, the Navy may "bank" these emissions permits as emissions reduction credits, which may be used at a later time by another company or organization. The potential for the transference and banking of each permit is being assessed; likewise, the current emissions and past banked credits are currently being assessed to determine the total air credits at NAS Alameda as well the total emissions at NAS Alameda.

It is the Navy's strategy to facilitate the banking and transfer of air emission reduction credits to DoD or other federal users and/or to the local reuse authority to facilitate community reuse of property.

4.2.12 Dredging

NAS Alameda is authorized under a U.S. Army Corps of Engineers permit to perform maintenance dredging of the access channel, turning basin, and piers to remove up to 4,800,000 cubic yards of material over a 5-year period. No maintenance dredging activities are currently scheduled.

4.2.13 Lead Paint

DoD policy with regard to lead-based paint is to manage lead-based paint in a manner protective of human health and the environment, and to comply with all federal, state, and local laws and regulations governing lead-based paint hazard.

Navy policy calls for testing for lead-based paint and lead in dust and soil in Navy residential structures. The PWC will conduct a lead survey for Navy family housing at and adjacent to NAS Alameda although no schedule currently exists. In addition to family housing units, any residential structure as defined by the community's reuse plan will be evaluated for lead based paint. Examples of additional structures might be child development center, Navy lodge, bachelor enlisted quarters, and bachelor officer quarters. A strategy for the assessment of these additional structures is currently being developed. The results of the PWC survey and the additional structures will be incorporated into the EBS report. The lead survey will perform the following functions:

- Inspect a statistically representative sample of units in each family housing project
- Assess the occupant's risk from lead and rank resulting actions on a worst first basis
- Provide for emergency response to severe health risks found during the inspections
- Develop a lead-based paint management plan for NAS Alameda

Inspectors will follow lead-based paint and lead in dust sampling and testing procedures identified in the Housing and Urban Development interim guidelines. Lead in soil testing will be based on EPA guidelines. Inspectors will use x-ray fluorescence spectrum analyzers for most lead-based paint tests.

Paint samples for laboratory analysis will be collected to test irregular or inaccessible surfaces, to confirm inconclusive x-ray fluorescence results, and for quality assurance and quality control. Inspectors will collect wipe samples to check for lead in dust. Soil samples will be analyzed with the x-ray fluorescence. Water samples will be collected and analyzed for lead using EPA protocols.

There are currently no federal, state, or local requirements to survey or abate lead paint hazards in nonhousing facilities.

4.2.14 Lead in Drinking Water

Lead in drinking water will continue to be monitored on a routine basis in accordance with California Department of Health Services oversight.

4.2.15 Outdoor Small Arms Range

Remediation of the outdoor small arms range at NAS Alameda will be conducted under the one-time compliance program. Lead shot assumed to be in sediments off-shore from the skeet range will be addressed as part of the OU 4 RI/FS (under the ecological assessment).

4.2.16 Indoor Small Arms Ranges

No indoor small arms ranges exist at NAS Alameda; therefore, no compliance strategy is presented.

4.2.17 Septic Tanks

At least one septic tank exists at NAS Alameda and will be addressed in the PEP for that parcel.

4.2.18 One-Time Compliance

One-time compliance is used here to define those activities which are accomplished at the time a building is vacated and which are intended to remove hazardous substances and residual contamination

with the purpose of eliminating any future threat to the environment or to human occupants during potential reuse.

One-time compliance objectives include:

- Ensuring compliance with requirements of RCRA closure plans where they are required by a hazardous waste permit.
- Ensuring that hazardous materials are not left behind when facilities are vacated.
- Protecting future building occupants from exposure to residual contamination from Navy operations which made use of hazardous substances.
- Preventing the post closure escape of hazardous waste or residuals to the environment through direct release or leachate.
- Ensuring that facilities are vacated in a condition that will facilitate their expeditious reuse.
- Eliminating the need for Navy post closure maintenance.
- Minimizing the Navy's future liability by vacating facilities in an orderly fashion which takes past hazardous substance operations into consideration.

Though overall base closure at NAS Alameda is currently scheduled for some time in 1997, individual facilities will become available for reuse on a building by building basis as various missions and requirements for facilities gradually reduce. One-time compliance activities will be targeted to occur at the time of individual building closures both to ensure timely compliance with appropriate hazardous substance regulations and to ensure that facilities are available for reuse in an expeditious fashion. Because one-time compliance activities are important to make a facility ready for a new potential occupant after the Navy departs, their timely accomplishment is crucial to the process of interim use and leasing.

For completeness, each building and structure at NAS Alameda is classified into one of three categories as a function of the operations that have been or are currently in that building. These categories will be used to guide the effort to ensure appropriate facility decontamination:

- Category 1: Major environmental compliance requirements are anticipated in buildings which contain specific sources of hazardous substances whether they be hazardous material or hazardous waste. This category includes:

  - Facilities which are subject to RCRA closure requirements by virtue of an applicable hazardous waste operating permit (such as an IWTP)

  - Facilities which contain hazardous materials (such as a plating shop which generates the IWTP influent)

  - Facilities which contain hazardous wastes but which are not governed by permit (such as areas where waste is not treated, but is stored for less than 90 days).

One-time compliance requirements for Category 1 areas include removal and disposal of hazardous wastes and materials. For example, treatment tanks would be drained, flushed with fresh water, and rinsed with an appropriate solvent or surfactant. Tanks, pipelines, pumps and similar structures containing hazardous substances would have liquid, solid or sediment residues removed. Hazardous material or waste would be properly removed and disposed of. Where facility and equipment decontamination is required, it would include such actions as high pressure wash and disposal of rinsate.

Other Category 1 facilities may have similar requirements for decontamination which are not stipulated in a RCRA closure plan. Where appropriate, following prudent management practice, similar facility decontamination procedures will be followed consistent with the objectives stated above. Performance standards for substances applicable to the given operations will be adopted as appropriate.

- Category 2: Minor environmental considerations are anticipated in facilities that have been used for functions using non-hazardous materials or waste typical of common industrial operations such as machine shops, utilities and power generation. Post closure activities would include cleaning of the interior walls, floor, ceiling, structural members and utility surfaces and are envisioned to include broom or machine sweeping and or high pressure wash and corresponding disposal of materials as appropriate.

- Category 3: Spaces whose use does not include environmentally significant operations.

Performance standards for one-time compliance activities are intended to achieve the objectives stated above. In cases where RCRA closure is required by permit, the performance standards are clearly set forth in the closure plan. The performance standards relate to removal of residues of particular chemicals associated with each operation from any tanks, equipment, or foundations. Removal of residuals to these levels achieves requirements of the closure plan and in general achieves the objectives of one-time compliance stated above. Closure plans also spell out procedures to address potential soil and groundwater contamination if foundations beneath tanks show contamination.

Funding for one-time compliance is provided through the "major claimant" for NAS Alameda, Commander in Chief for Pacific Fleet (CINCPACFLT) with two exceptions. The Naval Aviation Depot (NADEP) though it is a tenant of NAS Alameda was separately considered for closure and will complete its own one-time compliance funded by its major claimant the Naval Air Systems command (NAVAIRSYSCOM). Similarly, the Public Works Center, San Francisco Bay (PWC), with facilities located at all U.S. Navy facilities in the Bay Area, will have its one-time compliance costs funded by its major claimant, Naval Facilities Engineering Command (NAVFACENGCOM).

Closure of RCRA facilities includes closure of hazardous waste storage and treatment facilities, closure of SWMUs and generator accumulation points previously identified in the NAS Alameda Part B permit as requiring RCRA corrective action, and closure of additional SWMUs, such as oil/water separators, that require further confirmation sampling upon closure. The SWMUs identified for RCRA corrective action include hazardous waste generator accumulation points, fuel spill sites, and abandoned USTs. The remaining hazardous waste generator accumulation points not identified for RCRA corrective action cannot be closed without confirmation sampling if uncontained releases occurred before closure. The following hazardous waste storage and treatment facilities under our Part B permit will require closure:

- Building 13 Hazardous Waste Storage Facility
- Yard D-13 Hazardous Waste Storage Facility
- Area 37 Structure No. 598 Hazardous Waste Storage Facility
- Building 5 Industrial Wastewater Treatment Plant (IWTP)
- Building 24 IWTP
- Building 25 IWTP
- Building 32 IWTP

RCRA closure is also required for RCRA facilities which operated under interim status as identified in the RCRA Part A permit. The following IWTPs have received Part A permits, are no longer in operation, and will require closure:

- Building 360 IWTP
- Building 410 IWTP
- S.E. Corner of Building 5
- Area 37 Tanks 1, 3, 4, 13 and 16
- Annex Area 37

A force of 100 NADEP workers will be trained by Merritt-Peralta Community College as certified pollution remediation technicians to accomplish one-time compliance. They will then perform one-time closure cleanups, when facilities close, benefitting from both extended tenure at NAS Alameda and broadened experience and training.

4.2.19 Operational Compliance Permits

The strategy for transferring RCRA permits, Clean Air Act Permits, and Clean Water Act Permits is outlined below.

4.2.19.1 Hazardous Waste Permits

Compliance activities will continue at NAS Alameda RCRA facilities. To facilitate program integration, the BCT has chosen to fulfill the substantial requirements of the RCRA facility investigation (RFI) at selected SWMUs and generator accumulation points by conducting the necessary sampling under the PEPs as part of the phase II EBS. The general strategy for RCRA facilities is similar to the strategy of coordination between the IRP and RCRA program for storage tanks. The soil and groundwater issues associated with RCRA facilities may be addressed by the IRP for (1) RCRA sites located within IRP OUs or (2) RCRA sites with contamination intermingled with IRP contamination. Essentially, there will be no RCRA facility investigations or corrective measures studies as all RFIs will be conducted as part of the PEPs.

NAS Alameda representatives met with DTSC permitting branch officials in September 1994 to discuss NAS Alameda's closure and permit strategy. NAS Alameda will continue to coordinate with appropriate regulatory agencies regarding permits throughout the downsizing, closure, and transfer activities.

4.2.19.2 Clean Air Act Permits

NAS Alameda has an air permit from the Bay Area Air Quality Management District for approximately 505 permitted or exempt stationary sources at NAS and NADEP. The community has expressed interest in transfer. To facilitate the transfer or banking of these permits, the Navy hosted a conference with Bay Area Air Quality Management District and the local reuse authority in October 1994 to discuss issues related to air permits and emission reduction credits. To promote the transfer of air permits NAS alameda will assess the decrease in emissions due to downsizing the emissions reductions. NAS Alameda will also inventory all current emissions and establish a program for the appraisal to permit banking or transfer.

In addition to the transfer of the air permit, the community is interested in the transfer of emission reduction credits. As NAS Alameda is downsized, stationary sources of emissions will decrease. These emission reductions of hydrocarbons, particulates, sulfur dioxide, nitrogen oxides, and carbon monoxide can be banked as air emission reduction credits under the Bay Area Air Quality Management District Regulation 2, Rule 4, Emission Banking. Limits on NAS Alameda's air permit indicates only similar facilities within an air district will be able to use these emission reduction credits. For example, if the Navy discontinues the use of a boiler at NAS Alameda, only another boiler operator can use the emission reduction credits. NAS Alameda, by the reduction of emissions and the improvement of facilities has banked emission reduction credits. In addition to credits earned by improvement of facilities, an inventory of current emissions sources vs. permitted emissions will be done to allow for the banking of the difference between the permitted emissions and the actual emission. Once the current status and past banking have been assessed, air permits have the potential to either be transferred or "banked". When an air permit is to be transferred it must meet all the provisions specified within the specific permit. If, based on the reuse of the facility these provision will not be met, the Navy may "bank" these emissions permits as emissions reduction credits, which

may be used at a later time by another company or organization. The potential for the transference and banking of each permit is being assessed; likewise, the current emissions and past banked credits are currently being assessed to determine the total air credits at NAS Alameda as well the total emissions at NAS Alameda.

It is the Navy's strategy to facilitate the banking and transfer of air emission reduction credits to DoD or other federal users and/or to the local reuse authority to facilitate community reuse of property.

4.2.19.3 Clean Water Act Permits

Existing NAS Alameda wastewater and storm water permits will be maintained until base closure. These permits are not transferable so the Navy provided the ARRA with copies of these permits so that a plan for similar permits may be prepared by ARRA.

4.3 NATURAL AND CULTURAL RESOURCES STRATEGY

Strategies related to natural and cultural resource at NAS Alameda are presented below.

4.3.1 Natural Resources Strategy

An important aspect of the natural resource strategy is coordinating with Alameda reuse planners to define issues related to natural resources early in the reuse planning process. The community reuse plan will be evaluated by the Navy to identify potential impacts to natural resources at NAS Alameda. This evaluation takes the form of an environmental impact statement prepared according to NEPA. According to NEPA, a finding of no significant impact is required prior to Navy approval of the reuse plan. The environmental impact statement must be completed within 12 months of receiving the community's reuse plan or at operational closure of the base, whichever occurs first.

Before beginning the formal NEPA documentation process, relevant issues will be discussed with the community. The environmental impact statement will also include further delineation of natural resources if necessary. Development of the environmental impact statement will incorporate all

available information including that information collected for the ecological assessment to be conducted as part of the IRP. Natural resources to be assessed during the environmental impact statement are described in Table 3-8.

The U.S. Fish and Wildlife Service has proposed to protect endangered species by adding a portion of the facility to a national wildlife refuge system. The U.S. Fish and Wildlife Service has requested a no-cost transfer of approximately 595 acres of base property and 375 acres of neighboring bay waters in a proposed Alameda National Wildlife Refuge for the conservation and management of the least terns and other migratory birds at Alameda. This proposal is being evaluated by the Navy along with other reuse proposals for NAS Alameda.

4.3.2 Cultural Resources Strategy

A historical district composed of 85 buildings has been identified at NAS Alameda. Under the Historic Preservation Act, all undertakings that affect land and buildings within an historic district are subject to review. Before finalizing the environmental impact statement on the reuse plan, the Navy will afford the Advisory Council on Historic Preservation the opportunity to comment on the plan to protect the historic district. The Navy is also negotiating an agreement with the Advisory Council on Historic Preservation and the California State Historic Preservation Officer for the Navy to assume responsibility for conducting routine maintenance of the historic district.

As part of the environmental impact statement, a survey will be conducted to determine whether Navy housing east of NAS Alameda qualifies as an historic resource.

4.4 ENVIRONMENTAL CONDITION OF PROPERTY STRATEGY

To implement the EBS phase II study on an accelerated schedule, sites were prioritized. The general priority can be described as follows:

- High Priority: East section of base, including on- and off-base housing
- Second Priority: Southeast corridor
- Third Priority: Remainder of base, in priority moving from east to west

Using this priority system, parcel-specific evaluation plans (PEPs) are being implemented as soon as they are approved by the BCT. RAB members have been asked to participate in the on-board review meetings held by the BCT. The PEPs, where appropriate, are incorporating sampling required by other compliance programs. For example, the EBS phase II is incorporating required screening sampling and sampling needed to fill the requirements of an RFI for SWMUs.

To further facilitate an accelerated schedule and real-time decision-making, the BCT is reviewing analytical results for each parcel as the results are received, and indicating whether (1) additional sampling (phase IIB) is required, (2) no action is necessary, or (3) the parcel should be integrated into another program.

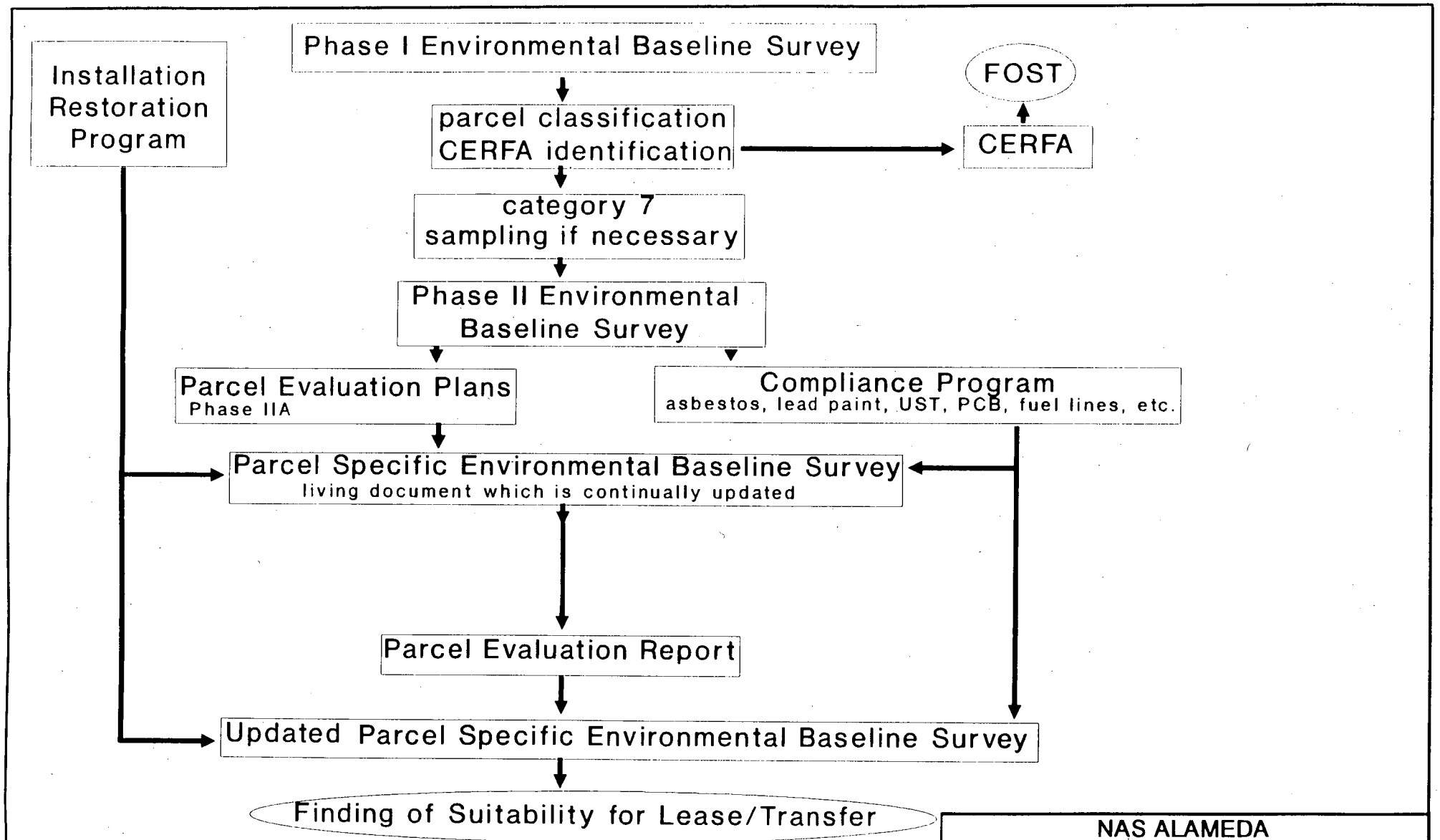
Chapter 5 presents scheduled EBS completion.

4.5 COMMUNITY INVOLVEMENT STRATEGY

NAS Alameda plans to continue implementing activities outlined in Section 3.5 and proactively solicit community involvement in the cleanup, closure, and reuse decision-making process. Fact sheets will continue to be developed; upcoming fact sheets provide an overview of the BRAC process and summarize highlights of cleanup activities recently completed or underway at NAS Alameda. These fact sheets will be distributed throughout the community through the community mailing list discussed in Section 3.5. The Navy and the BCT have facilitated workshops for understanding the CERCLA process, with plans to provide monthly presentations on document decision/review processes, early action protocols, innovative technologies and treatability studies, and other timely areas of RAB concern. The Navy has established base passes for RAB members to allow them easier access to the information repository at NAS Alameda, and set up a copy center account for copying relevant documents. With regard to future RAB activities, it is expected that the RAB focus groups will become increasingly involved in reviewing and commenting on particular components of the cleanup process, based on the specific expertise of that focus group.

Additionally, to further define community concerns, information needs, and overall interests, NAS Alameda is currently updating the existing community relations plan. The existing community

relations plan was prepared in 1989 to provide a strategy for community involvement. The community relations plan is based largely on a series of interviews with a cross section of community representatives to identify key community concerns and information needs regarding the installation restoration program. Since the time the original community relations plan was prepared in 1989, circumstances at NAS Alameda have changed: the base has been targeted for closure, community players have changed, and new issues have emerged. Therefore, NAS Alameda will conduct another round of interviews with a diverse representation of community members to update the community relations plan. In addition to outlining a strategy for effectively addressing community concerns and information needs, the community relations plan will identify aspects of the IRP in which public comment is required by law. The revised NAS Alameda community relations plan will enhance the existing community outreach program and facilitate meaningful and ongoing community involvement throughout the restoration process.



NAS ALAMEDA

FIGURE 4-1
PROGRAM INTEGRATION TO SUPPORT FOSL/FOST

PRC ENVIRONMENTAL MANAGEMENT, INC.

TABLE 4-1

NAVAL COMPLEX ALAMEDA
RELATIONSHIP BETWEEN OUs, PARCELS, AND IRP SITES

Operable Unit	Parcel[a]	IRP Site[b]
1	112, 113, 114 (20); 131, 135, 137 (17); 142, 143, 145, 146, 148, 149, 152, 210, 211, 214 (22);	3, 4, 7A, 7B, 7C, 9, 10B, 16, 19
2	12 (2); 14, 15, 22 (3); 52 (11); 54 (10); 69, 75 (13); 196 (11)	5, 6, 8, 10A, 12, 14, 15
3	1, 2, 5, 6, 7 (1); 8 (2)	1, 2
4	7 (portion)(1); 25 (5)	17, 20
Housing Areas.	37-45 (6,7,8); 60-65 (8,9); 78-109, 170,171, 179-184 (16); 187-189 (9,13); 194 (8); 203 (13); 207 (12); 212 (16); 213 (13);	None at this time
Runway Area	23 (4); 24 (5)	None at this time

IRP Installation Restoration Program
OU Operable unit

[a] Parcels listed correspond to the IRP sites included in the OUs and do no indicate potential groundwater plume area. Number in parentheses equals the Parcel Zone Designation as depicted in Table 2-2 and Figure 2-2.

[b] See also Table 3-1 for IRP site summary/descriptions, and Figure 3-1 for IRP site and OU boundaries.

TABLE 4-2

NAVAL COMPLEX ALAMEDA
ENVIRONMENTAL RESTORATION EARLY ACTIONS STRATEGY

IRP Site No.	Action	Purpose	Status
1 and 2	Treatability Study for Funnel/Gate and Biocurtain at Landfill Boundary.	• Test technology for in situ leachate treatment to prevent off-site migration of affected groundwater	• Proposal to be submitted, work to begin in 1995/96
1	Soil Removal at Site 1 Pistol Range	• Remove source of lead and copper in target soil berms	• Proposal to be submitted, work to begin in 1995/96
3	Treatability Study of Soil Vapor Extraction at AVGAS Release Site	• Pilot test of soil vapor extraction. • Reduce groundwater impact	• Proposal to be submitted, work to begin in 1995/96
4 and 5	Treatability Study of Biovalence Reduction	• Pilot test of in situ organisms to reduce valence of metals, especially chromium from plating shop releases	• Proposal to be submitted, work to begin in 1995/96
5	Removal Action at Plating Shop	• To pump and treat groundwater impacted by release of cadmium-rich fluids to surface soils • Reduce groundwater impacts	• Proposal to be submitted, work to begin in 1995
7C	Removal Action for Soils, Groundwater Treatment	• Pull leaking USTs, over excavate soils and treat, soil vapor extraction and air sparing • Reduce groundwater impacts	• Proposal to be submitted, work to begin in 1995
13	Soil Removal for Area of Greatest Refinery Impacts; Treatability Study of Enhanced and Intrusive Bioremediation	• Eliminate major area of crude oil impacts; pilot test of enhanced in situ biodegradation for areas with lesser impacts • Reduce groundwater impacts	• Proposal submitted, work to begin in 1995
14	Soil Removal at Fire Training Area	• Remove source of contaminants	• Proposal to be submitted, work to begin in 1995
16	Soil Removal at C-2 Cans Area	• Remove PCB affected soils	• Proposal to be submitted, work to begin in 1995
17	Treatability Study of Seaplane Lagoon Sediment	• Evaluate treatment technologies and biochemistry of Seaplane Lagoon sediments	• Proposal to be submitted, work to begin in 1995
18	Sediment Removal from Selected Storm Sewer Lines	• Remove impacted sediments	• Proposal to be submitted, work to begin in 1995

AVGAS Aviation Gasoline
EE/CA Engineering Evaluation/Cost Analysis
IMF Intermediate Maintenance Facility
NAS Naval Air Station
PCB Polychlorinated Biphenyl
UST Underground Storage Tank

CHAPTER 5
ENVIRONMENTAL PROGRAM MASTER SCHEDULES

This chapter presents the master schedules of anticipated activities in NAS Alameda's environmental programs. The master schedules are simplified from detailed schedules developed to support site-specific work plans and compliance agreements. A schedule presenting a simplified overview of major environmental programs and reuse planning for base closure at Naval Air Station (NAS) Alameda is presented in Figure 5-1. Installation Restoration Program (IRP) activities at each operable unit (OU) are graphically summarized in Figure 5-2. Schedules for compliance programs and natural and cultural resource activities are presented as Figures 5-3 and 5-4 respectively. The NAS Alameda environmental condition of property schedule is summarized in Figure 5-5.

5.1 ENVIRONMENTAL RESTORATION PROGRAM

This section presents the master restoration schedule for the IRP and the fiscal year (FY) requirements for completing that schedule. An IRP summary schedule (Figure 5-2) is presented by OU. The detailed schedule illustrates the required steps toward cleanup as well as the critical paths so that delays can be avoided.

5.1.1 Response Schedules

Figure 5-2 shows the master restoration schedule for completing the IRP activities at NAS Alameda, covering FY 1994 through FY 2000. The schedules are presented by OU. NAS Alameda's ability to meet the milestones shown on Figure 5-1 is contingent upon (1) completion of the follow-on field investigations; (2) successful completion of several treatability studies being conducted in 1995 and 1996; (3) successful coordination between the BRAC cleanup team (BCT) members, the restoration advisory board (RAB), and the compliance program task force; and (4) availability of funding to implement the environmental programs. Since the IRP and compliance cleanup activities will be integrated to facilitate the cleanup process at all sites, this coordination is a key planning component for future restoration activities. The incorporation of RCRA sites in the IRP will be determined by the BCT. The restoration schedule shown in Figure 5-1 addresses only the IRP sites associated with

each OU and may change with the inclusion of RCRA sites or other non-IRP sites, based upon the results of the parcel evaluation plans (PEP) field work being conducted as part of the Phase II environmental baseline survey.

The progress of the environmental cleanup activities at NAS Alameda will be reviewed annually after the federal facilities site remediation agreement (FFSRA) is signed; the master restoration schedule will be formally updated at that time. Working schedules will be updated every 6 months as part of a mid-year update of important issues for inclusion in the annual BCP update.

The project schedules for the OUs reflect agency review times and Navy turnaround times specified in the FFSRA. The schedules are developed based on the following major assumptions:

- Draft Primary Documents - The FFSRA does provide for the establishment of shorter schedules by mutual agreement. This schedule assumes 60 days for review and comment by the agencies and 30 days for the Navy to prepare responses and submit a draft final document. These documents are as follows:

  - Remedial investigation and feasibility study (RI/FS) work plan
  - Health and safety plan
  - RI report
  - FS report
  - Base-wide risk assessment
  - Risk assessment report
  - Interim record of decision (ROD)
  - Final ROD

- Final Primary Documents - 30 days for review by the agencies and 15 days for the Navy to prepare the final document after close of a formal or informal dispute resolution if one is invoked. If no comments are received by the Navy within the 30-day review period, the document will become final unless an extension is requested by the agencies in accordance with the FFSRA. For the purpose of scheduling, it was assumed that draft final primary documents would not result in dispute during the review period.

- Draft Secondary Documents - 30 days for review and comment by the agencies and 30 days for the Navy to prepare responses and submit a draft final document. These documents are:

- Engineering evaluation/cost analysis
- Follow-on field sampling plans
- Public notice

- The duration for the remedial design activities shown in the schedule for each OU is assumed based on existing information and potential remediation. Each assumed duration is within the CERCLA requirement, Section 120(e)(2), for the commencement of remedial action activities within 15 months following the ROD.
- Duration of quarterly sampling and laboratory analyses is approximately 90 days.
- Only one round of follow-on field work is needed for the completion of RI/FS work.
- One additional round of ecological assessment work will be required.
- Treatability studies can be completed within 120 calendar days.

The Navy recognizes the need to redirect and rescope investigations and response actions to accommodate new information or as RCRA sites are incorporated into the IRP as the investigations and cleanup activities progress. Therefore, the progress of the environmental cleanup activities at NAS Alameda will be reviewed annually after the FFSRA is signed, and updates to the BCP will be developed annually in consultation with the Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB).

5.1.2 Funding Requirements by Fiscal Year

The detailed funding estimates by fiscal year are contained within Appendix A (Note: budget data are currently being developed and will be provided in May 1995). Funding requirements are displayed by fiscal year for the IRP, environmental compliance programs, and one-time compliance. The plan is consistent with the budgetary allocations for FY 95. Overall, the funding estimates shown in Appendix A reflect early action strategies discussed in Chapter 4. The funding requirements are dependent on the FFSRA schedule which extends through cleanup completion and includes a mechanism for an annual update consistent with the timing of the federal budget process.

Funding estimates for all fiscal years were made on a site-by-site basis using a set of standard engineering and technical assumptions widely accepted in the environmental restoration field. Estimates are based on existing sampling data regarding the type and location of contamination, the affected media (i.e. soil, sediments, groundwater or surface water), and presumptive remedies using applicable remedial technologies. These estimates are appropriate for the investigation and restoration of sites affected by the types of constituents of concern known to be present at these sites. For example, based on investigative analytical results collected to date, assumptions can be made about which sites will require some form of soil or groundwater remedial action. Funding estimates for soil or groundwater remedial actions were made based on the relative size (volume) of the affected media needing remediation and costs for similar cleanups at other Navy and DoD facilities using best available remedial technologies.

Key to projecting funding estimates is the consideration of resource allocation (known and projected) and scheduling of all environmental restoration activities consistent with projected reuse activities. The NAS Alameda BCT has generated funding estimates that represent a fully executable plan and reflect assumptions made for conducting and completing all environmental restoration activities required for the final cleanup of NAS Alameda. Resource requirements are supported by the NAS Alameda site management plan, to be included as part of the future FFSRA.

As projected in the funding estimates, the NAS Alameda BCT has and continues to look for opportunities for early actions that might reduce overall project costs by reducing dollars spent for remedial design/remedial action activities (1997 and beyond). The advantages of this approach are that cleanup occurs sooner, the protection of human health and the environment is maintained, and findings of suitability to transfer (FOST) determinations can be made earlier in support of future economic redevelopment. Opportunities for acceleration of early actions reflected in these estimates include continuation of removal action activities at targeted IRP sites and the use of innovative technologies to initiate treatability studies.

By conducting treatability studies early, remedy selection is optimized and this has the potential for ultimately reducing costs for remedial actions after ROD. A bias to introduce innovative treatment technologies early in the process is consistent with 40 CFR 300.430 (e)(5) "if those technologies offer

the potential for comparable or superior performance or implementability; fewer or lesser adverse impacts than other available approaches; or lower costs for similar levels of performance for demonstrated treatment technologies." Accelerated investment in innovative treatment technologies and other early actions is a foresighted approach that shortens the time required to clean up the facility and to restore parcels for community reuse, ultimately shortening the life cycle of the project and reducing overall budget requirements.

5.2 COMPLIANCE PROGRAMS

The master compliance program schedule for NAS Alameda is presented as Figure 5-3. A compliance program task force has been established to develop procedures for integrating RCRA sites into the IRP cleanup activities where doing so will facilitate the cleanup and transfer of property. As discussed previously, the Navy will use PEP strategy (see Chapter 4) to redirect and rescope investigations and integrate response actions to accommodate new EBS information as RCRA sites and other parcels are considered for incorporation into the IRP.

5.3 NATURAL AND CULTURAL RESOURCES

Schedules for natural and cultural resources are presented in Figure 5-4.

5.4 ENVIRONMENTAL BASELINE SURVEY

Figure 5-5 shows the schedule for completing the EBS. Completion of the EBS is an important component in the BRAC cleanup process. Results from the EBS will be evaluated and will be incorporated in any redirecting or rescoping of site cleanup activities.

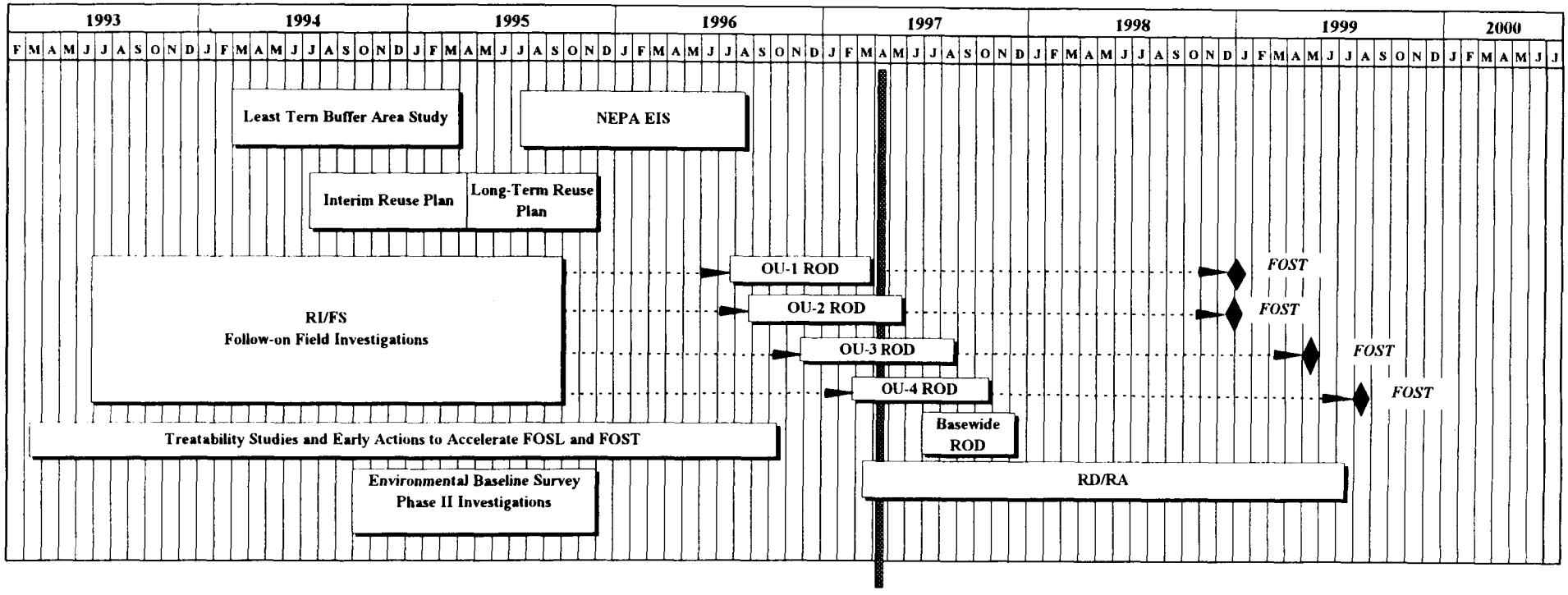
5.5 MEETING SCHEDULE

Meetings are scheduled as required by the applicable process or as mandated by the FFSRA. Meetings are typically held as follows:

- Remedial project manager meetings - monthly (or more often as needed)
- Document presentation meetings - within 10 days of document submittal
- Technical and issue resolution meetings - as necessary to facilitate progress of EBS, IRP or compliance activities
- RAB meetings - once a month on the first Tuesday evening of the month, with RAB focus group meetings held separately as needed

FIGURE 5-1

NAVAL COMPLEX ALAMEDA, PROGRAM INTEGRATION FOR BASE CLOSURE

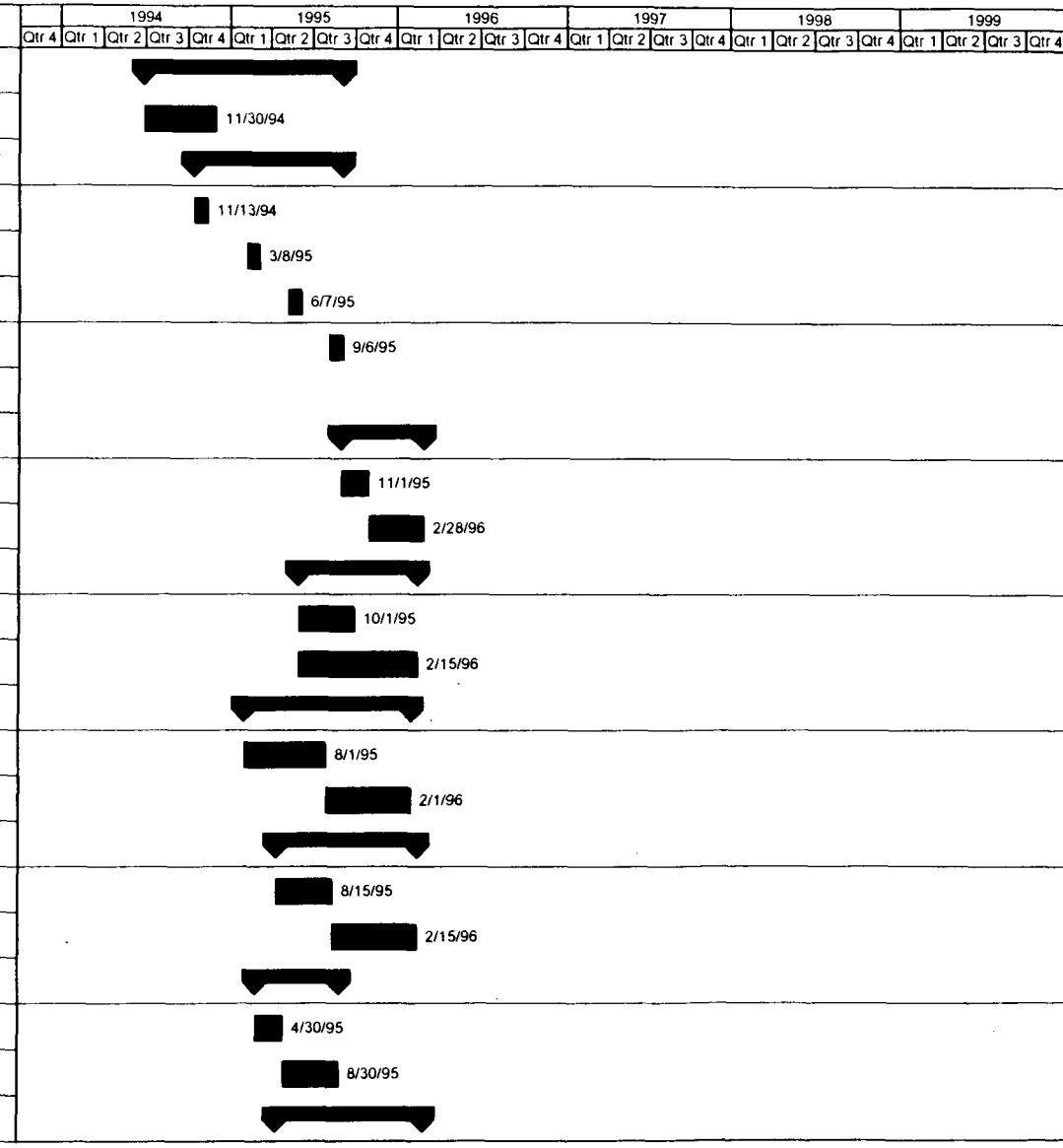


EIS - Environmental Impact Statement
FOSL/FOST - Finding of Suitability to Lease/Transfer
NEPA - National Environmental Policy Act, as amended
OU - Operable Unit
RD/RA - Remedial Design/Remedial Action
RI/FS - Remedial Investigation/Feasibility Study
ROD - Record of Decison

FIGURE 5-2

NAS ALAMEDA MASTER SCHEDULE INSTALLATION RESTORATION PROGRAM

ID	Task Name	Duration	Start
1	**Operable Unit (OU) #1 - Sites: 3, 4, 7A, 7B, 7C, 9, 10B, 11, 13, 16, 19**	**436.38ed**	**6/27/94**
2	RI/FS Follow-On Field Work	156 38ed	6/27/94
3	**Quarterly Groundwater Sampling**	**327.38ed**	**10/14/94**
4	1st Quarter	30 38ed	10/14/94
5	2nd Quarter	30 38ed	2/6/95
6	3rd Quarter	30 38ed	5/8/95
7	4th Quarter	30 38ed	8/7/95
8	Early Actions (Removals/Interim Remedial Measures)	0d	NA
9	**Site 3**	**180.38ed**	**9/1/95**
10	Bench Scale Treatability Study	60ed	9/1/95
11	Pilot Test	120ed	11/1/95
12	**Site 4**	**259.38ed**	**6/1/95**
13	Bench Scale Treatability Study	89 38ed	6/1/95
14	Pilot Test	276 38ed	6/1/95
15	**Site 7A**	**365.38ed**	**2/1/95**
16	EE/CA	181 38ed	2/1/95
17	Removal	215 38ed	8/1/95
18	**Site 7C**	**307.38ed**	**4/14/95**
19	EE/CA	120 38ed	4/14/95
20	Removal	276 38ed	8/15/95
21	**Site 13**	**182.38ed**	**3/1/95**
22	Pilot Test Well	60ed	3/1/95
23	Pilot Test Treatability Study	120ed	4/30/95
24	**Site 16**	**321.38ed**	**4/15/95**



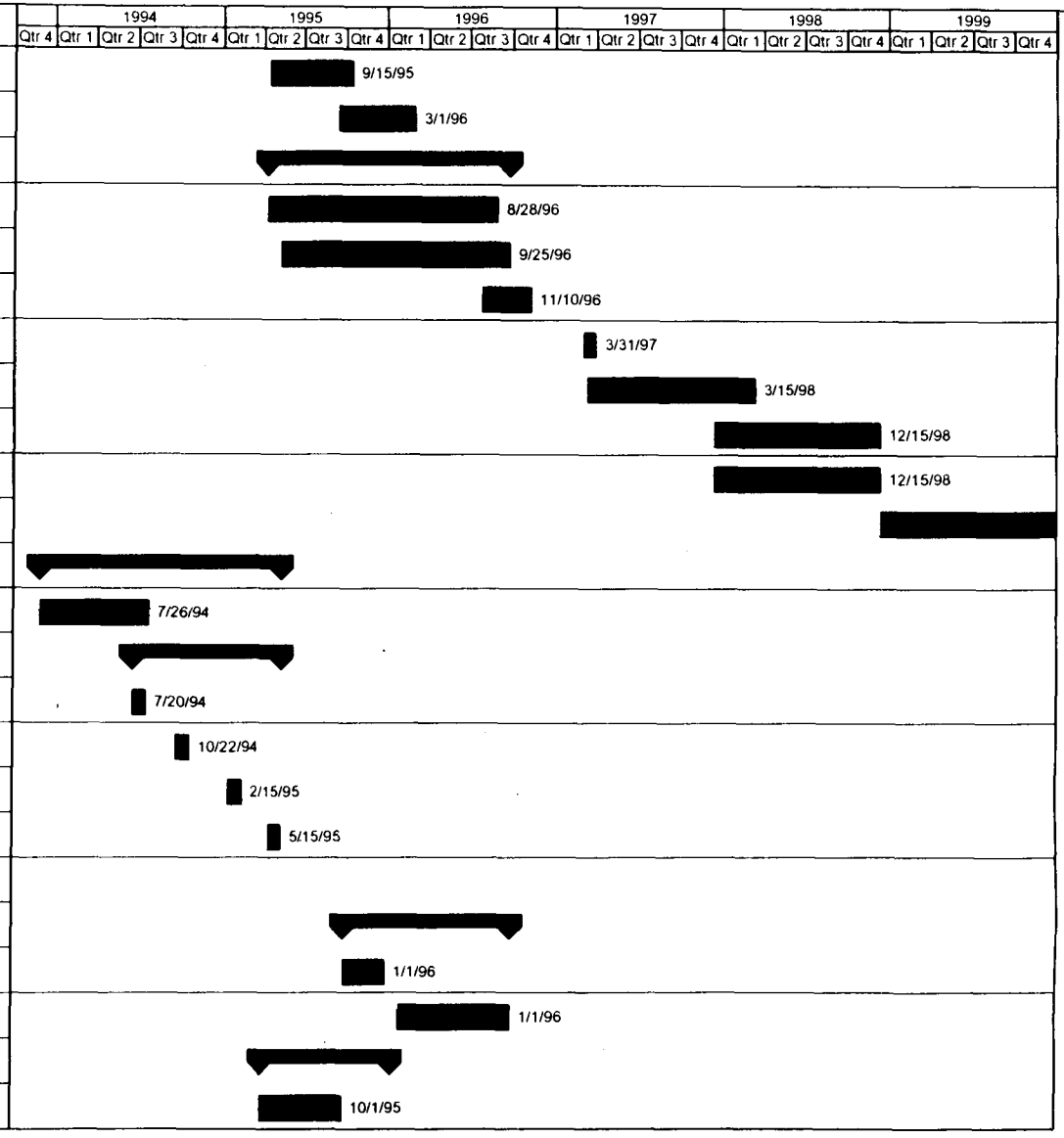
Project: NAS ALAMEDA
Date: 03/2/95

Milestone ◆ Normal Summary

FIGURE 5-2

NAS ALAMEDA MASTER SCHEDULE INSTALLATION RESTORATION PROGRAM

ID	Task Name	Duration	Start
25	EE/CA	184.38ed	4/15/95
26	Removal	213.38ed	9/15/95
27	**RI/FS**	**533.38ed**	**4/11/95**
28	OU-1 Remedial Investigation (RI) Report	503.38ed	4/11/95
29	OU-1 Feasibility (FS) Report	501.38ed	5/13/95
30	Draft OU-1 ROD	105.38ed	7/27/96
31	Final OU-1 ROD	25.38ed	3/6/97
32	Remedial Design	365.38ed	3/15/97
33	Remedial Action	365.38ed	12/15/97
34	System Construction	365.38ed	12/15/97
35	System Operation and Maintenance	365.0ed	12/15/98
36	**Operable Unit# 2 (OU-2); Sites 5, 6, 8, 10A, 12, 14, 15, 18**	**531.38ed**	**11/30/93**
37	RI/FS Follow-On Field Work	238.38ed	11/30/93
38	**Quarterly Sampling**	**329.38ed**	**6/20/94**
39	1st Quarter	30.38ed	6/20/94
40	2nd Quarter	30.38ed	9/22/94
41	3rd Quarter	30.38ed	1/15/95
42	4th Quarter	30.38ed	4/16/95
43	Early Actions (Removals/RemedialActions)	0d	NA
44	**Site 5**	**366.38ed**	**10/1/95**
45	EE/CA	120.38ed	10/1/95
46	Removal or Pilot Test	306.38ed	2/1/96
47	**Site 14**	**289.38ed**	**4/1/95**
48	EE/CA	120.38ed	4/1/95



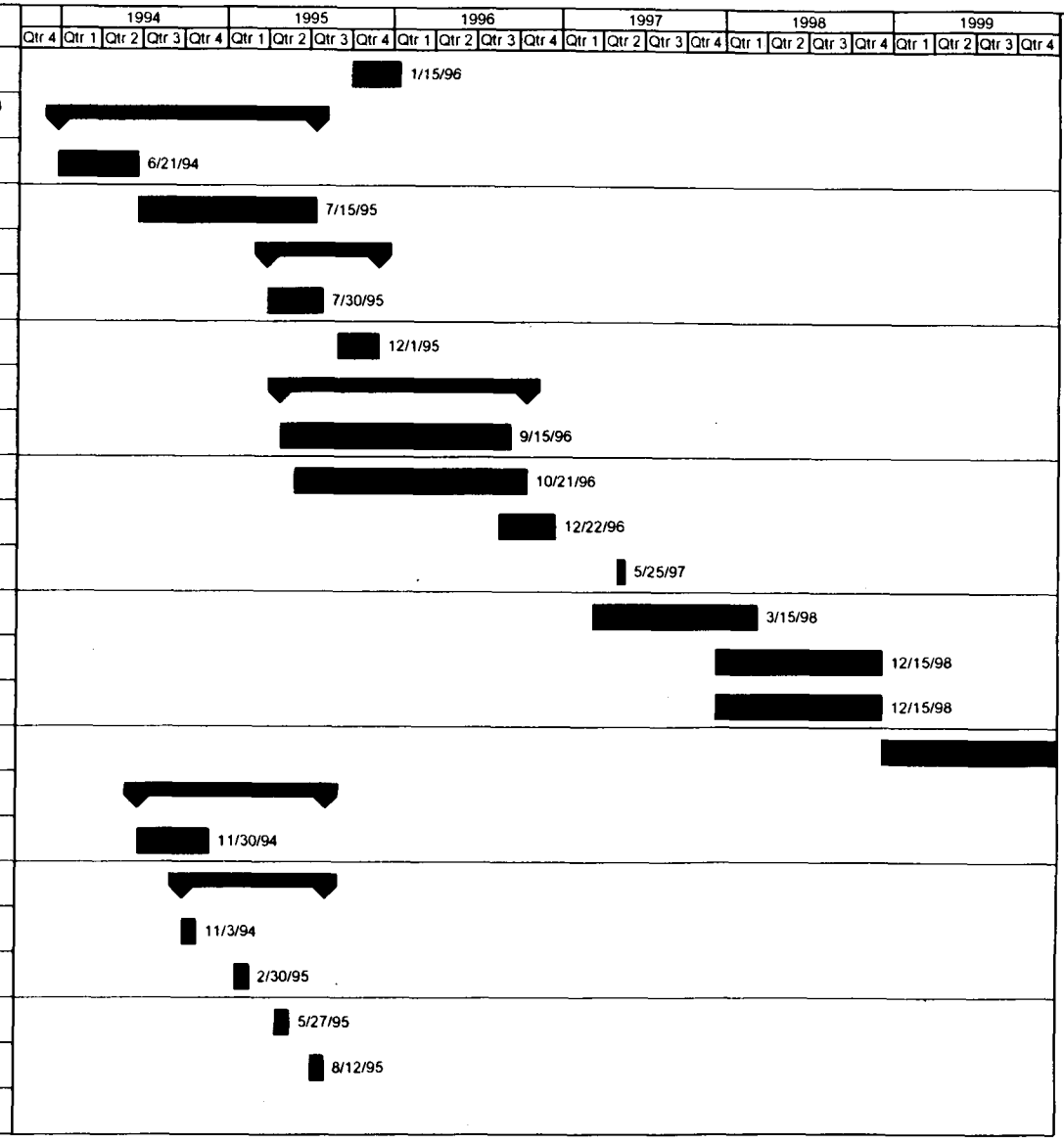
Project: NAS ALAMEDA
Date: 03/2/95

Milestone ◆ Normal Summary

FIGURE 5-2

NAS ALAMEDA MASTER SCHEDULE INSTALLATION RESTORATION PROGRAM

ID	Task Name	Duration	Start
49	Removal	275 38ed	10/1/95
50	**Site 15**	**565.38ed**	**12/27/93**
51	EE/CA	176 38ed	12/27/93
52	Removal	498 38ed	6/21/94
53	**Site 18**	**244.38ed**	**4/1/95**
54	EE/CA	120ed	4/1/95
55	Removal	183 38ed	9/1/95
56	**RI/FS**	**539.38ed**	**5/1/95**
57	OU-2 Remedial Investigation (RI) Report	510 38ed	5/1/95
58	OU-2 Feasibility (FS) Report	508 38ed	6/1/95
59	Draft OU-2 ROD	105 38ed	8/22/96
60	Final OU-2 ROD	18 38ed	5/7/97
61	Remedial Design	365 38ed	3/15/97
62	Remedial Action	365 38ed	12/15/97
63	System Construction	365 38ed	12/15/97
64	System Operation and Maintenance	3650d	12/15/98
65	***Operable Unit #3 (OU-3); Sites 1, 2***	**411.38ed**	**6/27/94**
66	RI/FS Follow-On Field Work	156 38ed	6/27/94
67	**Quarterly Sampling**	**312.38ed**	**10/4/94**
68	1st Quarter	30 38ed	10/4/94
69	2nd Quarter	30 38ed	1/27/95
70	3rd Quarter	30 38ed	4/27/95
71	4th Quarter	30 38ed	7/13/95
72	Early Actions (Removals/RemedialAction)	0d	NA



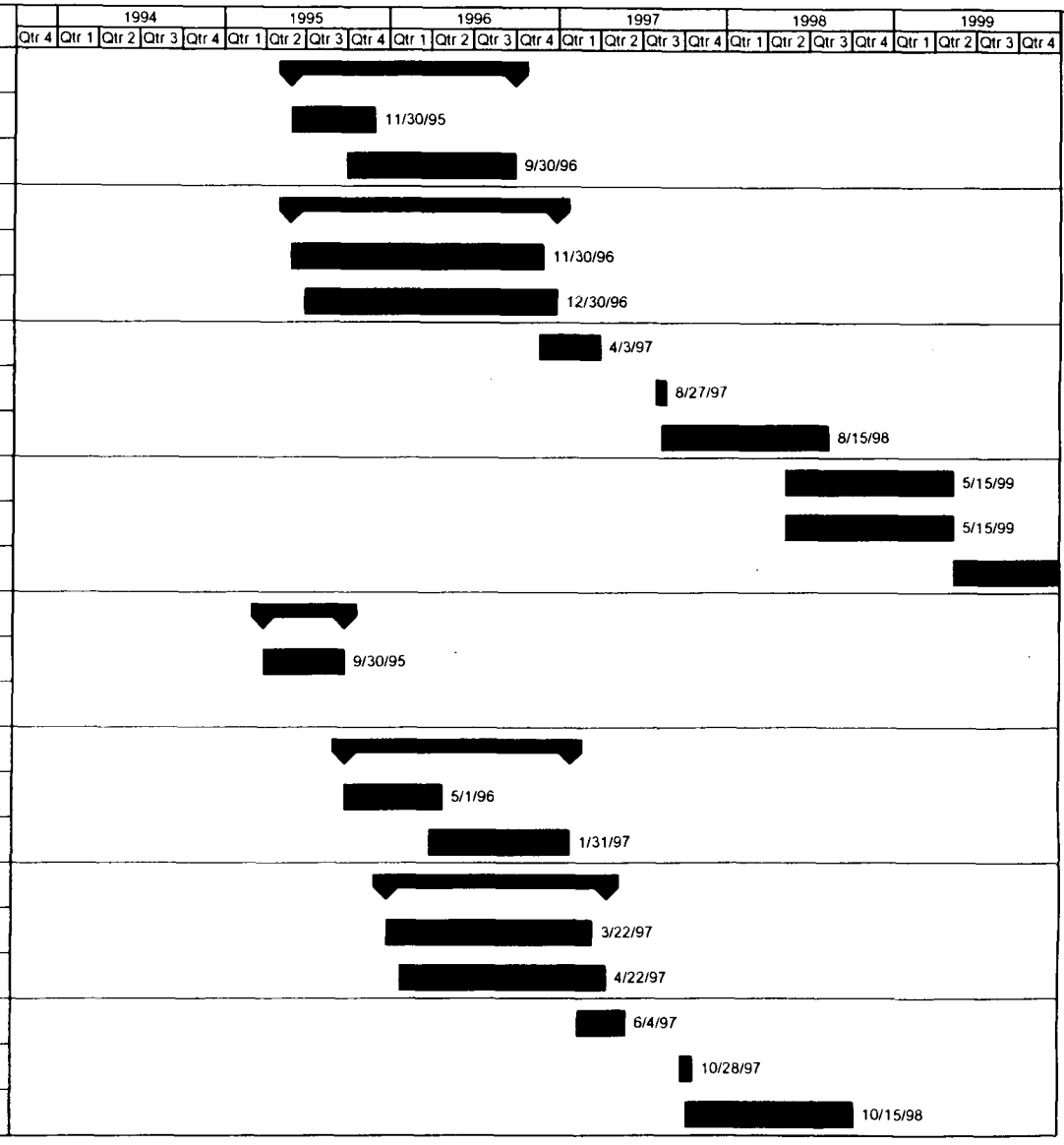
Project: NAS ALAMEDA
Date: 03/2/95

Milestone ◆ Normal Summary

FIGURE 5-2

NAS ALAMEDA MASTER SCHEDULE INSTALLATION RESTORATION PROGRAM

ID	Task Name	Duration	Start
73	**Site 1**	**487.38ed**	**6/1/95**
74	Bench Scale Treatability Study	181 38ed	6/1/95
75	Pilot Test Treatability Study	366 38ed	10/1/95
76	**RI/FS**	**578.38ed**	**6/1/95**
77	OU-3 Remedial Investigation (RI)Report	543 38ed	6/1/95
78	OU-3 Feasibility (FS) Report	543 38ed	7/1/95
79	Draft OU-3 ROD	133 38ed	11/23/96
80	Final OU-3 ROD	25 38ed	8/2/97
81	Remedial Design	365 38ed	8/15/97
82	Remedial Action	365.38ed	5/15/98
83	System Construction	365 38ed	5/15/98
84	System Operation and Maintenance	3650ed	5/15/99
85	**Operable Unit #4 (OU-4); Sites: 17, 20, West Beach Wetland, Runway**	**182.38ed**	**4/1/95**
86	RI/FS Follow-On Field Work (Ecological Assessment Follow-On)	182 38ed	4/1/95
87	Early Actions (Removals/Remedial Action)	0d	NA
88	**Site 17**	**488.38ed**	**10/1/95**
89	Bench Scale Treatability Study	214 38ed	10/1/95
90	Pilot Test Treatability Study	366 38ed	4/1/96
91	**RI/FS**	**477.38ed**	**1/1/96**
92	OU-4 Remedial Investigation (RI) Report	447 38ed	1/1/96
93	OU-4 Feasibility (FS) Report	447 38ed	2/1/96
94	Draft OU-4 ROD	105 38ed	2/20/97
95	Final OU-4 ROD	27 38ed	10/1/97
96	Remedial Design	365 38ed	10/15/97



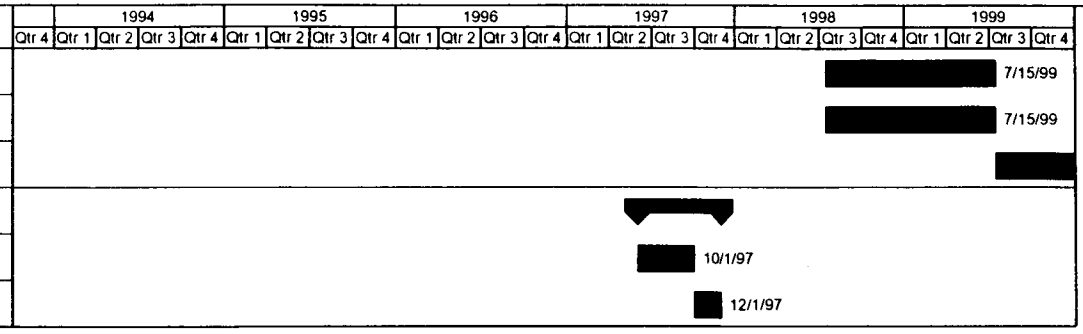
Project: NAS ALAMEDA
Date: 03/2/95

Milestone ◆ Normal Summary

FIGURE 5-2

NAS ALAMEDA MASTER SCHEDULE INSTALLATION RESTORATION PROGRAM

ID	Task Name	Duration	Start
97	Remedial Action	365 38ed	7/15/98
98	System Construction	365 38ed	7/15/98
99	System Operation and Maintenance	3653 38ed	7/15/99
100	**Basewide ROD**	**183.38ed**	**6/1/97**
101	Draft Basewide ROD	120d	6/1/97
102	Final Basewide ROD	60d	10/1/97



Project: NAS ALAMEDA
Date: 03/2/95

Milestone ◆ Normal Summary

FIGURE 5-3

NAS ALAMEDA MASTER SCHEDULE - COMPLIANCE PROGRAMS

ID	Task Name	Duration	1993 (M J J A S O N D) / 1994 (J F M A M J J A S O N D) / 1995 (J F M A M J J A S O N D) / 1996 (J F M A M J J A S O N D) / 1997 (J F M A M J J A S O N D J F)
1	**Storage Tanks**	**241.38ed**	
2	Removal of inactive USTS	241 38ed	[redacted] Aug 1, 1994 - March 30, 1995
3	UST Removal Report	1d	◆ March 30, 1995
4	**Removal of fuel lines**	**0d**	
5	**PCBs**	**0.38ed**	◆ Dec 21, 1994
6	Survey of PCB oil in secondary transformers	0 38ed	◆ PCB Transformer Survey and Test Results Report by Navy Public Works Center
7	PCB Soil Sampling	1d	(To be conducted as part of the EBS)
8	**Asbestos**	**334.38ed**	
9	Survey	184 38ed	[redacted] July 1, 1994 - Jan 1, 1995
10	Survey Report	1 38ed	◆ Preliminary Report Feb 28, 1995
11	Final Report	1d	◆ May 31, 1995
12	Asbestos Remediation	0d	*(As needed only in area where asbestos is deemed damaged, exposed or friable)*
13	**RCRA Facilities**	**0.38ed**	
14	RFI Sampling	0d	(To be conducted as part of EBS)
15	**Lead Based Paint**	**0ed**	
16	Basewide Survey (only at residential structures)	0d	To be performed by Public Works Center

Project: NAS ALAMEDA
Date: 03/2/95

Milestone ◆ Normal [redacted]

FIGURE 5-3

NAS ALAMEDA MASTER SCHEDULE - COMPLIANCE PROGRAMS

ID	Task Name	Duration	1993	1994	1995	1996	1997
			M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D	J F M A M J J A S O N D J F
17	One-Time Compliance	1459 38ed		Jan 1, 1994 - Dec 12, 1997			

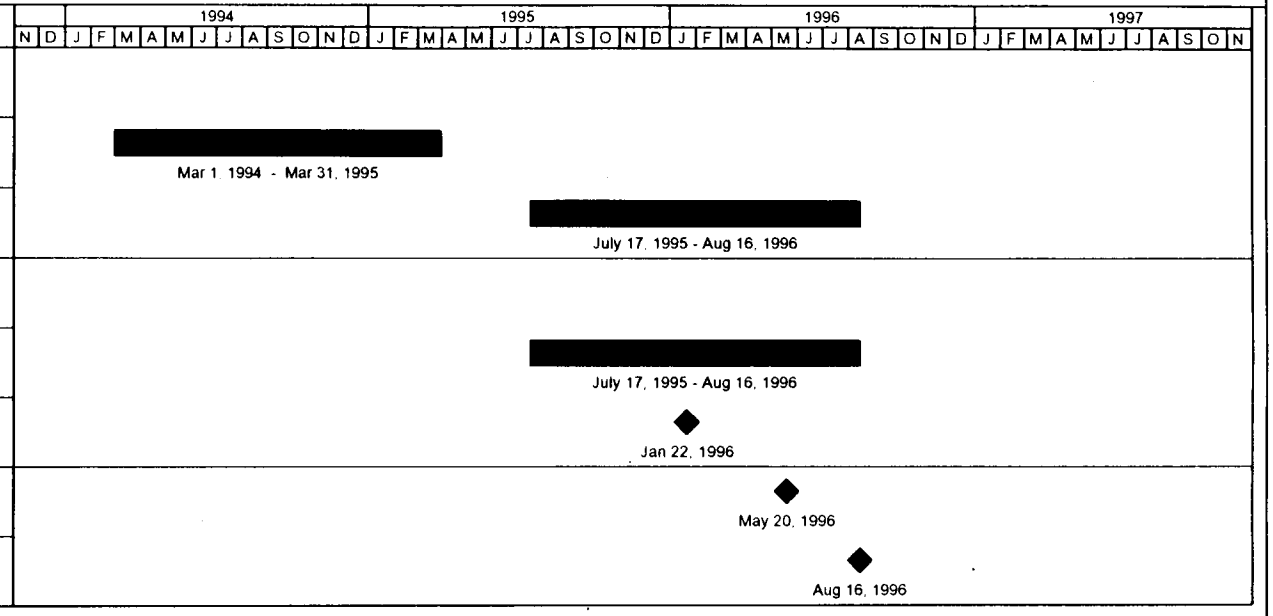
Project: NAS ALAMEDA
Date: 03/2/95

Milestone ◆ Normal

FIGURE 5-4

NAS ALAMEDA MASTER SCHEDULE - NATURAL AND CULTURAL RESOURCES SUMMARY

ID	Task Name	Duration	Start
1	**Natural Resources**	**899.38ed**	**3/1/94**
2	California Least Tern/Nesting Site Evaluation	395.38ed	3/1/94
3	Environmental Impact Statment	396.38ed	7/17/95
4	**Cultural Resources**	**396.38ed**	**7/17/95**
5	Environmental Impact Statement	396.38ed	7/17/95
6	Draft EIS	1d	1/22/96
7	Final EIS	1d	5/20/96
8	Distribute ROD and EIS	1d	8/16/96



Project: NAS ALAMEDA
Date: 02/27/95

Milestone ◆ Normal

FIGURE 5-5

NAS ALAMEDA MASTER SCHEDULE ENVIRONMENTAL CONDITIN OF PROPERTY

ID	Task Name	Schedule
1	Environmental Baseline Survey	
2	**Phase I**	
3	Final Phase I report	October 31, 1994
4	Final DoD CERFA Report	October 31, 1994
5	**Phase II**	
6	Preparation, Evaluation, and Approval/Parcel-Specific Evaluation Plans	Aug 1, 1994 - May 19, 1995
7	Phase IIA PEPs Implementation	Nov 1, 1994 - July 31, 1995
8	Phase IIB sampling if necessary	Dec 1, 1994 - Sept 30, 1995
9	Draft Phase II Report	Sept 1, 1995
10	Final Phase II Report	Dec 1 1995

Project: NAS ALAMEDA
Date: 03/2/95

Milestone ◆ Normal

CHAPTER 6

TECHNICAL AND OTHER ISSUES TO BE RESOLVED

This section summarizes technical and other issues at Naval Air Station (NAS) Alameda related to environmental cleanup and property reuse. The topics stated by the major headings are provided by the Department of Defense (DoD) guidebook for preparing the BRAC cleanup plan (BCP). The BRAC cleanup team (BCT) has discussed each of the topics as they relate to the closure of NAS Alameda. In some cases, specific unresolved problems have been identified that might affect base closure. However, in other cases, issues related to the topic have already been resolved or have not arisen. To be consistent with the BCP guidebook, a discussion of each topic is presented as it relates to NAS Alameda even if the issues have been resolved or have not been encountered.

For consistency with the BCP guidebook, the format for this section identifies specific issues for each topic, presents a resolution strategy for each issue, and lists any required action items.

6.1 DATA USABILITY

Issue 1: Data quality assurance/quality control (QA/QC) requirements may affect data usability.

Resolution Strategy:

There are six primary sources of restoration and cleanup data at NAS Alameda:

- Existing Installation Restoration Program (IRP) data collected by Canonie
- Existing non-IRP data collected by other contractors
- Existing IRP data collected by PRC Environmental Management, Inc. and Montgomery Watson (PRC team)
- IRP data collected for the ecological assessment
- Future non-IRP data
- Future IRP data

The status and strategy for data usability are summarized below.

- Data collected by Canonie for the initial field investigation phases of the remedial investigation (RI) have been entered in an electronic database. The data were collected in accordance with the RI/feasibility study (FS) quality assurance project plan and QA/QC plan (Canonie 1990b) approved by the Department of Toxic Substances Control (DTSC).

- The availability of historical data collected by other contractors in electronic format has not been determined and is not likely to exist.

- Existing IRP data collected by the PRC team were analyzed by a DTSC-certified laboratory. The analyses, data reporting, and validation were performed according to the Navy Level D QC program. The data are stored in electronic format.

- Data collection for the ecological assessment was conducted in accordance with a DTSC-approved work plan (PRC 1992). The data are stored in electronic format.

- All future IRP data will be analyzed by a DTSC-certified laboratory. The analyses, data reporting, and validation will be performed according to the Navy Level D QC program.

- Electronic data submittal from the laboratory will be required for all future data collected.

- All historical data, if appropriate, will be loaded into an electronic format, and new data will be entered into a central data management system.

Data quality requirements are addressed in the quality assurance project plan. The required data quality has been specified by data quality objectives (DQO) which were developed by data users during the RI/FS work plan preparation to support decision making. The quality assurance project plan provides specific QA policies, organization, objectives, and QA procedures to be followed during field and analytical activities.

The NAS Alameda quality assurance project plan was revised (in draft status) to incorporate updated laboratory capabilities and new detection limits required by DTSC (DTSC 1993c). The revised quality assurance project plan has been distributed to the environmental baseline survey (EBS) and the remedial action contract (RAC) contractors to insure consistent data quality for all project sampling activities. These data will be usable for site characterization and risk assessment purposes.

Action Items:

1. Data quality and usability must be evaluated by the BCT for use in risk assessments, background level determination, contaminant plume delineation, remedial technology evaluation and selection, classification of the environmental condition of property, and overall project decision-making.

2. The project team will evaluate quality of Canonie IRP data.

6.2 DATA INTEGRATION AND MANAGEMENT

Issue 1: Project team members need access to all site data to support on-site decision making.

Resolution Strategy:

A draft data management plan was issued on October 24, 1994 to document data management needs, document data management functional requirements, propose a data management and GIS, and provide a preliminary scoping of the data management system. The NAS Alameda project team is implementing a data management plan and geographic information system (GIS) in support of NAS Alameda investigation, remediation, and closure. The requirements for the NAS Alameda base closure stress real-time decision making. This type of capability can be derived from a user-interactive GIS. ARC/INFO GIS software will be used which will meet the following criteria:

- Provide direct link to the attribute database stored in the Oracle attribute database.
- Provide full topological data storage and organization of spatial objects, both thematically and spatially.
- Generate high quality graphics.
- Provide tools for development of query stations for Navy, regulatory personnel, and Navy CLEAN contractor.
- Provide data in a format suitable for transfer to regulatory agencies.

Data volume and data format will impact the time it takes to set up a functional relational database management system (RDBMS). The RDBMS maintains all the information about a spatial object displayed by the GIS. The RDBMS design and programming (stored code for internal consistency) has been completed. All spatial coverage for the GIS have been established. Input of site data into the RDBMS is ongoing. The GIS is expected to be operational beginning February 1995 to support the NAS Alameda RI/FS preparation. In February 1995, the data from the southeastern portion of the base will be loaded into the database and the GIS can be applied to this region.

Issue 2: The data management system should be designed to accommodate and centralize data from multiple sources.

Resolution Strategy:

A data format for analytical data deliverables has been established to produce data that are compatible with the data management system and GIS. The data format requirements have been distributed to the EBS and RAC contractors to produce project-wide data consistency and management.

Action Items:

1. Canonie historical IRP data and PRC RI data will be input into the GIS.
2. EBS and RAC data will be input into the GIS.
3. Compliance program data will be evaluated for incorporation into the GIS.
4. Appropriate GIS training will be conducted.

6.3 DATA GAPS

Issue 1: Data gaps must be addressed to determine the environmental condition of property.

Resolution Strategy:

A strategy has been developed for addressing data gaps in determining the environmental condition of property. The environmental assessment approach for BRAC category 7 parcels is included in

Appendix E and has been and is being implemented in phase I and II of the EBS. The strategy for the EBS phases I and II and the site-specific EBSs are presented in Section 2.7, and EBS integration into ongoing programs is discussed in Chapter 4.

Issue 2: Data gaps must be addressed to determine the nature and extent of contamination.

Resolution Strategy:

BCT meetings and other meetings among Navy and regulatory agency project managers will continue to be used to resolve data gap issues before additional field work takes place. For each data gap, the need for additional information will be evaluated with regard to the endangerment of human health or the environment, cost, and its impact to the schedule of remedial activities. This coordination process is in place at NAS Alameda and will continue as an integral part of the IRP and environmental compliance program.

Field and ecological investigations have been completed for the IRP sites at NAS Alameda. Results of the initial investigation indicate that additional work needs to be done as follow-on to the ecological investigation. In addition, evaluation of the compliance programs has revealed data gaps that need to be addressed. An environmental program integration strategy designed to address all data gaps and eliminate overlapping program phases is presented in Chapter 4. The integration strategy includes coordinating the IRP, the EBS, and the compliance programs such as RCRA, UST, PCB transformers, asbestos, lead paint and others.

Action Items:

1. Additional work must be conducted to complete the ecological assessment of the aquatic sites (Sites 17 and 20, and wetlands).

2. Additional groundwater monitoring in the first and second water-bearing zones of the first aquifer is required to complete the characterization of the groundwater conditions at IRP sites and to assess whether adjacent parcels are affected.

3. Four quarterly groundwater sampling events are required to address the seasonal variability of groundwater quality and movement underneath the IRP sites.

4. Field screening and sampling are required at the PCB transformer sites to assess impact to soils and groundwater from spills or leaks of oil at these locations.

5. A basewide asbestos survey is being conducted to identify asbestos containing material present in buildings.

6. A RCRA facility investigation (RFI) is required to demonstrate compliance with the RCRA Part B permit. The RFI is being conducted during the EBS PEP field work.

7. Phase II of the EBS will be completed to evaluate and update the environmental condition of property of all parcels.

8. Storm water sampling is required to demonstrate compliance with the storm water permit.

9. An assessment and sampling are required at the oil/water separator sites to assess environmental impact to soils and groundwater from spills or leaks of oily wastewater.

10. A basewide lead-based paint survey is required to identify building materials with lead paint.

11. A radiation survey may be required to address radiological concerns.

12. RIs may be required for some parcels investigated in the PEPs.

6.4 BACKGROUND LEVELS

Issue 1: Basewide or site specific background values for soil and groundwater need to be determined.

Issue 2: Background values for fill areas versus native soil areas need to be established.

Resolution Strategy:

Soil and groundwater samples have been collected at NAS Alameda that may be considered as background. These are as follows: (1) soil and groundwater samples collected from four shallow monitoring wells located in the eastern portion of NAS Alameda, (2) soil and groundwater samples from 11 shallow and four deep wells installed in the runway area to determine upgradient concentrations for the landfills (IRP Sites 1 and 2) and, (3) sediment and surface water samples

collected as part of the ecological assessment. General soil and groundwater background chemical data are summarized in the tables within Appendix D.

Background values of compounds in the soil, groundwater, surface water, and sediments must represent soil and groundwater that have not been impacted by site activities, sources, or conditions. Much of NAS Alameda is built on fill material that was dredged from San Francisco Bay. Those dredged materials are not considered native soil. The federal and state regulatory agencies must agree on background levels.

A summary of background samples previously collected is described below.

- Background samples were collected for soil and shallow groundwater, including two rounds of groundwater sampling, from the eastern portion of the NAS Alameda during the spring of 1992. Samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), herbicides, pesticides and PCBs, metals, and general chemical characteristics. Additionally, groundwater samples were analyzed for oil and grease. However, background concentrations will only apply to naturally occurring compounds such as inorganic (metals).

- During 1990 and 1991, background samples were collected for soil and shallow and deep groundwater, including four quarters of groundwater sampling, from the runway area. Samples were analyzed for VOCs, SVOCs, pesticides and PCBs, total petroleum hydrocarbons (TPH), oil and grease, metals, radionuclides, and general chemical characteristics.

- Results of background samples are reported in two data summary reports: *Data Summary Report, Background and Tidal Influence Studies and Additional Work at Sites 4 and 5, Draft Final* (PRC/JMM 1992), and the *NAS Alameda, Alameda, California, Solid Waste Water Quality Assessment Test SWAT)* and *Data Summary Report for RI/FS Phases 5 and 6*. Final (PRC/Montgomery Watson 1993).

- Additional sampling is currently underway during the EBS for the runway area and housing areas.

The usability of the background samples collected in the runway area should be further evaluated; although there is no history of chemical uses or operations located in the runway area, releases may have occurred during occasional fuel spills or the hydraulic arresting hookline mechanism operation. The presence of fill base-wide may have a significant impact on the selection of background values.

If the fill contains polynuclear aromatic hydrocarbons at variable depths, this will possibly affect the adjustment of background values. This will also affect the selection of "chemicals of concern" for the risk assessment. Federal and state regulators must agree on these issues.

Issue 3: The location and number of background samples should support a statistical approach to determine background levels.

Resolution Strategy:

The number and location of the background samples already collected will be evaluated. Statistical tests that may be appropriate for determination of true background population will also be evaluated.

Issue 4: Background levels and risk-based levels should be used for screening contaminants.

Resolution Strategy:

If background levels can be established, then the project team will compare background to risk-based levels for screening chemicals of concern, otherwise risk-based levels will be considered.

Action Items:

1. The BCT will evaluate the adequacy of the existing data for representing background conditions. Both location and quantity of background samples should be assessed. The BCT will be assisted by DTSC and project team toxicologists and statisticians to help develop a background strategy.

6.5 RISK ASSESSMENT AND PRELIMINARY REMEDIATION GOALS

Issue 1: Future land use is not defined at this time, and the risk assessment will evaluate both residential and industrial scenarios for all sites.

Resolution Strategy:

Risk assessments are scheduled for OUs 1, 2, 3, and 4; a base-wide risk assessment will also be performed. All risk assessments will be conducted in accordance with EPA and DTSC guidance.

A key issue concerning risk assessments is the determination of future land use to develop the appropriate exposure scenarios and risk-based concentrations for cleanup levels. The RAB advised the BCT that the risk assessment should consider both residential and industrial land use scenarios even if the land use is known. The Navy will perform risk assessment calculations to determine cleanup levels using both residential and industrial use scenarios, and the levels could differ significantly. Cleanup levels will be risk based concentrations.

The development of risk based concentrations will be an iterative process that is conducted in parallel with (1) an evaluation of the ARARs and (2) a preliminary screening of remedial action alternatives in the feasibility study. There may be cases where a chemical-specific ARAR is not technically implementable; in such cases, a risk-based chemical concentration may be selected as a cleanup goal. In some cases, the risk-based concentrations can be so low that it might be technically infeasible to achieve cleanup to that concentration. In this case, federal and state regulators must agree on a cleanup goal that is technically feasible.

Issue 2: The RWQCB requires four quarters of groundwater sampling to account for seasonal variations in the risk assessment.

Resolution Strategy:

The project team is collecting groundwater samples four times during the year to assess seasonal variations in groundwater quality. Risk assessments are currently scheduled to be prepared using four quarters of groundwater sampling data in risk calculations. The groundwater sampling data requirements to support a risk assessment will be evaluated by the BCT in an effort to accelerate the risk assessment schedule.

Action Items:

1. The project team will attempt to start the risk assessment as soon as at least two quarters of groundwater data are available.

6.6 BASEWIDE REMEDIAL ACTION STRATEGY

Issue 1: Potential reuse options and priorities need to be balanced with the protection of human health and the environment when prioritizing remedial actions.

Resolution Strategy:

The general strategy for remedial action at NAS Alameda is intended to accomplish the goals of expedited cleanup and increased efficiency within the regulatory framework, while ensuring the remedial actions are protective of human health and the environment and the appropriate public involvement is achieved. The NAS Alameda base-wide remedial action strategy is based on reuse priority and protection of human health and the environment. Site characterization and cleanup activities will be accelerated to meet the community's needs by integrating early actions into the cleanup process.

Early actions are responses performed to eliminate or reduce public health or environmental threats from the release or potential release of hazardous substances. The early actions strategy at NAS Alameda is discussed in Section 4.1.3. This early actions strategy is designed to be protective of human health and the environment and will result in accelerated cleanup, hot spot removal, contaminant mass reduction, reduction of overall remedial action costs, and will facilitate property reuse by targeting sites that have high priority for reuse.

The NAS Alameda long-term remedial action strategy will target operable units that include parcels that have a high priority for reuse, as identified by the community and discussed in Section 2.3. Treatability studies will be conducted prior to the FS to support final remedy selection.

Action Items:

1. Implement environmental restoration strategy described in Chapter 4.
2. Periodically evaluate priorities, scope and schedule of early actions.

6.7 INTERIM MONITORING OF GROUNDWATER AND SURFACE WATER

Issue 1: Groundwater conditions across the base must be evaluated to allow decisions to be made about cleanup and possible future uses of the groundwater.

Resolution Strategy:

The Navy currently monitors the groundwater quality at NAS Alameda on a quarterly basis. The objective of the groundwater sampling program is to obtain water level and water quality data on a quarterly basis to assess changes in the nature and extent of groundwater contamination over time or changes caused by seasonal fluctuations. Several areas of contamination have been identified in the groundwater at NAS Alameda, and the monitoring program is designed to track the movement of the impacted groundwater and to provide information needed for the design of remedial actions for groundwater cleanup. In addition, all newly installed monitoring wells at NAS Alameda are sampled for four consecutive quarters to generate a historical data set for each well. Included in this monitoring is the evaluation of the potability of the groundwater across the base, as measured by the concentration of total dissolved solids. Also, groundwater elevations are monitored at all wells every quarter. Groundwater monitoring is planned through summer 1995 as part of the RI.

Issue 2: Storm water discharge needs to be evaluated to assess potential threats to the environment.

Resolution Strategy:

Surface water quality is monitored at NAS Alameda as part of the requirements for the base storm water discharge permit. Surface water quality is measured at least twice a year, once during the dry season and once during the rainy season. In addition, surface water quality is measured, as necessary, during specific investigations at NAS Alameda. The surface water runoff discharges to the

Seaplane Lagoon, San Francisco Bay and Oakland Inner Harbor. Evaluating the quality of this discharge is important as there is a potential for the sediments to become contaminated, thereby causing a potential for threats to the environment.

Issue 3: DTSC and RWQCB have requested that the Navy collect unfiltered groundwater samples. All groundwater samples collected have been filtered.

Resolution Strategy:

If the Navy and state regulators agree that unfiltered groundwater data are needed, a subset of wells will be selected and sampled accordingly.

Action Items:

1. Implement long-term groundwater monitoring plan. Any remedial action selected may include groundwater wells and monitoring.
2. Develop storm water monitoring plan.
3. Evaluate analytical results and significance of unfiltered groundwater samples.

6.8 EXCAVATION OF CONTAMINATED MATERIALS

Issue 1: The volume of contaminated soils requiring treatment may affect remedy selection.

Resolution Strategy:

After the nature and extent of soil contamination is delineated during the RI, the remedial alternatives that are capable of handling the volume of contaminated soil at NAS Alameda will be evaluated during the FS. The FS may screen out ex-situ treatment technologies if very small or unusually large volumes of contaminated material require treatment.

Issue 2: Access to contaminated soils below structures identified for potential reuse may impact future use.

Resolution Strategy:

In-situ treatment technologies that are capable of remediating soils located beneath structures will be evaluated during the FS. Treatability studies have been proposed and will be accelerated at selected sites for inclusion in the FS.

Issue 3: The condition of fill soil may affect remedy selection.

Resolution Strategy:

The area of NAS Alameda that is built on dredged fill materials will be documented in the RI. Early action treatability studies and the FS will evaluate remedial action alternatives to treat contaminated soil including fill material. The condition of fill may impact the implementability and costs of most remedial actions. Therefore, establishment of background or ambient concentrations (of inorganics) will be necessary, and, if required, focused risk assessments at individual sites will be implemented. As discussed previously, fill will affect the decision made about background concentrations.

Issue 4: Remedial actions requiring on site storage and treatment of remediation wastes may be managed under recent corrective action management units (CAMU) regulations.

Resolution Strategy:

The EPA and DTSC have signaled an important change for on-site remedial actions. Regulations on corrective action management units (CAMUs) were promulgated at the federal level in April 1993, and in California in December 1993. These regulations significantly relax the hazardous waste management requirements for land-based activities at cleanup sites.

Promulgation of the CAMU rule provides for greater use of innovative technologies and less off-site disposal or off-site treatment. This rule specifies that placement, storage, and treatment of remediation waste in a CAMU does not trigger land disposal restrictions. While CAMUs must be approved on a case-by-case basis, the requirements are reasonable and therefore it is expected the implementation of CAMUs at NAS Alameda will be possible. The requirements for implementing a CAMU can be summarized as follows:

- The CAMU shall facilitate the implementation of reliable, effective, protective, and cost effective remedies;
- Waste management activities associated with the CAMU shall not create unacceptable risks to humans or to the environment resulting from exposure to hazardous wastes or hazardous constituents;
- The CAMU should expedite the timing of remedial activity implementation when appropriate and practicable;
- The CAMU shall enable the use of treatment technologies (including innovative technologies) to enhance the long term effectiveness of remedial actions by reducing the toxicity, mobility or volume of wastes that would remain on site otherwise;
- The CAMU should include, if applicable, groundwater monitoring provisions and provisions to control, minimize, or eliminate the escape of hazardous constituents (leachate, contaminated runoff, decomposition products).

The closure of a CAMU also must meet specific requirements that are documented in 40 CFR Part 264.552(e)(4)(B)(ii).

Also provided for in the CAMU rule is the implementation of temporary units (TU) that can include temporary tanks and container storage areas used for treatment and storage of remediation waste. These requirements are documented in 40CFR Part 264.553.

The BCT will consider on a case-by-case basis where CAMUs or TUs may be implementable.

Issue 5: Location of stockpiles and treatment areas must be designated for contaminated soils to be excavated during any soil and UST removals.

Resolution Strategy:

The DTSC and RWQCB have suggested the use of a soil management plan to handle petroleum-contaminated soil sites because of the CERCLA exclusion. If groundwater issues can be separated from the soil management, then a RWQCB action is not required. The soil management plan should include the storage of contaminated soil, evaluation of treatment and disposal options, and alternative selection. Where groundwater impacts can not be handled separately from soil impacts, then RWQCB action is required.

Action Items:

1. Evaluate the application of CAMUs and TUs for disposal and on-site treatment of hazardous wastes.
2. Identify location of treatment area for contaminated soils from UST removals.
3. Characterize and determine treatment method for contaminated soils from UST removals.

6.9 PROTOCOLS FOR REMEDIAL DESIGN REVIEWS

Issue 1: Remedial design planning should allow all appropriate stakeholders the opportunity for involvement.

Resolution Strategy:

Remedial designs at NAS Alameda will undergo a comprehensive three-stage review by three parties. The three parties participating in the design review process are the Navy, the regulatory agencies, and the architect/engineering firm performing the design. Each party has specific and overlapping responsibilities during the design process. The Navy is responsible for ensuring that the designs meet the stated goals, meet acceptable safety standards, and are consistent with the quality of Navy designs. The regulatory agencies are responsible for ensuring that the remedial designs meet the overall goals of the project and are consistent with identified regulatory requirements. The architect/engineering

firm is responsible for the proper design of the project including satisfying of all requirements from the Navy and the regulatory agencies.

Before the initiation of a remedial design, the interested parties will schedule a discussion on the scope of the design reviews. In general, reviews will be conducted when the remedial designs are 30 percent, 90 percent, or 100 percent complete. The focus of the review at the 30 percent level of completion will be on whether or not the scope of the design meets the general goal of the design and that all identified regulatory concerns have been addressed. The focus of the review at the 90 percent level of completion will be on whether the complete design meets the design goals, whether safety concerns have been addressed, and whether the design complies with all regulatory requirements. The focus of the review at the final level of completion is that the comments made at the 90 percent review were addressed and that the design is ready for contracting.

EFA West will continue to use CLEAN/RAC integration for remedial design. EFA West will encourage the use of performance specifications in lieu of developing detailed plans and specifications.

Issue 2: Implementation of innovative technology includes inherent uncertainties, but also offers the potential for optimizing remedies that may be more protective and/or more cost effective.

Resolution Strategy:

The BCT has incorporated treatability studies into the IRP to evaluate innovative technologies prior to the remedial design stage. The treatability studies will be performed by the UCB group and will offer innovative technology performance data under site-specific conditions. Often, innovative technologies are those that have not been previously demonstrated as effective in a particular circumstance. The uncertainties involved in pursuing the use of such an innovative technology vary, but offer the potential for optimizing a technology to fit a site specific condition. In some cases this may lead to overall savings in time or cost, and may provide a more protective remedy.

Action Items:

1. The project team will complete treatability studies and incorporate results into the FS and remedial designs.

6.10 CONCEPTUAL MODELS

Issue 1: Conceptual site models that provide for the basis of risk assessment need to be developed and agreed upon by the regulatory agencies. Conceptual site models can display potential contaminant fate and transport mechanisms and exposure scenarios which may be used for risk communication.

Resolution Strategy:

The conceptual models for each OU are being developed during the RI/FS. The conceptual models will continue to be refined and updated throughout the RI/FS process. Appendix C presents preliminary site-by-site conceptual models and a regional conceptual site model for NAS Alameda with information on groundwater occurrence and quality. Each site conceptual model provides a summary of information collected to date. The exposure pathways and receptor endpoints are not identified yet, but will be developed during the RI. Also, the chemicals of concern will be developed during the risk assessment and are not yet identified in the conceptual models.

Action Items:

1. Complete development of conceptual site models during the RI.

6.11 CLEANUP STANDARDS

Issue 1: Assessing the suitability of the shallow groundwater at Naval Complex Alameda for municipal or domestic water supply. Establishing suitability or non-suitability of groundwater for municipal or domestic water supply is required to facilitate cleanup standards for groundwater.

Resolution Strategy:

Criteria outlined in the RWQCBs Resolution No. 89-39, specify that groundwater with total dissolved solids (TDS) exceeding 3,000 mg/L is not reasonably expected by the RWQCB to supply a public water system. The RWQCB makes further exception if a single well does not produce an average sustained yield of 200 gallons per day. The Navy is currently collecting quarterly groundwater samples for, among other analytes, TDS, and is generating TDS contour maps across the base which will demonstrate the suitability or non-suitability of shallow groundwater for municipal or domestic water supply.

Issue 2: The identification and definition of ARARs by regulatory agencies is in progress.

Resolution Strategy:

The Navy has requested DTSC to identify and define ARARs at NAS Alameda. ARARs will be evaluated during the RI/FS.

Issue 3: The RWQCB groundwater antidegradation policy may be unattainable

Resolution Strategy:

The BCT and RWQCB will carefully consider the groundwater antidegradation policy and develop a strategy for groundwater remediation.

Issue 4: Risk-based cleanup levels will be considered during the screening of contaminants of concern.

Resolution Strategy:

Depending on resolution of the risk-based concentrations for selection of chemicals of concern (Section 6.5), risk-based cleanup levels will be calculated during the risk assessment. Federal and state regulatory agencies must agree on the risk-based cleanup levels.

Issue 5: New provisions for non-attainment areas for groundwater has been developed by RWQCB.

Resolution Strategy:

The RWQCB provisions for groundwater non-attainment areas has recently been presented to the Navy. Application of RWQCB non-attainment areas for groundwater will be evaluated by the BCT and RWQCB during the development of the FS for each operable unit at NAS Alameda.

Issue 6: Technology and remedial action selection is influenced by the cleanup standards provided in the ARARs set forth by regulatory agencies; the Navy may consider the standards as goals, and remedial technologies may need to be adjusted accordingly.

Resolution Strategy:

Technology evaluations during the FS and treatability studies will consider cleanup standards or ARARs as remedial action goals. Remedial technologies will be evaluated against the nine criteria in the NCP including balancing the technical feasibility and cost impact of attaining a particular cleanup standard. As the UCB group presents treatability study alternatives and results, the technology effectiveness in meeting cleanup standards will be evaluated. If using a certain technology indicates that a particular cleanup standard is not technically feasible, or has a significant impact on the cost of remediation, the technology selection may require adjustment.

Action Items:

1. The project team will provide technical documentation (TDS maps) assessing suitability of groundwater as a drinking source.

2. DTSC will identify ARARs for NAS Alameda.

3. The project team will perform an ARARs evaluation during the RI/FS.

6.12 INITIATIVES FOR ACCELERATING CLEANUP

Issue 1: Additional front-end costs and funding are required for program acceleration.

Resolution Strategy:

Cost to complete estimates for all environmental programs have been developed and are included in Appendix A. Acceleration opportunities have been identified which exceed the FY 95 authorized budget. The Navy will request additional funding to support these acceleration opportunities.

Issue 2: A complex cleanup process must be implemented.

Resolution Strategy:

The following initiatives have been implemented by the BCT for expediting response actions at NAS Alameda:

- EBS process used to evaluate and accelerate transfer at all real property at NAS Alameda.

- Use of operable units - To expedite the investigation and review process, the base was divided into OUs. The OUs were revised as the scope of environmental issues changed and regulatory reviewer needs changed. Segregation of NAS Alameda into OUs significantly accelerated the overall cleanup schedule by focusing investigation and review efforts.

- Target source areas - Identified source areas early for removal actions. Removal actions at IRP Sites 13, 15, and 7A are examples of targeted source areas at NAS Alameda.

- Agreements - Drafted a FFSRA for NAS Alameda which mandates investigation and cleanup of Navy contaminant sources and sets RI/FS remedial design and remedial action schedules.

- Streamlined document reviews - Negotiated accelerated regulatory agency review periods and all parties agreed to provide comments and revise reports as quickly as possible.

- Concurrent reviews - To streamline document reviews, the Navy, DTSC, RWQCB, and EPA will review NAS Alameda documents at the same time.

- Community involvement - An active community relations program is in place at NAS Alameda as described in Section 3.5.

- Innovative contracting - Maximize use of RAC, UCB, indefinite quantity contracts to accelerate the cleanup process.

- Streamlined document preparation - Involvement of the BCT and project team early in the development of draft documents will help define the scope of documents.

- Innovative site characterization techniques - Used Optical Cone Penetrometer and benzene and PCB field screening tools.

- Community acceptance of fast track philosophy has been sought.

- Risk Taking - Some degree of risk is involved in fast track cleanup.

- Using "plug-in" RODs for no action sites, RCRA corrective actions including USTs, and any other possibilities.

- One year removal action goal - Set a goal that removal actions will take one year from discovery to implementation.

- Phase I reports include work plan for phase II.

- Expanded EBS work scope - added RCRA facility investigation requirements to the EBS phase II work scope.

Issue 3: Active public involvement needs to be implemented while accelerating the environmental cleanup process.

Resolution Strategy:

The public has been invited to participate in the NAS Alameda cleanup process through the RAB. Incorporating community input and reuse issues into the cleanup process will save time in the long run. In the short run, the BCT will work with the RAB, reuse committees, and the project team to define roles and responsibilities while promoting partnering.

The BCT's strategy includes participation of RAB members during the scoping and resolution of technical issues such as removal actions. RAB involvement during scoping of programs such as the early action program, BCT involvement with RAB focus groups, and workshops on technical issues or programs.

Issue 4: The BCT needs to continually identify acceleration initiatives that could result in time savings.

Resolution Strategy:

Before the BCP process, a single installation ROD was planned with cleanup to begin about 1999 and FOST to occur on unspecified dates after the year 2000. The bottom up review created a comprehensive schedule through FOST. The review also identified opportunities for overall schedule compression and indicated areas where individual schedule elements could be expedited without compromising the process.

EBS PEPs are being implemented at all parcels and may result in time savings of several months to years of RI work.

Several opportunities have been identified for early actions before ROD, which will take the form of removal actions. Remedial actions will be implemented as appropriate including removal actions, treatability studies, and interim remedial actions. In come cases, removal actions and interim remedial actions will fully address problem sites. Using this approach, the ROD may reflect no

further action or limited additional action required after ROD. FOST should follow shortly after ROD.

Complex sites may have potentially more expensive cleanups. For these sites, the early actions will be implemented as interim remedial measures. The approach for these sites is to initiate the cleanup on a small scale before ROD, and increase the scale based on the results of treatability studies, the FS and adoption in the ROD. Starting earlier means finishing earlier. This approach also will provide the opportunity for faster and less expensive remedies. The BCT has formed early action and innovative technology focus group to facilitate this strategy. Time savings resulting from implementing the acceleration initiatives will be quantified to track progress.

Issue 5: The Navy needs to evaluate the possibility of having inadequate regulatory resources to support environmental acceleration.

Resolution Strategy:

The Navy will evaluate the allocation of DSMOA funds based on project workload. As programs are accelerated and more work is executed, DSMOA funding may be increased to provide adequate resources for regulatory oversight. Additional funding should be allocated to regulatory staff working at NAS Alameda and not directed to a general overhead account.

Action Items:

1. Continue to identify and implement acceleration opportunities as new data becomes available.
2. The Navy will evaluate current and future DSMOA funding budgets.

6.13 REMEDIAL ACTIONS

Issues: No issues have been identified. Remedial actions will be implemented as specified in the record of decision. RI/FS and compliance program information will be considered during the preparation of proposed plans and records of decision.

6.14 REVIEW OF SELECTED TECHNOLOGIES FOR APPLICATION OF EXPEDITED SOLUTIONS

Issue 1: Use of innovative treatment technologies may accelerate cleanup and reduce costs.

Resolution Strategy:

The NAS Alameda project team is evaluating the use of innovative technologies by initiating treatability studies to support the evaluation of remedial alternatives in the FS. The University of California at Berkeley (UCB) has proposed selected treatability technologies as discussed in Section 4.

Specific technologies being evaluated within treatability studies include the following:

- Steam enhanced extraction
- Biological valance reduction
- Biological curtains for groundwater containment and cleanup
- Intrinsic and enhanced bioremediation
- Waste stream treatment
- Biochemical evaluation of Seaplane Lagoon
- Physicochemical treatment technologies

Additional treatability studies may be performed by UCB, and the CLEAN or RAC contractors.

In addition, innovative site characterization techniques are being applied at NAS Alameda. PRC and Naval Command, Control, and Ocean Surveillance Center (NCCOSC) in San Diego, in conjunction with the DoD's Tri-Services Program, recently completed site delineation of a turn-of-the-century oil refinery site at NAS Alameda using the Site Characterization and Analysis Penetrometer System (SCAPS). SCAPS uses laser light, fiber optic cable, and a fluorescence spectrometer in a penetrometer to rapidly delineate petroleum hydrocarbons in soil and groundwater. The laser induces aromatic hydrocarbons to fluoresce, and the fluorescent response is logged into a computer in order to provide data at 1-inch to 2-inch intervals in real time. Vertical resolution of petroleum hydrocarbons is greatly enhanced over conventional investigative techniques. A total of 45 penetrations to approximately 20 feet (900 feet total) was completed in less than 8 field days. Eight of the penetrometer holes were over-drilled using a hollow-stem auger rig, and samples were collected using

traditional methods in an effort to validate the fluorescent data against standard EPA analytical methods.

The primary advantages of SCAPS are (1) data are displayed in real-time to permit informed decision-making in the field; (2) vertical resolution is measured in inches rather than feet; (3) no waste soils are generated by the penetrometer, thereby reducing investigative-derived waste disposal costs; and (4) laboratory analysis of samples is minimized.

Action Items:

1. Continue to evaluate the use of innovative technologies as new data becomes available.

6.15 HOT SPOT REMOVALS

Issues 1 - 5: Similar issues to those described in Section 6.8 (Issues 1 through 5), excavation of contaminated soils.

Issue 6: Removal actions vary in complexity, time required for completion, and cost, and because of this, have been prioritized.

Resolution Strategy:

For issues 1 through 5, see resolution in Section 6.8.

The BCT prioritized removal actions based on protection of human health and environment and reuse potential. There are removal actions planned as discussed in Section 4.1.3.

Action Items: None identified at this time.

6.16 IDENTIFICATION OF CLEAN PROPERTIES

Issue 1: While six clean parcels were identified by the EBS CERFA report as CERFA eligible, 202 parcels were identified as BRAC category 7 parcels requiring additional information for categorization.

Resolution Strategy:

BRAC category 7 parcels are those that have data gaps related to uncertainties about the condition of the property. For example, it may be necessary to collect some soil screening data to show there has not been an impact to soil or groundwater. A technical memorandum identifying environmental assessment protocols was developed to address data gaps and is included in Appendix E. The BCT has developed a strategy for EBS phases IIA and IIB that includes site inspections and sampling which will address all data gaps. The objectives of the phases IIA and IIB include conducting comprehensive assessment of all issues that may affect FOSL or FOST, and to reclassify BRAC category 7 parcels into category 1, 2, 3 or 6 parcels. The environmental condition of property will be updated during the EBS phases IIA and IIB.

Action Items:

1. Complete EBS phases IIA and IIB and update environmental condition of property of all parcels.

6.17 OVERLAPPING PHASES OF THE CLEANUP PROCESS

Issue 1: The strategy for defining CERCLA/RCRA/Compliance program/UST/EBS integration is in continued development.

Resolution Strategy:

The BCT has developed a strategy for integrating the environmental programs at NAS Alameda as presented in Section 4.1. This integration strategy will be refined as the environmental programs progress.

Issue 2: The strategy for CLEAN/RAC/EBS integration is a key aspect of the partering needed to keep the NAS Alameda cleanup going.

Resolution Strategy:

Coordination between the CLEAN, RAC and EBS contractors has been accomplished by effective project wide communication. The BCT invites key personnel from the CLEAN, RAC, and EBS contractors to project meetings to coordinate integrated efforts. An example of contractor cooperation and coordination is the EBS phase II sampling. The CLEAN contractor developed the sampling protocols for category 7 parcels (see Appendix E). The EBS contractor developed the sampling and analysis plans for each parcel. The RAC contractor performed the field sampling to support the EBS. In addition, the CLEAN and RAC contractor have worked together on removal actions at IRP site 15.

Action Items:

1. Continue close coordination between all contractors with the CLEAN contractor providing oversight and integration of all data into the RI/FS and ROD.

6.18 IMPROVED CONTRACTING PROCEDURES

Issue 1: Budget execution is to be based on cost-to-complete and time-phased budgets.

Resolution Strategy:

NAS Alameda will execute the FY95 budget based on NAVFAC guidance for DERA and BRAC funds. The funding levels for DERA and BRAC are less in FY95 than requested and less than is executable.

Issue 2: The Navy needs to involve local small and small disadvantaged business in environmental restoration.

Resolution Strategy:

The Navy's strategy is focused on maintaining IRP technical continuity by having a single CLEAN and single RAC contract for all EFA WEST bases. Fixed-price architect/engineer services will be available through three media-specific indefinite quantity (IQ) contracts or the general services IQ contract. Fixed price remediation services will be available from the IQ remediation contract.

This strategy facilitates prime contracting opportunities for local small business (SB) and small disadvantaged business (SDB) by establishing a number of activity specific contracts that will be set aside for SBs, SDBs and/or 8(a) firms. In addition, the Navy will facilitate maximum local SB and SDB subcontracting opportunities by: (1) including SB and SDB subcontracting goals as an evaluation factor in unrestricted solicitations; (2) encouraging mentor/protege arrangements under large business contracts; (3) conducting aggressive outreach programs; and (4) using the award fee under the CLEAN and RAC to encourage aggressive SB and SDB subcontracting.

Specific examples of the Navy's contracting strategy at NAS Alameda are listed below:

- Remedial Action Contract includes the right of first refusal for displaced workers, provisions for SDB, and award fee tied to efforts to subcontract to qualified businesses.
- U. C. Berkeley Contract brings in local expertise at University and National Laboratories with SDB plan for contracted work.
- Alameda Environmental Engineering SDB Contract is in procurement.

- Public Works Center San Francisco employees are involved in tank removal operations.
- NADEP Alameda workers will perform "One Time Compliance" activities.
- Mare Island workers will inspect, analyze and document occurrence of asbestos containing materials in buildings.

Issue 3: CLEAN, RAC and EBS contracts either have or will soon reach capacity.

Resolution Strategy:

The Navy has awarded a CLEAN II contract to alleviate the contract capacity issue on the CLEAN I contract. Contract capacity under the RAC may become an issue in FY95. The EBS phase IIA and IIB is being implemented by the RAC.

Action Items:

1. Identify opportunities for small and disadvantaged business.
2. Assess and monitor CLEAN and RAC contract capacities available to assure continuity of program execution. The Navy will plan early to secure additional capacities if necessary.

6.19 INTERFACING WITH THE COMMUNITY REUSE PLAN

Issue 1: The community reuse plan has not been completed.

Resolution Strategy:

The interim community reuse plan is being prepared by the ARRA and scheduled for completion in May 1995 and the long-term reuse plan will be completed in December 1995. Although the reuse plans are not yet complete, the BCT is incorporating known reuse interests and priorities into the NAS Alameda environmental programs by working with the reuse committees identified in Section 2. The reuse planners have identified priority buildings and parcels and these priorities have been incorporated into the environmental program strategies. Detailed site characterization will be initiated

in time to provide information on the environmental condition of property to reuse planners prior to the completion of the long-term reuse plan. At the same time, the CERCLA records of decision will be finalized after the final reuse plan is complete, ensuring that land use considerations are incorporated into the RODs. The BCT is also working closely with the RAB to consider community issues during the cleanup process.

Issue 2: Knowledge of future land use is required for completing NEPA process.

Resolution Strategy:

The EIS will incorporate the future land use identified by the community in the reuse plan.

Issue 3: Knowledge of future land use is required for risk assessment exposure scenarios.

Resolution Strategy:

The NAS Alameda project team will perform risk assessment using both industrial and residential future land use scenarios until the community reuse plan is issued. Remedy selection will occur after the community reuse plan is finalized and therefore will incorporate the future land use identified by the community.

Action Items:

1. Coordinate with reuse planners and community to identify and understand future reuse priorities.

6.20 BIAS FOR CLEANUP INSTEAD OF STUDIES

Issue 1: A complex multi-phased process is required for environmental restoration.

Resolution Strategy:

The BCT has emphasized cleanup actions over additional studies by incorporating early actions such as removal actions or treatability studies into the installation restoration program. Early actions are performed to eliminate or reduce public health or environmental threats caused by the release or potential release of hazardous substances. Treatability studies are laboratory or field tests of a remedial alternative or innovative technology to obtain data necessary for a detailed evaluation of its feasibility. NAS Alameda has initiated or completed four removal actions. Twelve more removal actions and treatability studies are planned for FY95. The early actions strategy at NAS Alameda will result in accelerated cleanup, protection of human health and the environment, and reduction of overall remedial action costs and will facilitate property reuse.

Action Items:

1. Complete early actions to accelerate cleanup.

6.21 EXPERT INPUT ON CONTAMINATION AND POTENTIAL REMEDIAL ACTIONS

Issues: Technical experts should be used to identify or optimize remedial actions.

Resolution Strategy:

The NAS Alameda project team has been expanded to include experts in innovative technologies from University of California - Berkeley, who are currently initiating innovative treatability studies.

In addition, the Navy and the EPA are jointly performing a technology demonstration at IRP site 15 through the EPA's Superfund Innovative Technology Evaluation (SITE) program. The SITE program was established by EPA's Office of Solid Waste and Emergency Response (OSWER), is administered by the Office of Research and Development (ORD), and is run by the Risk Reduction Engineering Laboratory (RREL). The SITE program evaluates new and promising treatment and monitoring technologies for the cleanup of hazardous waste sites.

The DTSC technology unit will also provide support during treatability studies and FS technology evaluations.

A technical advisory review panel (TARP) provides program review of all remedial activities conducted under the Navy CLEAN. The TARP is composed of PRC senior technical staff members from the following disciplines: chemistry, engineering, environmental law, geology and hydrogeology, and toxicology and risk assessment. The TARP convenes approximately quarterly to review project status and to discuss technical issues. The TARP also reviews selected reports and data by request from the EFA WEST technical staff.

Action Items:

1. Continue to incorporate new, innovative characterization and cleanup technologies and expert input during the NAS Alameda cleanup process.

6.22 PRESUMPTIVE REMEDIES

Issue: Presumptive remedies can expedite the overall remedy selection and cleanup process.

Resolution Strategy:

Presumptive remedies are remedial actions that have already been selected through the current EE/CA or FS process for one site and are applied to sites with similar contaminants and site conditions to expedite overall remedy selection and cleanup. Presumptive remedies have not yet been used at NAS Alameda but are being evaluated. At NAS Alameda, presumptive remedies will be considered at UST and PCB transformer sites.

Presumptive remedies may also be developed as a conceptual design for a site that is based on assuming the most probable conditions for each characteristic and reasonable deviations from those conditions. A presumptive remedy of capping, containment, and monitoring is assumed for IRP site 1, the 1943 through 1956 disposal site and for IRP Site 2, the West Beach Landfill (excluding the

wetland area). This presumptive remedy may change as new information becomes available, or be used in conjunction with new groundwater treatment technologies being proposed by UC Berkeley.

Issue 2: Presumptive remedies may not be compatible with the proposed reuse alternative.

Resolution Strategy:

Presumptive remedies will be evaluated during the EE/CA and FS technology evaluation process and reuse issues will be addressed through evaluating the implementability criteria.

Action Items:

1. Continue evaluation of presumptive remedies on a site-by-site basis.

6.23 PARTNERING (USING INNOVATIVE MANAGEMENT, COORDINATION, AND COMMUNICATION TECHNIQUES)

Issue 1: Partnering with Naval facility and EFD-West personnel.

Issue 2: Partnering with other agencies, such as the California Department of Fish and Game.

Issue 3: Partnering with the RAB.

Issue 4: Partnering with the reuse planners.

Resolution Strategy:

Partnering is a process that brings key players in a project together to work as a team. The process creates an environment of trust in which the team members communicate with one another to achieve common goals.

The BCT is based primarily on the partnering concept, which encourages better communication and increased trust between participants to facilitate efficiency, acceleration, and cleanup achievement. The community is also a partner through RAB participation in the decision-making process. The Navy has set up offices in Building 1 at NAS Alameda that can be used by the BCT and project team members as working offices to encourage communication and team work.

The BCT has developed a sense of partnering by working closely together toward the common goal of an environmentally responsible base closure combined with accelerated economic reuse of base assets. Partnering with facility personnel, base tenants, other agencies and reuse planners will be pursued by establishing common goals and working together for mutual benefit. In addition, the Navy has partnered with a local university, the University of California-Berkeley, to develop innovative cleanup strategies.

The BCT is partnering with the RAB by conducting meetings on "making a better RAB".

Action Items:

1. Pursue opportunities through partnering training, facilitated workshops and public open houses to foster real partnering between all "stakeholders" in the NAS Alameda closure and conversion process.

6.24 UPDATING THE BCP AND THE EBS

Issue 1: The BCP submittal schedule should be coordinated with the budget authorization cycle.

Resolution Strategy:

The BCP will be used as a management tool by the BCT to address all environmental programs required for base closure and transfer of property to the community. The BCP will be updated as needed to reflect the status of environmental programs, the environmental condition of property, and property reuse. The EBS will be updated as needed for environmental program compliance and base closure.

The EBS and the BCP are currently scheduled for annual submittal. However, the BCP submission schedule does not correspond to the budget authorization cycle. Therefore, the NAS Alameda BCP will be updated twice a year, with the second revision performed mainly to update the schedule based on actual authorized budget.

Action Items:

1. The BCT will work closely with EFA West and NAVFAC to provide accurate updates on budget requirements and schedule impacts.

6.25 IMPLEMENTING THE POLICY FOR ON-SITE DECISION MAKING

Issue 1: The decision process and documentation of base closure activities should be defined.

Resolution Strategy:

BCT decision documentation is being guided by a consensus development document that outlines the way working decisions are made during technical meetings, progress status meetings, RAB meetings or field decisions. The BCT will document the process that exhibits the Navy and regulatory agencies accountability during decision-making activities. The following key decision-making elements will be considered: identification of key issues; recording of key issues, action items, and decisions in meeting minutes or a letter; consensus statement generation, and development of a record of consensus file.

An example of on-site decision making is the PEPs. Follow-on field work will be determined through on-site decisions.

Issue 2: Effective BCT and project team communication is required to integrate and accelerate environmental programs.

Resolution Strategy

With frequent and close communication as well as unrestricted access to data and RI/FS activities, the BCT members will be more responsive to each other and be able to better reach consensus on critical issues. The BCT will determine whether having a greater physical presence at NAS Alameda would be beneficial to accelerating cleanup and closure.

Issue 3: Data must be available to support on-site decision making.

Issue 4: The GIS is being developed as a geographic and data management tool to provide specific data needs for on-site decision making.

Resolution Strategy:

Site data to support on-site decision making is being managed and centralized in a GIS as discussed in Section 6.2. The GIS will provide immediate access and spatial display of site data to present information necessary to support on-site decision making by the BCT. The GIS provides the tools for users to access, visualize, and query both geographic and tabular data for better analysis and decision making.

Action Items:

1. Complete data input and GIS development.
2. Define consensus statement process.

6.26 ALAMEDA FAMILY HOUSING HISTORIC CONTAMINATION

Issue 1: Historic contamination has been tentatively identified as related to contamination in the housing area.

Resolution Strategy:

The Navy will commit to sharing data between facilities and will decide whether additional data and risk assessment will be required.

Action Steps:

1. The Alameda Family Housing Area is currently being evaluated under zone analysis plan 16 as part of the Phase IIA EBS.

BIBLIOGRAPHY

Air Traffic Control NAS Alameda. 1992. "International Station Meteorological Climate Summary - 1950 to 1985, Year/Month Total Precipitation (Inches) from Daily Observations." Division OPS, Building 19, NAS Alameda, California.

Atwater, B.F., C.W. Hedel, and E.J. Helley. 1977. "Late Quaternary Depositional History, Holocene Sea-Level Changes, and Vertical Crustal Movement, Southern San Francisco Bay, California." U.S. Geological Survey Professional Paper 1014.

Bailey, S.F. 1994. "Waterbirds Using the Alameda Naval Air Station with Special Attention to Caspian Terns" in, Alameda Naval Air Station's Natural Resources and Base Closure: Proceedings of a Scientific Symposium. Sponsored by The Golden Gate Audubon Society and the College of Alameda. March 12.

Caffrey, C. 1994. "The Current Status of Least Terns in California and the San Francisco Bay Area," in Alameda Naval Air Station's Natural Resources and Base Closure: Proceedings of a Scientific Symposium. Sponsored by The Golden Gate Audubon Society and the College of Alameda. March 12.

California Department of Fish and Game (CDFG). 1994a. "Endangered and Threatened Animals of California." Natural Heritage Division, Natural Diversity Data Base. October.

CDFG. 1994b. "Special Plants List." Natural Heritage Division, Natural Diversity Data Base. November.

CDFG. 1994c. "Endangered, Threatened, and Rare Plants of California." Natural Heritage Division, Endangered Plant Program. April.

CDFG. 1994d. "Special Animals." Natural Heritage Division, Natural Heritage Division, Natural Diversity Data Base. August.

California Department of Health Services. 1988. "Notice of remedial action Order, Health and Safety Code Section (s) 205, 206, 25220, 25355.5(a)(1)(B), Docket No. HSA 88/89-051." Letter dated June 30.

California Regional Water Quality Control Board, Central Valley Region. 1986. "The Designated Level Methodology for Waste Classification and Clean-up Level Determination."

California State Water Resources Control Board (SWRCB). 1988. "Sources of Drinking Water." Resolution No. 88-63, adopted at State Water Resources Control Board Meeting. May 19.

Canonie Environmental Services Corp. (Canonie). 1988. "Work Plan, Volume 1B, Air Sampling Plan, Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. December 16.

Canonie. 1989a. "Work Plan, Volume 4, Community Relations Plan, Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. February 15.

Canonie. 1989b. "Work Plan, Volume 5, Project Management Plan/Schedule, Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. March 2.

Canonie. 1989c. "Work Plan, Volume 6, Data Management Plan, Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. May 19.

Canonie. 1989d. "Work Plan, Volume 7, Public Health and Environmental Evaluation Plan, Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. June.

Canonie. 1989e. "Work Plan, Volume 2, Health and Safety Plan, Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. November 29.

Canonie. 1990a. "Work Plan, Volume 8, Feasibility Study Plan, Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. January 31.

Canonie. 1990b. "Work Plan, Volume 3, Quality Assurance Project Plan, Quality Assurance/Quality Control Plan (QA/QC), Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. February 6.

Canonie. 1990c. "Work Plan, Volume 1, Sampling Plan, Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. February 12.

Canonie. 1990d. "Work Plan, Volume 1A, Sampling Plan, Solid Waste Assessment Test (SWAT) Proposal Addendum, Remedial Investigation/Feasibility Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. February 22.

Canonie. 1990e. "Revised Investigation Analytical Results on the Refinery Area (Site 13) Remedial Investigation/Feasibility Study at NAS Alameda." Prepared for Navy-WESTDIV. December.

Canonie. 1992a. "Revised Phase 1 and 2A Analytical Results for Sites 1 and 2, 1943-1956 Disposal Area and West Beach Landfill, RI/FS." Prepared for NAVY-WESTDIV. June 1.

Canonie. 1992b. "Revised Phase 1 and 2A Analytical Results for Site 7, Building 547, RI/FS." Prepared for NAVY-WESTDIV. June 1.

Canonie. 1992c. "Revised Phase 1 and 2A Analytical Results for Site 9, Building 410, RI/FS." Prepared for NAVY-WESTDIV. June 1.

Canonie. 1992d. "Revised Phase 1 and 2A Analytical Results for Site 13, Oil Refinery Site, RI/FS." Prepared for NAVY-WESTDIV. June 1.

Canonie. 1992e. "Revised Phase 1 and 2A Analytical Results for Site 16, CANS C-2 Area, RI/FS." Prepared for NAVY-WESTDIV. June 1.

Canonie. 1992f. "Revised Phase 1 and 2A Analytical Results for Site 19, Yard D-13, RI/FS." Prepared for NAVY-WESTDIV. June 1.

Carson, H. Tom and Doye B. Cox. 1992. Handbook on Hazardous Materials Management. Institute of Hazardous Materials Management. USA.

Caswell, R. 1993. Personal Communication, From Roger Caswell of Naval Aviation Depot Alameda (NADEP), Alameda, California, to Kelli Shuter of Montgomery Watson. January 6.

Code of Federal Regulations (CFR). 1992. Title 40 Part 300, "National Oil and Hazardous Substances Pollution Contingency Plan (NCP)." July 1.

Department of Toxic Substances Control (DTSC). 1991. "RCRA Facility Assessment at Naval Air Station, Alameda." California Environmental Protection Agency. December.

DTSC. 1992. Letter, Diana Peebler to Lieutenant Colonel Dennis C. Green, USAF. Proper Disposal Requirements for Demolition Debris Containing Lead Based Paint. California Environmental Protection Agency. November 23, 1992.

DTSC. 1993a. "Hazardous Waste Facility Permit, Owner: USA, U.S. Navy, Naval Air Station, Alameda, CA (Code 00), Operator: Commanding Officer, Naval Air Station, Alameda, CA (Code 00)." EPA ID Number CA 2170023236. California Environmental Protection Agency. June 24.

DTSC. 1993b. "Federal Facility Site Remediation Agreement for Naval Air Station, Alameda, Draft in Preparation." Prepared by Toxics Legal Office. California Environmental Protection Agency. August.

DTSC. 1993c. "Letter, Tom Lanphar to Gary Munekawa, WESTDIV." Quantititation Limit Requirements for Analysis Performed on Samples from NAS Alameda. California Protection Agency. December 23, 1993.

Ecology and Environment, Inc. (E&E). 1983. "Initial Assessment Study Naval Air Station," Alameda, California." Prepared for Navy Assessment and Control of Installation Pollutants (NACIP) and Naval Energy and Environmental Support Activity (NEESA). April.

Environmental Resource Management-West (ERM-West). 1987. "Site Investigation, NAS Naval Exchange Gas Station, Alameda, California." Prepared for U.S. Navy. March 31.

ERM-West. 1993. Draft Environmental Baseline Survey Database - NAS Alameda. December 17, 1993.

ERM-West. 1994. Draft EBS Preliminary Parcel Classification Presentation. January 7.

Federal Register (FR). Title 55 Section 8666, "National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Final Rule." March 8.

Feeney, L.R. 1994. "Base Closure - Relevant Issues and Questions," in Alameda Naval Air Station's Natural Resources and Base Closure: Proceedings of a Scientific Symposium. Sponsored by The Golden Gate Audubon Society and the College of Alameda. March 12.

Freeze, R.A., and J.A. Cherry. 1979. *Groundwater*. Prentice-Hall, Inc. Englewood Cliffs, New Jersey.

Harding-Lawson Associates (HLA). 1978. "Final Submittal, Sanitary Landfill Site Study, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. March 1.

HLA. 1980a. "Draft Sanitary Landfill Closure Plan, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. May 30.

HLA. 1980b. "Basis of Design for Solid Waste, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. November 20.

HLA. 1982. "Solid Waste Disposal System, P-183, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. February 5.

HLA. 1983. "Confirmation Study, Sanitary Landfill, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. October 19.

HLA. 1986. "As Built Drawings of West Beach Landfill, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. March 28.

HLA. 1988. "Aquifer Study; Fourth Quarterly Report, Naval Air Station Alameda, Naval Supply Center, Oakland, Alameda County California." Prepared for Environmental Science Associates, Inc. May 24.

HLA. 1989. "Soil and Groundwater Investigation, Intermediate Maintenance Facility, Project P-207, Naval Air Station Alameda, California." Prepared for Navy-WESTDIV. December 6.

Hieb, K. 1994. "Pelagic Fish Community of the South and Central San Francisco Bay - Prey Source for Wildlife Using the Alameda Naval Air Station," in Alameda Naval Air Station's Natural Resources and Base Closure: Proceedings of a Scientific Symposium. Sponsored by The Golden Gate Audubon Society and the College of Alameda. March 12.

Hydro-Search, Inc. (HSI). 1977. "Well Performance Evaluation Pan American Well Naval Air Station," Prepared for Utilities Department Navy Public Works Center San Francisco Bay, Oakland, California.

Jacques-Strong, D. 1994. "Brown Pelicans in Northern California and the Importance of the Roost at the Alameda Naval Air Station," in Alameda Naval Air Station's Natural Resources and Base Closure: Proceedings of a Scientific Symposium. Sponsored by The Golden Gate Audubon Society and the College of Alameda. March 12.

Kitting, C.L. 1994. "Shallow Populations of Small Fishes in Local Eel Grass Meadow Food Webs," in Alameda Naval Air Station's Natural Resources and Base Closure: Proceedings of a Scientific Symposium. Sponsored by The Golden Gate Audubon Society and the College of Alameda. March 12.

Kopec, D. 1994. "The Status of Harbor Seals in San Francisco Bay and the Value of the Alameda Naval Air Station for Foraging and as a Haulout," in Alameda Naval Air Station's Natural Resources and Base Closure: Proceedings of a Scientific Symposium. Sponsored by The Golden Gate Audubon Society and the College of Alameda. March 12.

National Oceanic and Atmospheric Administration (NOAA). 1988. "Status and Trends and Concentrations of Contaminants and Measurements of Biological Stress in San Francisco Bay." NOAA Technical Memorandum NOSOMA 41. National Oceanic and Atmospheric Administration. Seattle, Washington. May.

Naval Facilities Engineering Command (NAVFAC). 1979. Standard Operational Manual for the Waste Oil Raft (donut). NAVFAC MO-350. December 1979.

Navy. 1990. "Final Environmental Impact Statement Candidate Base Closures/Realignment, San Francisco Bay Area." Volume I. November 1990.

Navy. 1993. "Environmental Cleanup Summary Plan for Closure of NAS Alameda." Undated.

Navy. 1993a. Letter from D.K. Major to Neighbor. December 21, 1993.

Naval Energy and Environmental Support Activity (NEESA). 1991. "Comprehensive Solid Waste Survey. Naval Energy and Environmental Support Activity. Port Hueneme, California. September.

Pacific Aerial Surveys. Aerial Photo, ALA-C19L-18, November 18, 1930; Aerial Photo, AAP-2-9, February 25, 1938; Aerial Photo, AAP-2-14, February 18, 1939; Aerial Photo, AV-11-08-06, March 24, 1947; Aerial Photo, AV-28-9-33, September 6, 1949; Aerial Photo, AV-119-7-28, August 14, 1953; Aerial Photo, AV-253-06-23, May 3, 1957; Aerial Photo, AV 902-03-07, May 19, 1969; Aerial Photo, AV 1100-03-05, April 30, 1973; Aerial Photo, AV 1750-03-3, September 14, 1979; Aerial Photo, AV 2300-03-03, June 21, 1983; Aerial Photo, AV 2640-03-04, May 15, 1985; Aerial Photo, AV 3268-03-06, March 30, 1988.

PRC. 1990a. "Air Sampling and Analysis, Military Family Housing." Final. July 23, 1990.

PRC. 1990b. "Draft Technical Review of RI/FS Work Plan." Prepared for Navy-WESTDIV. June.

PRC. 1991a. "Hydrogeology and Proposed Changes for Phase 5 of the RI/FS, Naval Air Station (NAS) Alameda, California." March.

PRC. 1991b. "Well Decommissioning Plan: 1943-1956 Disposal Area and West Beach Landfill." Prepared for Navy-WESTDIV. March 12.

PRC. 1991c. "RI/FS Health and Safety Plan, Final." Prepared for Navy-WESTDIV. April 1.

PRC. 1991d. "West Beach Landfill and Runway Areas Interim Data Report." Prepared for Navy-WESTDIV. August 1.

PRC. 1992a. San Francisco Bay Area Bilge Water Study. One hundred Percent Final Report. November 17, 1992.

PRC. 1992b. "Well Decommissioning Report: 1943-1956 Disposal Area and West Beach Landfill." Prepared for Navy-WESTDIV. January 23.

PRC. 1992c. "NAS Alameda, Alameda, California, Fuel Spill Investigation Report, Final." Prepared for Navy-WESTDIV. March 30.

PRC. 1992d. "NAS Alameda, Alameda, California, Air Quality Analysis for RI/FS Phases 2B and 3, Draft." Prepared for Navy-WESTDIV. May 26.

PRC. 1993a. "NAS Alameda, Alameda, California, Work Plan for Excavation and Disposal of Hydrocarbon Contaminated Soil." Prepared for Navy-WESTDIV. February 1.

PRC. 1993b. "Long-Term Installation Plan, NAS Alameda." September 1993.

PRC/Kinetics Laboratory Inc (KLI). 1993. Field notes and draft reports collected as part of the Ecological Risk Assessment currently being conducted for NAS Alameda.

PRC/James M. Montgomery Consulting Engineers, Inc. (PRC/JMM). 1990. "NAS Alameda, Alameda, California, Addendum to Field Sampling Plans, RI/FS Phases 5 and 6 (CTO 085) Solid Waste Water Quality Assessment Test (SWAT)." Prepared for Navy-WESTDIV. November.

PRC/JMM. 1991a. "NAS Alameda, Alameda, California, Addendum to Field Sampling Plans, RI/FS Phases 2B and 3." Prepared for Navy-WESTDIV. February 15.

PRC/JMM. 1991b. "NAS Alameda, Alameda, California, Addendum to Sampling Plan and Quality Assurance Project Plan, RI/FS Phases 5 and 6 Solid Waste Water Quality Assessment Test (SWAT)." Prepared for Navy-WESTDIV. April.

PRC/JMM. 1991c. "NAS Alameda, Alameda, California, Health and Safety Plan, RI/FS Phases 2B and 3 and IMF Site EE/CA." Prepared for Navy-WESTDIV. May.

PRC/JMM. 1992a. "NAS Alameda, Alameda, California, Work Plan Amendment RI/FS Phases 2B and 3." Prepared for Navy-WESTDIV. February.

PRC/JMM. 1992b. "NAS Alameda, Alameda, California, Revised Work Plan for Background Sampling, Phases 2B and 3." Prepared for Navy-WESTDIV. February.

PRC/JMM. 1992c. "NAS Alameda, Alameda, California, Proposed Additional Field Work at Sites 4 and 5 for The RI/FS." Prepared for Navy-WESTDIV. March.

PRC/JMM. 1992d. "NAS Alameda, Alameda, California, Final Health and Safety Plan Addendum, RI/FS Phases 2B and 3." Prepared for Navy-WESTDIV. May.

PRC/JMM. 1992e. "Data Summary Report, Background and Tidal Influence Studies and Additional Work at Sites 4 and 5, Draft Final." Prepared for Navy-WESTDIV. August 4.

PRC/JMM. 1992f. "NAS Alameda, Alameda, California, Data Summary Report RI/FS Phases 2B and 3, Final." Prepared for Navy-WESTDIV. October 27.

PRC/JMM. 1992g. "Draft Addendum to the Draft Waste Characterization Technical Report Summary of Waste Disposal Options and Costs." Prepared for Navy-WESTDIV. November 4.

PRC/JMM. 1992h. "NAS Alameda, Alameda, California, Draft - Quality Control Summary Report, RI/FS Phases 2B and 3." April 1.

PRC/JMM. 1993a. "Naval Air Station, Alameda, Alameda, California, Final Waste Characterization Technical Report." Prepared for Navy-WESTDIV. January 28.

PRC/Montgomery Watson. 1993a. "NAS Alameda, Alameda, California, Solid Waste Water Quality Assessment Test (SWAT) and Data Summary Report for RI/FS Phases 5 and 6, Final." Prepared for Navy-WESTDIV. April 30.

PRC/Montgomery Watson. 1993b. "Intermediate Maintenance Facility Field Investigation." Prepared for Navy-WESTDIV. June 17.

PRC/Montgomery Watson. 1993c. "NAS Alameda, Alameda, California, Data Summary Report, RI/FS Phases 1 and 2A, Final." Prepared for Navy-WESTDIV. August 25.

PRC/Montgomery Watson. 1993d. "Implementation Work Plan, Interim Removal Action, Lead and Acid Soils Removal, Intermediate Maintenance Facility Site, Draft Final." Prepared for Navy-WESTDIV. September 20.

PRC/Montgomery Watson. 1993e. "NAS Alameda, Alameda, California, Stormwater Prevention Plan Final (Revision 01)." Prepared for Navy-WESTDIV. September 24.

PRC/Montgomery Watson. 1993f. "Follow-On Field Sampling Plan Remedial Investigation/Feasibility Study Phases 2B and 3, Draft Final." Prepared for Navy-WESTDIV. September 28.

PRC/Montgomery Watson. 1993g. "Follow-On Field Sampling Plan Remedial Investigation/Feasibility Study Phases 5 and 6 - Landfill Investigation, Draft." Prepared for Navy-WESTDIV. September 28.

PRC/Montgomery Watson. 1993h. "IMF Site Interim Removal Action Engineering Evaluation/Cost Estimate Report (Final)." Prepared for Navy-WESTDIV. September 29.

PRC/Montgomery Watson. 1993i. "NAS Alameda RI/FS Work Plan Addendum Draft." Prepared for Navy-WESTDIV. September 29.

PRC/Montgomery Watson. 1993j. "NAS Alameda, Alameda, California, Follow-on Field Sampling Plan, Remedial Investigation/Feasibility Study Phase 2A, Draft." Prepared for Navy-WESTDIV. October.

PRC/Montgomery Watson. 1993k. Federal Facilities Site Remediation Agreement Site Management Plan. Draft. September 22, 1993.

PRC/Montgomery Watson. 1993l. "NAS Alameda, Alameda, California, Quality Control Summary Report, Solid Wastewater Quality Assessment Test (SWAT) RI/FS Phases 5 and 6." Prepared for Navy-WESTDIV. April 30.

PRC/Montgomery Watson. 1993m. "NAS Alameda, Alameda, California, RI/FS Interim Remedial Action, Site 15, Buildings 301 and 389 Transformer Storage Area Field Investigation Work Plan, Draft." Prepared for Navy-WESTDIV. December 2.

PRC/Tetra Tech. 1992. "NAS Alameda, Alameda, California, Revised Final Work Plan for an Ecological Assessment." Prepared for Navy-WESTDIV. May.

Radbruch, Dorothy H. 1957. "Areal and Engineering Geology of the Oakland West Quadrangle, California." Miscellaneous Geologic Investigations MAP I-239. U.S. Geological Survey.

Rogers, J.D., and S.H. Figuers. 1991. "Engineering Geologic Site Characterization of the Greater Oakland-Alameda Area, Alameda and San Francisco Counties, California." Final Report to National Science Foundation, Grant No. BCS-9003785.

Sanborn-Ferris Map Co. (Sanborn). 1897. Map of Alameda, California.

State Water Resources Control Board (SWRCB). 1989. "Leaking Underground Fuel Tank (LUFT) Manual, 1990. Guidelines for Site Assessment, Cleanup, and Underground Storage Tank Closure." Prepared by State of California Leaking Underground Fuel Tank Task Force. October.

Trask, P.D., and J.W. Rolston. 1951. "Engineering Geology of San Francisco Bay, California." Geological Society of America Bulletin, Vol. 62, No. 9, pp. 1079-1110.

Treasher, R.C. 1963. "Geology of the Sedimentary Deposits in San Francisco Bay, California." Geological Society of America Bulletin, Vol. 62, No. 9, pp. 1079-1110.

United States Code (USC). 1980. Title 42 Section 9601-9657, "The Comprehensive Environmental Response, Compensation, and Liability Act." December.

U.S. Department of Agriculture - Soil Conservation Service. 1986. Natural Resource Management Plan Naval Air Station Alameda, California.

U.S. Department of Defense (DoD). 1993. "BRAC Cleanup Plan Guidebook." Fall, 1993.

U.S. Environmental Protection Agency (EPA). 1985. "Guidance for Controlling Asbestos Containing Materials in Buildings." EPA/560/5-85/024. May 1985.

EPA. 1989. "Interim Final RCRA Facility Investigation (RFI) Guidance," Waste Management Division, Office of Solid Waste, EPA 30/SW-89-036. May.

EPA. 1990a. "Guidance on Remedial Actions for Superfund Sites with PCB Contamination." EPA/540/G-90/007. August 1990

EPA. 1990b. "A Guide to Developing Records of Decision." Directive 9335.3.02FS-1. May 1990.

EPA. 1991. "Guide to Developing Superfund No Action, Interim Action and Contingency Remedy RODs." Publication 9355.3-02FS-3. April 1991.

EPA. 1992. "Community Relations in Superfund: A Handbook." Office of Emergency and Remedial Response, EPA/540/G-88/002. January.

EPA. 1993a. "Guidance on Conducting Non-Time Critical Removal Actions under CERCLA." September 1993.

EPA. 1993. "Presumptive Remedy for CERCLA Municipal Landfill Sites." Directive No. 9355.0-49FS. September 1993.

Wahler Associates (Wahler). 1985. "Draft Report, Verification Step, Confirmation Study," Prepared for Navy-WESTDIV. May.

Wahler. 1986. "Confirmation Study (Characterization Step), Work Plan for Naval Air Station, Alameda, California." Draft Report Prepared for Navy-WESTDIV. February.

Western Division Naval Facilities Engineering Command (WESTDIV). 1981. Waste Plan for Naval Air Station Alameda. October 1981.

Woodbridge, Sally B. "Historical Architectural Resources Inventory for the Naval Air Station, Alameda." 1992.

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APPENDIX A

(BUDGET DATA IS CURRENTLY BEING DEVELOPED AND WILL BE PROVIDED IN MAY 1995)

N00236.001167
ALAMEDA POINT
SSIC NO. 5090.3

APPENDIX A

FISCAL YEAR FUNDING REQUIREMENTS AND COSTS

DATED 18 AUGUST 1995

IS FILED AS ADMINISTRATIVE RECORD NO.
N00236.001236

APPENDIX B

INSTALLATION ENVIRONMENTAL RESTORATION PROJECT DELIVERABLES

TABLE B-1

NAS ALAMEDA
PROJECT DELIVERABLES

Year	Phase	Project Title	Sites Examined	Deliverable Date/By Whom
1977	PA/SI	Well Performance-Pan Am. Well	Area South of Site 14	PA/SI report 1977, Hydro-Search
1978	PA/SI	Final-Sanitary Landfill Site Study	1,2	PA/SI report 1978, HLA
1980	Other	Draft Sanitary Landfill Closure Plan	1,2	Report 1980a, HLA
1980	Other	Basis of Design for Solid Waste	1,2	Report 1980b, HLA
1982	Other	Solid Waste Disposal System	1,2	Report 1982, HLA
1983	Other	Confirmation Study, San. Landfill	1,2	Report 1983, HLA
1983	PA/SI	Initial Assessment Study NAS	All 20 sites	PA/SI report 1983, E&E
1985	PA/SI	Draft Confirmation Study Verify	1,2,3,4,15,16,17	PA/SI report 1985, Wahler
1986	PA/SI	Confirmation Study Work Plan	1,2,3,4,15,16,17	Work plan report 1986, Wahler
1986	Other	As Built; West Beach Landfill	2	Report 1986, HLA
1987	PA/SI	Site Investigation at Gas Station	7A	PA/SI report 1987, ERM-West
1988	PA/SI	Aquifer Study; Fourth Quarter Rpt.		PA/SI report 1988, HLA
1988	RI/FS	Air Sampling; RI/FS	All 20 Sites	RI/FS report 1988, Canonie
1989	PA/SI	Soil and Groundwater Investigation	13	PA/SI report 1989, HLA
1989	RI/FS	Community Relations Plan RI/FS	All 20 Sites	Work plan report 1989a, Canonie
1989	RI/FS	Proj. Mgmt. Plan RI/FS	All 20 Sites	Work plan report 1989b, Canonie
1989	RI/FS	Data Mgmt. Plan RI/FS	All 20 Sites	Work plan report 1989c, Canonie
1989	RI/FS	Public Health & Env. Eval. RI/FS Work Plan	All 20 Sites	Work plan report 1989d, Canonie
1989	RI/FS	Health & Safety RI/FS	All 20 Sites	Work plan report 1989e, Canonie
1990	RI/FS	FS Plan RI/FS	All 20 Sites	Work plan report 1990a, Canonie
1990	RI/FS	QAPjP, QA/QC RI/FS	All 20 Sites	Work plan report 1990b, Canonie
1990	RI/FS	Sampling Plan RI/FS	All 20 Sites	Work plan report 1990c, Canonie

TABLE B-1 (continued)

NAS ALAMEDA
PROJECT DELIVERABLES

Year	Phase	Project Title	Sites Examined	Deliverable Date/By Whom
1990	RI/FS	Sampling Plan SWAT RI/FS	1,2	Work plan report 1990d, Canonie
1990	RI/FS	Revised Investigation, Site 13 RI/FS	13	RI/FS report 1990e, Canonie
1990	RI/FS	Draft Review of RI/FS Work Plan	All 20 sites	Work plan review 1990, PRC
1990	RI	FSP Addendum RI/FS Phases 5 and 6 SWAT	1,2	RI report 1990, PRC/JMM
1991	RI	Well Decommissioning	1,2	Plan 1991b, PRC
1991	RI/FS	Health and Safety Plan	1,2	Plan 1991c, PRC
1991	RI	West Beach Landfill and Runway Area Investigation	2, runway area	Interim data report 1991d, PRC
1991	RI	Hydrogeology & Proposed Changes for Phase 5 RI/FS	1,2	RI report 1991, PRC/JMM
1991	RI	Sampling and QA/QC Plan RI/FS Phase 5 & 6 SWAT	1,2	Work plan 1991b, PRC/JMM
1991	RI	HSP RI/FS Phase 2B,3 and IMF EE/CA	4,5,6,7A,7B,8,10A,11,12,14,15	RI report 1991c, PRC/JMM
1992	RI	Phase 1 and 2A RI	1,2	Analytical results 1992a, Canonie
1992	RI	Phase 1 and 2A RI	7	Analytical results 1992b, Canonie
1992	RI	Phase 1 and 2A RI	9	Analytical results 1992c, Canonie
1992	RI	Phase 1 and 2A RI	13	Analytical results 1992d, Canonie
1992	RI	Phase 1 and 2A RI	16	Analytical results 1992e, Canonie
1992	RI	Phase 1 and 2A RI	19	Analytical results 1992f, Canonie
1992	RI	Well Decommissioning	1,2	Report 1992b, PRC
1992	Other	Fuel Spill Investigation	BLD. 397 (not an IR site)	Investigation report 1992c, PRC
1992	RI/FS	Air Quality Analysis for Phases 2B and 3	4,5,6,7A,7B,8,10A,11,12,14,15	RI report 1992d, PRC

TABLE B-1 (continued)

NAS ALAMEDA
PROJECT DELIVERABLES

Year	Phase	Project Title	Sites Examined	Deliverable Date/By Whom
1992	RI	Work Plan Amm. Phase 2B, 3	4,5,6,7A,7B,8,10A,11,12,14,15	Work plan 1992a, PRC/JMM
1992	RI	Rev. Work Plan Background Sampling, Phase 2B, 3	4,5,6,7A,7B,8,10A,11,12,14,15	Work plan 1992b, PRC/JMM
1992	RI	Proposed Add. Field Work RI/FS Sites 4 & 5	4,5	RI report 1992c, PRC/JMM
1992	RI	Final HSP Addendum RI/FS Phases 2B,3	4,5,6,7A,7B,8,10A,11,12,14,15	RI report 1992d, PRC/JMM
1992	RI	DSR Bkgrnd. and Tidal Influence Sites 4 and 5	4,5	RI report 1992e, PRC/JMM
1992	RI	DSR RI/FS Phases 2B, 3 Final	4,5,6,7A,7B,8,10A,11,12,14,15	RI report 1992f, PRC/JMM
1992	RI	Draft Addendum Waste Disposal Options and Costs	All 20 sites	RI report 1992g, PRC/JMM
1992	RI	Phase 2B and 3 RI	4,5,6,7A,7B,8,10A,11,12,14,15,18	QCSR 1992h, PRC/JMM
1992	RI	Rev Final Work Plan; Eco. Assess.	17,20	Work plan 1992, PRC/Tetra Tech
1993	Other	Excavation and Disposal of Hydrocarbon Contaminated Soil	Bldg. 397 (not an IR site)	Work Plan 1993a, PRC
1993	RI	Final Waste Characterization Rpt.	All 20 Sites	RI report 1993a, PRC/JMM
1993	RI	SWAT DSR RI/FS Phases 5,6	1,2	RI report 1993a, PRC/Montgomery
1993	RI	Intermediate Maintenance Facility Field Inv. Rpt.	6	RI report 1993b, PRC/Montgomery
1993	RI	DSR RI/FS Phases 1 and 2A	1,2,3,4,7C,9,10B,13,16,19	RI report 1993c, PRC/Montgomery
1993	RI	IRA Impl. Work Plan; Int. Maint. Facility	6	Work plan 1993d, PRC/Montgomery
1993	Other	Storm Water Prevention Plan	Entire Base	Report 1993e, PRC/Montgomery
1993	RI	Follow-On FSP RI/FS Ph 2B, 3 Draft Final	4,5,6,7A,7B,8,10A,11,12,14,15	RI report 1993f, PRC/Montgomery

TABLE B-1 (continued)

NAS ALAMEDA
PROJECT DELIVERABLES

Year	Phase	Project Title	Sites Examined	Deliverable Date/By Whom
1993	RI	Follow-On FSP RI/FS Ph 5,6 Draft Final	1,2	RI report 1993g, PRC/Montgomery
1993	IRA	IRA EE/CA, IMF Site	13	EE/CA Report 1993h, PRC/Montgomery
1993	RI	RI/FS Work Plan Addendum Draft	All 20 Sites	Work plan 1993i, PRC/Montgomery
1993	RI	Follow-On FSP RI/FS Ph 2A	3,4,7C,9,10B,13,16,19	RI report 1993j, PRC/Montgomery
1993	RI	SWAT QCSR, Phases 5 and 6	1,2	QCSR 1993l, PRC/Montgomery Watson
1993	IRA	Site 15 IRA Field Investigation	15	Work plan 1993m, PRC/Montgomery
1994	IRA	Site 7A IRA Field Investigation	7A	Work plan 1994, PRC/Montgomery

PA/SI	Preliminary assessment/site inspection
NAS	NAS Alameda
RI/FS	Remedial investigation/feasibility study
QAPjP	Quality assurance project plan
QA/QC	Quality assurance/quality control
QCSR	Quality control summary report
SWAT	Solid waste assessment test
FSP	Field sampling plan
HSP	Health and safety plan
IMF	Intermediate maintenance facility
EE/CA	Engineering evaluation/cost analysis
IRA	Interim remedial action
Montgomery	Montgomery Watson
PRC	PRC Environmental Management, Inc.
HLA	Harding Lawson Associates
E&E	Ecology and Environment, Inc.
JMM	James M. Montgomery Consulting Engineers, Inc.
IR	Installation restoration

APPENDIX C

CONCEPTUAL SITE MODEL DATA SUMMARIES

NAS ALAMEDA BASEWIDE CONCEPTUAL MODEL

Much of the land now occupied by NAS Alameda was once covered by the waters of San Francisco Bay, or was tidal flat. The tidal flats were mapped in an 1856 U.S. Coast and Geodetic Survey; these tidal flats and an area westward, which grades into subtidal deposits, are considered a portion of the Holocene Bay Mud. The Holocene Bay Mud is overlain by fill material over most of NAS Alameda. The fill material consists of dredge spoils from the surrounding San Francisco Bay, the Seaplane Lagoon, and the Oakland Channel.

Historical aerial photographs indicate that fill procedures may have produced a systematic variation in grain size of the fill material, with finer-grained material being deposited closer to the water-filled swales and coarser-grained material being deposited closer to the point at which the hydraulic fill pipe discharged. The hydraulically placed fill thickness ranges from 0 to 30 feet. The fill is thinnest in the tidal flat area in the eastern portion of the base.

The fill material comprises the uppermost water-bearing zone underneath NAS Alameda. The water-bearing fill underlies most of NAS Alameda, with the exception of the eastern portion of the base where the fill material is thinnest. In this portion of the base, the uppermost water-bearing zone includes native sediments of the Holocene Bay Mud.

At nearly all sites investigated at NAS Alameda, several to many polycyclic aromatic hydrocarbons were detected in soil samples. The lateral and vertical distributions of these compounds varies by site, but are generally concentrated at the interface between the native sediments and the overlying fill materials. The following is a list of the polycyclic aromatic hydrocarbons typically found in samples collected from NAS Alameda soil.

POLYCYCLIC AROMATIC HYDROCARBONS FOUND IN SOIL AT NAS ALAMEDA

2-Methylnaphthalene
Acenaphthene
Acenaphthylene
Anthracene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(g,h,i)perylene
Benzo(b)fluoranthene
Benzo(d)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
Phenanthrene
Pyrene

SITE CONCEPTUAL MODEL
SITE 1 - 1943-1956 DISPOSAL AREA

Site History

- Site 1 is located in the northwestern corner of NAS Alameda. Based on aerial photographs, an area of approximately 12 acres served as a landfill for the base from 1943 to 1956. The landfill reportedly received all waste generated at NAS Alameda except liquid waste, which was discharged directly to the Seaplane Lagoon. Landfilled wastes reportedly included old aircraft engines, kitchen scraps and garbage from ships in port, cables, scrap metal, waste oil, waste paint, waste solvents, cleaning compounds, construction debris, and low-level radiological material.

- The area occupied by Site 1 was developed through hydraulic filling conducted from 1942 to 1943. Prior to the hydraulic filling, this area was covered by waters of San Francisco Bay. The hydraulic fill of this area was deposited in linear east-west trending rows; the filling began on the north end and progressed to the south end of the site.

- Waste disposal activities reportedly began in 1943. The disposal method consisted of digging trenches in the hydraulic fill to the water table (3 to 4 feet below ground surface), filling the trenches with waste, and compacting the material with a bulldozer. Cover material was applied on an irregular basis. Reportedly, combustion of waste drums often occurred during bulldozing operations, suggesting that flammable materials were disposed in this area.

- Beginning in the early 1950's until 1954, the Navy Public Works Department conducted open burning of waste materials in a pit located in the extreme northwestern corner of Site 1 (northern end of Runway 13-31). Burnt residue was disposed into San Francisco Bay and between 1953 and 195, the 400 foot shoreline near the burning area was extended approximately 130 feet westward into San Francisco Bay. Boring logs indicate the shoreline was extended with burned and unburned refuse with a thin covering of sand.

- Beginning 1952, the construction of runways necessitated covering the northern portion of Site 1. By 1956 the entire Disposal Area was covered with hydraulic fill material. Currently, most of Site 1 is paved and is part of active runways. Other portions of Site 1 are occupied by a skeet range, a target range, a picnic area, and a running path.

- Groundwater at Site 1 is found in two water-bearing zones. The first water bearing zone is unconfined and occurs above the Holocene Bay Mud Unit. The second water-bearing zone occurs between the late Pleistocene estuarine deposits and the Holocene Bay Mud Unit. The hydraulic separation between the two water-bearing zones may be incomplete. Groundwater in the vicinity of Site 1 is tidally influenced; depth to groundwater varies between approximately 3.0 and 5.0 feet below ground surface.

Potential Source(s)

- Leachate generated from buried waste may migrate through the vadose zone to the first water-bearing zone. Potential fuel combustion by products and pesticide use in the open unpaved areas may settle in surface soils and be subsequently carried by airborne dust.

Chemicals Most Frequently Detected

Soil

- Semi-volatile organic compounds (variable), polychlorinated biphenyls (aroclor 1260), metals (variable).

Groundwater

- Benzene, toluene, xylenes, chlorobenzene, 1,2-dichloroethene, 1,1-dichloroethane, vinyl chloride and trichloroethene.

Sediments from Storm Sewer Drain

- No samples collected from storm drain sediments.

Preliminary Estimate of Contamination

- Surface soil all across the site contains semi-volatile organic compounds, polychlorinated biphenyls, pesticides, and total petroleum hydrocarbons; the highest concentrations are found in the northwestern corner. Deeper soil has been affected at depths ranging from 0.5 to 25 feet below ground surface. The deepest contamination, on the northwest end, is from semi-volatile organic compounds. Polychlorinated biphenyls have been found from 0 to 13 feet below ground surface on the northeast corner, and to a depth of 2.5 feet on the east side of the site (polychlorinated biphenyl contamination not all shown on attached maps).

- Groundwater has been monitored on the perimeter of Site 1. The highest contamination is on the west side of the landfill area in the first water-bearing zone. 1,2-dichloroethene and vinyl chloride were found in the highest concentrations. The quarterly monitoring data show that these two parameters were very elevated for two quarters; the concentrations decreased the third quarter and increased the fourth quarter.

SITE CONCEPTUAL MODEL
SITE 2 - WEST BEACH LANDFILL

Site History

- Site 2, the West Beach Landfill, occupies approximately 110 acres in the southwestern corner of NAS Alameda and is located to the south of Site 1. The western and southern borders of Site 2 are on San Francisco Bay. The area of Site 2 once was covered by the waters of the San Francisco Bay to depths ranging from 3 to 24 feet. In 1956, the construction of a sea wall began on the southern and western sides. By 1957, the sea wall was completed and the northern portion of the existing Site 2 was filled with hydraulic fill to above sea level. By 1969, most of the southern portion had been filled, and by 1973, fill had been emplaced over the entire area that is now Site 2.

- Disposal operations began at the West Beach Landfill in the early 1950s; full disposal operations began in 1956, following the closure of the 1943-1956 Disposal Area (Site 1), and continued until 1978, when disposal operations ceased. The disposal method consisted of excavating a trench to approximately 20 feet below ground surface into the hydraulic fill, and placing waste in the trench. During the late 1970s, trenches were dug to the water table (3 to 4 feet below ground surface) prior to placing waste. Wastes were compacted by a bulldozer and intermittently covered with soil.

- Wastes deposited in the West Beach Landfill included waste chemical drums, municipal garbage, solvents, oily waste and sludges, paint waste, plating wastes, industrial strippers and cleaners, acids, mercury, polychlorinated biphenyl contaminated liquids, batteries, low-level radiological waste, scrap metal, inert ordnance, asbestos, pesticides (solid and liquid), tear gas agent (ortho-chlorobenylidene malononitrile), infection medical waste, creosote, dredge spoils, and waste medicines and reagents. An estimated 1.6 million tons of wastes were disposed in the West Beach Landfill.

- The landfill is surrounded by an earthen berm approximately 55 feet wide and 7 feet high. The area is moderately to well vegetated with grasses and supports a variety of wildlife.

- During the 1980s, a wetland area was created in the southwest corner of Site 2 as a result of excavating surface material that was used as landfill cover. The wetland provides a nesting area for birds and is also well vegetated with grasses. Currently, the site is not used for air station operations or activities.

- By June 1985, the Navy had installed a slurry wall along a portion of the western perimeter of the landfill to prevent seepage of leachate into the bay. The slurry wall is approximately 820 feet long, 2 feet wide, and 20 to 30 feet deep (depth extends into Holocene Bay Mud Unit).

- Depth to groundwater is 3 to 4 feet below ground surface.

Potential Source(s)

- Leachate generated from buried waste is migrating to upper water-bearing zone; waste is in direct contact with groundwater. Polychlorinated biphenyls on ground surface (source unknown) may be entrained in airborne dust.

Chemicals Most Frequently Detected

Soil

- Semi-volatile organic compounds, polychlorinated biphenyls (aroclor 1260 & 1248) and pesticides (DDT, DDD, DDE, dieldrin, endrin, alpha-chlordane, gamma-chlordane, delta-BHC).

Groundwater

- Benzene, chlorobenzene, 1,2-dichloroethene, 1,2 dichloroethane, and semi-volatile organic compounds (variable).

Sediments in Storm Sewer Drain

- No data were collected from storm drains at this site.

Preliminary Estimate of Contamination

- In surface samples, polychlorinated biphenyls, were found in nearly every sample on a 200-foot grid across the site. The highest concentrations are on the north end, the central portion, and the east side of the side. The concentrations lessen from the southern third of the site to the southern end. The highest concentrations were as follows:

  - In a sample taken 400 feet from the east side, and 1000 feet from the north side, the concentration was 11,000 micrograms per kilogram (μg/kg);

  - In a 1000-foot area trending from the northeast corner toward the southwest, the concentrations ranged from 1200 to 4000 μg/kg;

  - In a 800-foot wide area, the western side of the landfill typically had samples ranging from 100 to 250 μg/kg.

- Pesticides were found mostly in the central portion of the site, and were more elevated on the north side of the site than on the south side. The highest concentrations were found about 600 feet from the north side of the site.

- Total petroleum hydrocarbons and semi-volatile organic compounds were also found all across the site in surface soil samples.

- In soil borings, pesticides and polychlorinated biphenyls were found in soils in the northwest corner from the surface to 11 feet below ground surface, and on the southwest corner in surface soils. On the southeast corner, semi-volatiles were found in surface soil.

- Groundwater in the first water-bearing zone on the northeast, the northwest corner, and the west side contained chemicals of concern.

SITE CONCEPTUAL MODEL
SITE 3 - AREA 97, ABANDONED FUEL STORAGE AREA

Site History

- Site 3 (Area 97) is an abandoned fuel storage area which contained five storage tanks for aviation gasoline (AVGAS), approximately 10,000 gallons each, which were discovered to be leaking in 1975 and 1978. An estimated 365,000 gallons of AVGAS may have escaped from the storage area in the 1960s and early 1970s.

- By 1987, all five tanks had been drained, cleaned, and filled with water; all were later destroyed and buried in place.

- Site 3 is currently covered with grass and is used for an aircraft exhibit.

- Previous investigations detected AVGAS-range hydrocarbons in soil and groundwater and free product was noted on inflow water during trench digging along the north and west sides of the site in 1985.

- The depth to groundwater is approximately 6 feet below ground surface.

Potential Source(s)

- The major likely source of contamination at Site 3 was the leaking storage tanks containing AVGAS.

Chemicals Most Frequently Detected

Soil

- Toluene, xylene, and petroleum hydrocarbons.

Groundwater

- Toluene and petroleum hydrocarbons.

Sediments in Storm Sewer Drain

- No data available; data will be available November 1994.

Preliminary Estimate of Contamination

- Based on current data, toluene, xylene and petroleum hydrocarbons were detected in soil to depths of 6 feet below ground surface as far as 100 feet to the north and west and 400 feet to the northwest of this site.

- Based on field test kit data, low levels of gasoline constituents have been detected in groundwater as far as 100 to 200 feet to the north, west, and northwest of Site 3.

SITE CONCEPTUAL MODEL
SITE 4 - BUILDING 360, AIRCRAFT ENGINE FACILITY

Site History

- Site 4 consists of Building 360, and is located near the eastern perimeter of the base. The building has been in operation since 1954. The building houses machine shops, a paint shop, a parts cleaning shop, and a plating shop. Processes performed in the plating shop included paint stripping by blasting; chrome, silver, and nickel stripping; etching; and chrome, silver, nickel, and copper plating. The plating shop has been dismantled and all equipment has been removed. The paint spray booths that were operated in the plating shop have also been removed. The cleaning shop is still in use. Chemicals used in the cleaning shop historically include a mixture containing 55 percent perchloroethylene; several other mixtures have been used that contain dichlorobenzene, methylene chloride, toluene, and sodium hydroxide (30 percent to 70 percent solutions).

- Prior to 1975, plating wastes from the plating shop were discharged to the Sea Plane Lagoon via the industrial waste sewer system. After 1975, plating wastes were separated into a cyanide waste stream and a chromium waste stream; the cyanide waste stream was discharged directly to the industrial sewer, and the chromium waste stream was routed through an industrial waste treatment facility to the west of Building 360 prior to discharge into the industrial sewer. The industrial sewer lines feed into a force main which pumps treated waste to the East Bay Municipal Utility District (EBMUD).

- Utilities located within and surrounding Building 360 include sanitary, industrial, and storm sewers, underground electrical distribution lines, potable and fire protection water lines, and steam and condensate lines. A utility trench is located beneath the building. This tunnel runs the length of Building 360 in a north to south direction. The tunnel is constructed of concrete and has 6-foot high walls. A sump pump is located on the northern end of the tunnel.

- The depth to groundwater is approximately 5 feet below ground surface.

Potential Source(s)

- The potential sources of contamination at Site 4 are spills inside of the building, floor drains, or leaking waste lines associated with (1) the activities at the plating shop on the west side of the building and (2) the cleaning shop in the northeastern corner of the building. The utility tunnel that runs the length of the building may act as a conduit for groundwater and for compounds that are more dense than water (such as trichloroethene).

Chemicals Most Frequently Detected

Soil

- JP-5, motor oil, diesel, xylenes, ethylbenzene, toluene, trichloroethene, 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, semi-volatile organic compounds (variable), cyanide, and chromium.

Groundwater

- Trichloroethene, 1,1-dichloroethene, 1,2-dichloroethene, and 1,1,1-trichloroethane.

Sediments in Storm Sewer Drain

- Total petroleum hydrocarbons, chromium, cobalt, copper, lead, molybdenum, nickel, and silver.

Preliminary Estimate of Contamination

- Soil results from shallow borings on all four sides of Site 4 indicate the presence of gasoline constituents and chlorinated solvents to depths of 15.5 feet below ground surface. The soil beneath Building 360 contained elevated concentrations of total petroleum hydrocarbons (motor oil) and gasoline constituents at depths ranging from 0.5 to 5.0 feet below ground surface. Cyanide has been detected in nearly all sample locations beneath Building 360 at depths ranging from 0.5 to 5.0 feet below ground surface. Surface soil beneath the plating shop contain elevated concentrations of chromium. Two borings to the west side of the Building 360 (and west of the plating shop) contained elevated chromium at 5.5 to 6.0 feet below ground surface. The storm sewer drain sediment samples on the north, east, and south sides of Building 360 contained elevated concentrations of total petroleum hydrocarbons, chromium, cobalt, copper, lead, molybdenum, nickel and silver.

- Chlorinated solvents have been detected in shallow groundwater wells on the west, north and east sides of Building 360. HydroPunch groundwater samples on the north and east side of the building at a depth of approximately 20 feet below ground surface contained trichloroethene.

SITE CONCEPTUAL MODEL
SITE 5 - BUILDING 5, AIRCRAFT REWORK FACILITY

Site History

- Site 5 consists of Building 5 and is located between First and Second Streets, and Avenues C and F. The site has been in operation since 1942. Operations conducted at this site include cleaning, reworking, and manufacturing of metal parts, tool maintenance, plating, and painting operations. Prior to 1972, Building 5 wastewater was discharge without pretreatment to the base industrial sewers, the bulk of which emptied into the Seaplane Lagoon. From 1972 until its closure in 1990, the plating shop generated wastewater consisting of two waste streams, one from the alkaline tanks and one from the cyanide tanks. The cyanide stream was treated in a cyanide destruction unit, then the two waste streams were combined and routed to a treatment plant.

- Additional site investigations were performed in June 1992 and September 1993 in or around five areas at Site 5: the plating shop, the selective plating shop, the wastewater treatment area, the former hazardous waste storage area, and the battery storage area.

- The plating shop was used to plate aircraft parts using both cyanide and chromium processes. Plating shop processes include degreasing; caustic and acid etching; metal stripping and cleaning; and chrome, nickel, silver, cadmium, and copper plating. The plating shop was closed in June of 1990 and is currently inactive with the exception of two rinse tanks. These tanks are used to rinse parts that have been plated in the selective plating shop.

- The selective plating shop is an area where small items were plated by hand and has been abandoned since October 1993. No bulk plating was performed at this shop. Spent fluids were formerly discharged without pretreatment to the industrial waste sewer system through a floor drain at this shop.

- The wastewater treatment area contains sumps which were used to store cyanide- and chrome-containing wastewaters prior to pretreatment. Wastewater from the cyanide and chrome process lines were held in separate sumps until the cyanide wastewater stream was treated in a cyanide destruction unit. This area currently serves the cleaning shop and the conversion coating area and formerly served the plating shop before it closed in June of 1990. The inactive cyanide destruction unit is still located in the wastewater treatment area.

- The former hazardous waste storage area was closed in mid-1988. Drummed wastes formerly stored in this area included spent solvents, waste paint, and waste oil. This area is currently used to store drummed hydraulic fluid and lubricating oils.

- The battery storage area services lead/acid and nickel/cadmium batteries. In the past, battery fluids were discharged to the base industrial waste sewer system through a sink located in this storage area. Base personnel indicated that the corrosive fluids resulted in deterioration of the piping in the sink and drain that led to the sewer system. Currently, battery fluids are collected at this site for proper disposal.

- Utilities located within and immediately surrounding Building 5 include underground sanitary sewer, storm sewer, telephone, steam, water, electrical, abandoned fuel, and industrial sewer lines.

- The depth to groundwater is approximately 6 feet below ground surface.

Potential Source(s)

- The potential sources of contamination at Site 5 are spills or leaking waste lines associated with (1) the activities at the plating shop and selective plating shop in the center of the building, (2) the wastewater treatment area on the south side of the building, (3) the former hazardous waste storage area on the southeast side of the building, (4) the battery storage area in the northeastern corner of the building, and (5) the storm sewers located within and surrounding Building 5.

Chemicals Most Frequently Detected

Soil

- 1,1,1-trichloroethane, 1,1-dichloroethane, trichloroethene, ethylbenzene, toluene, xylenes, semi-volatile organic compounds (variable), cyanide, cadmium, chromium, and lead.

Groundwater

- 1,1-dichloroethene, 1,1-dichloroethane, 1,1,1-trichloroethane, trichloroethene, trichloroethene, tetrachloroethene, vinyl chloride, chloroethane, chlorobenzene, benzene, ethylbenzene, xylenes, semi-volatile organic compounds (variable), and cyanide.

Sediments in Storm Sewer Drain

- 1,1,1-trichloroethane, 1,1-dichloroethane, trichloroethene, tetrachloroethene, vinyl chloride, toluene, xylene, motor oil, other total petroleum hydrocarbons, semi-volatile organic compounds (variable), lead, and chromium.

Preliminary Estimate of Contamination

- Soil boring samples collected from beneath the plating and selective shops at depths ranging from 1.25 to 22 feet below ground surface detected 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethane, trichloroethene, chloroethane, vinyl chloride, cyanide, cadmium, and chromium. Polycyclic aromatic hydrocarbons were detected in soil samples collected from the wastewater treatment area at 10 feet below ground surface, and solvents and polycyclic aromatic hydrocarbons were detected in soil samples collected from the former hazardous waste storage area at 10 feet below ground surface.

- Groundwater beneath Building 5 detected common industrial solvents and their transformation products. Chlorinated solvents have been detected in shallow groundwater wells on the east , south, and west sides of the building. 1,1,1-trichloroethane, 1,1-dichloroethane, cyanide, cadmium, and chromium were detected in grab groundwater samples collected from beneath the plating and selective plating shops. Chlorinated solvents were detected in grab groundwater samples collected from the wastewater treatment area, the former hazardous storage area, and the battery storage area.

SITE CONCEPTUAL MODEL
SITE 6 - BUILDING 41, AIRCRAFT INTERMEDIATE MAINTENANCE FACILITY

Site History

- Site 6 consists of Building 41 which is located on the northeast corner of Avenue F and Fifth Street, approximately 600 feet north of the Seaplane Lagoon. Building 41 was formerly used as a hangar for sea planes; also, it was used to store 55-gallon drums of waste from repair and maintenance activities. These drums reportedly contained PD-680 dry cleaner (a Stoddard solvent-based material), trichlorofluoroethane, 6083 oil, 1,1,1-trichloroethane, paint wastes and strippers, and hydraulic fluids.

- A paint stripping tank was once located on the outer southwest corner of Building 41. The tank was observed in 1988 during a site visit by Canonie, but has since been removed. Rinse waters from the tank flowed into a sewer manhole that discharged to the sanitary sewer system (East Bay Municipal Utility District). The paint stripping tank location was also used as an equipment wash pad. Rinse water from the pad was first drained to an oil water separator and then to the sanitary sewer system. The pad does not appear to be currently in use.

- Currently, Building 41 is used for the repair of aircraft components such as hydraulics, brakes, avionics, engines, electrical wiring and instrumentation.

- Groundwater is approximately 5.5 feet below ground surface.

Potential Source(s)

- No source of soil contamination is apparent. The potential source of groundwater contamination at the southwestern corner of the site is the old paint stripping tank/wash pad area. It is possible the drain or sewer lines are cracked. Any contamination on the north side of Building 41 may be from the industrial sewer line that parallels the north side of the building.

Chemicals Most Frequently Detected

Soil

- Semi-volatile organic compounds (variable).

Groundwater

- 1,1-dichloroethane, 1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride.

Sediments in Storm Sewer Drain

- No data currently available; data will be available by November 1994.

Preliminary Estimate of Contamination

- Soil contains semi-volatile organic compounds (variable) on all four sides of Building 41 as follows: on the south, contamination is found from 2.5 to 11.0 feet below ground surface; on the north, from 6.5 to 11.0 feet below ground surface; on the west, from the surface to 8.0 feet below ground surface, and on the east, from 8.0 to 14.0 feet below ground surface.

- Groundwater samples from two wells on the southwest corner of Building 41 contained chemicals of concern.

SITE CONCEPTUAL MODEL
SITE 7A - BUILDING 459, NAVY EXCHANGE FUEL STATION

Site History

- Site 7A consists of Building 459, and is located near the eastern perimeter of the base. This site has served as the NAS Alameda fuel station since 1966. An auto repair shop and a small convenience store are also part of the station facilities. The fuel islands are located on the eastern portion of the site and a former transformer pad is located at the northern boundary of the site. No information on the history of use of transformers at the site, or documentation of leaks, is available.

- There are four 10,000-gallon underground storage tanks located northwest of the fuel islands at the site. Three of the four 10,000-gallon tanks contain gasoline (two contain unleaded gasoline and one contains premium gasoline) and failed a tank precision tightness test in 1987. It is assumed that repairs were made because the three tanks reportedly passed leak tests in 1991. The fourth tank was taken out of service at an unknown date due to a suspected leak.

- Two underground storage tanks (10,000 and 8,000 gallons) located west of the fuel islands were abandoned in place at the site due to leakage. Both tanks stored leaded gasoline and were scheduled for closure in 1987.

- Two abandoned underground storage tanks (500 gallons each) are located on the northern side of Building 459. One tank was used to store solvent. Types of solvents stored in this tank are unknown. The other tank was used to store waste oil. Both tanks were scheduled for closure in 1987 and are no longer in use. The waste oil tank, which has not been used since failing a vacuum tightness test in December 1991, was reported to be leaking in 1992.

- The depth to groundwater is approximately 6 feet below ground surface.

Potential Source(s)

- Potential sources of contamination at Site 7A are spills or leaks associated with (1) the two abandoned underground storage tanks west of the fuel islands, (2) the three existing and one abandoned underground storage tank northwest of the fuel islands, and (3) the existing fuel pipelines and fuel islands.

Chemicals Most Frequently Detected

Soil

- Ethylbenzene, toluene, xylenes, total petroleum hydrocarbons, semi-volatile organic compounds (variable), lead, and chromium.

Groundwater

- Benzene, ethylbenzene, toluene, xylenes, and total petroleum hydrocarbons.

Sediments in Storm Sewer Drain

- No data available; data will be available November 1994.

Preliminary Estimate of Contamination

- Soil results from shallow borings located north and south of the abandoned underground storage tanks indicate the presence of gasoline constituents to depths of 5 feet below ground surface. The soil beneath Site 7A contained elevated concentrations of total petroleum hydrocarbons at depths ranging from 0 to 13 feet below ground surface.

- Fuel constituents have been detected in shallow groundwater wells north, south, and in the backfill material of the existing and abandoned underground storage tanks and the existing pump islands. Total petroleum hydrocarbons were detected in wells in the backfill material of the abandoned and active underground storage tanks at the site.

SITE CONCEPTUAL MODEL
SITE 7B - BUILDING 162, SERVICE STATION

Site History

- Site 7B consists of an area reportedly used by the Navy Exchange as a service station (date of reported use not available). During a March 1988 site visit, Canonie representatives were unable to locate information about the quantity, size, location or disposition of any underground storage tanks (USTs) associated with the former service station. Recently obtained anecdotal information suggests the area now occupied by Building 162 was not used as a service station. However, surface evidence suggests the presence of potential USTs in the grass near the northeast corner of Building 162; 3-inch diameter pipes are cut off flush with the ground surface and two 2-inch diameter pipes run out of the ground and up the wall adjacent to the lawn area. Public Works Center indicates that two small oil-bearing USTs with 100 and 150 gallon capacities and located at Building 162.

- Building 162 is currently used as a maintenance shop for ship components. Testing of small engines and pumps is conducted in water-filled vats in the alleys surrounding Building 162. No secondary containment or spill prevention controls are present. Recently, the PRC team observed minor spilling of fuel-contaminated water during testing in the water-filled vats. Machine shops and maintenance shops are located inside of the building.

- Building 162 is located approximately 200 feet southwest of Installation Restoration Program (IRP) Site 3 where an AVGAS leak was discovered in 1975. Investigations in 1979 and 1985 (Kennedy Engineers and Wahler Associates) placed wells around Site 7B for the purpose of detecting contamination coming from the Site 3 AVGAS leak. Three wells on the north side of Building 162 were sampled once; two of the wells showed AVGAS contamination.

- Groundwater is approximately 3.5 to 4.0 feet below ground surface, and is tidally influenced on the south side of the building in the vicinity of a storm drain that empties into the Seaplane Lagoon.

Potential Source(s)

- Industrial sewer line to the north of Building 162, the AVGAS release at Site 3 to the east of Building 162, and spillage from the test vats in alleys surrounding Building 162.

Chemicals Most Frequently Detected

Soil

- 1,2-dichloroethene, xylenes, and semi-volatile organic compounds (variable).

Groundwater

- Benzene, 1,2-dichloroethene, and vinyl chloride.

Sediment from Storm Sewer Drain

- No data available; data will be available in November 1994.

Preliminary Estimate of Contamination

- In soil from a monitoring well boring on the northwest corner of the site, 1,2-dichloroethene and xylene were detected at 8 feet below ground surface. Semi-volatile compounds were detected in all three borings at a depth of 11 feet below ground surface.

- The groundwater from a well on the northwest corner of the building contains benzene, 1,2-dichloroethene and vinyl chloride.

SITE CONCEPTUAL MODEL
SITE 7C - BUILDING 547, SERVICE STATION

Site History

- Site 7C is a former on-base annex service station not currently in operation, and is located near the eastern perimeter of the base. This service station operated between 1971 and 1980.

- The site includes three 12,000-gallon underground fiberglass fuel tanks. The underground fuel tanks are located in the northwest corner of the property. In 1980, one of the 12,000-gallon underground fuel tanks was ruptured and has since been drained, repaired, and abandoned. In 1987, feed lines to the same tank were reported leaking; they were removed and replaced.

- The depth to groundwater is approximately 5 feet below ground surface.

Potential Source(s)

- Potential sources of contamination at Site 7C are spills or leaks associated with (1) the underground fuel tanks in the northwest corner of the property and (2) the feed lines from these fuel tanks to the service station near the center of the site.

Chemicals Most Frequently Detected

Soil

- Benzene, ethylbenzene, toluene, xylenes, total petroleum hydrocarbons, semi-volatile organic compounds (variable), and lead.

Groundwater

- Benzene, ethylbenzene, toluene, xylenes, total petroleum hydrocarbons, and semi-volatile organic compounds (variable).

Sediment in Storm Sewer Drain

- No data available; data will be available November 1994.

Preliminary Estimate of Contamination

- Analytical results from shallow soil borings located on the north and south sides of the former service station indicate the presence of gasoline constituents to depths of 12 feet below ground surface. Total petroleum hydrocarbons have been detected in soil throughout the site at depths ranging from 1 to 6 feet below ground surface. Polycyclic aromatic hydrocarbons were detected in shallow borings north and south of the service station to depths of 5 feet below ground surface; phthalates were detected in shallow borings north and south of the service station to depths of 15 feet below ground surface.

- Fuel constituents, total petroleum hydrocarbons, and polycyclic aromatic hydrocarbons have been detected in shallow groundwater wells south and southeast of the service station.

SITE CONCEPTUAL MODEL
SITE 8 - BUILDING 114, PESTICIDE STORAGE AREA

Site History

- Site 8 consists of Building 114, which is located on Third Street between Avenues C and D. Building 114 was constructed in 1944 and served as the Navy's Public Works Center (PWC) maintenance and storage shop, office equipment storage and appliance repair, and administrative office. The site was used as the center for weed and pest control on the base. PWC also stored material and rinsed equipment in the Building 114 yard. In 1974, PWC administrative duties were shifted to the Oakland Naval Supply Center; however, pesticide operations currently remain at Building 114.

- PWC also maintained other shops at Site 8. Activities at these shops included woodworking, painting, and steam cleaning. Wastewater generated from steam cleaning, paint stripping, and paint spray booth activities was discharged directly to the storm drains. A separator pit located in the western corner of the courtyard separated sludges and floating scums from the wastewater stream; however, this system operated inadequately, sometimes allowing sludges and floating scum to remain in the wastestream.

- Currently, an outside shed along the northeast corner of the south wing of the building is used for storing pesticides. A number of maintenance activities, including a paint shop, are still in operation at the building.

- The depth to groundwater is approximately 6 feet below ground surface.

Potential Source(s)

- Potential sources of contamination at Site 8 are (1) spills associated with wastewater generated from steam cleaning, paint stripping, and paint spray booth activities and (2) leaks associated with the storm drain (in which site wastewater was discharged) and the industrial sewer lines.

Chemicals Most Frequently Detected

Soil

- Semi-volatile organic compounds (variable), polychlorinated biphenyl (PCB)/pesticides, and lead.

Groundwater

- Benzene, ethylbenzene, xylenes, and 1,2-dichloroethene.

Sediment in Storm Sewer Drain

- Motor oil, other total petroleum hydrocarbons, 1,2-dichloroethene, vinyl chloride, PCB/pesticides, and semi-volatile organic compounds (variable).

Preliminary Estimate of Contamination

- The contamination resulting from activities conducted at Site 8 appears to be limited to soil. Soil results from shallow borings throughout Site 8 indicate the presence of semi-volatile organic compounds to depths of 14 feet below ground surface. Soil results from surface samples in the grassy northeast corner of the site indicate the presence of elevated concentrations of PCB/pesticides and lead to depths of 2 feet below ground surface. The storm sewer drain sediment samples on the north and south sides of Building 114 contained elevated concentrations of total petroleum hydrocarbons (motor oil, other components), PCB/pesticides, and phthalates.

- Groundwater contamination at Site 8 appears to be migrating from Site 5, located west-southwest of this site.

SITE CONCEPTUAL MODEL
SITE 9 - BUILDING 410, PAINT STRIPPING

Site History

- Site 9 is approximately 1 acre in size and consists of Building 410 and the area to the east of the building. The site is 850 feet west of the south gate on Eighth Street between Avenues L and M. Building 410 formerly housed the aircraft paint stripping operation for NAS Alameda. Wastewater from the paint stripping operation contained oil, paint, paint skins, detergent, and paint stripper. Prior to the construction of an industrial waste treatment facility, wastewater from Building 410 was discharged directly to the industrial sewer without pretreatment. (The construction date of the industrial waste treatment facility is not known.)

- As part of the Naval Air Rework Facility Industrial Waste Survey in 1981, composite wastewater samples were collected from Building 410; results indicated elevated concentrations of chromium, cadmium, zinc, oil and grease, trichloroethane, phenol, surfactants, and total solids.

- Groundwater is approximately 6 to 8 feet below ground surface.

Potential Source(s)

- Potential sources of contamination include subsurface waste drainage and sewer lines. Also, Site 9 is 300 to 400 feet west of Site 13 and it is possible the contamination found at Site 9 is from historical activities at Site 13.

Chemicals Most Frequently Detected

Soil

- Toluene and semi-volatile organic compounds (variable).

Groundwater

- No chemicals of concern detected in groundwater to date.

Sediment from Storm Sewer Drain

- No data available; data will be available in November 1994.

Preliminary Estimate of Contamination

- Soil from 3.0 to 15.5 feet below ground surface on all sides of Building 410 contains toluene. Semi-volatile organic compounds in soil were found from the surface to 15.5 feet below ground surface; the greatest concentrations were found on the east and north sides of the building.

SITE CONCEPTUAL MODEL
SITE 10A - BUILDING 400, MISSILE REWORK OPERATIONS

Site History

- Site 10A consists of Building 400, which is located south of Avenue F, between Buildings 11 and 12. The site is approximately 600 feet north of the Seaplane Lagoon. The building was used from the mid 1950s to 1972 for missile rework operations. From 1972 to the present, the building has been used for paint stripping, constructing fiberglass aircraft components, and aircraft parts cleaning operations.

- Prior to 1972, wastes generated included paint sludges, metal shavings, paint strippers, cleaning solvents such as trichloroethene and carbon tetrachloride, testing fluids, miscellaneous waste oils, and oil and grease. Wastewater streams were discharged to the industrial waste sewer system. Prior to 1972, the wastewater was discharged without pretreatment to the Seaplane Lagoon.

- Waste currently generated at this site includes paint sludges, paint strippers, cleaning solvents such as trichloroethene and carbon tetrachloride, and miscellaneous waste oils, and oil and grease. Disposal of used chemicals is accomplished by collecting the wastes at one of the five Generator Accumulation Point (GAP) sites in the building.

- The depth to groundwater is approximately 5 feet below ground surface.

Potential Source(s)

- For soil, no source is apparent. The groundwater at the northern portion of the site is affected; the potential source for this contamination is Site 5.

Chemicals Most Frequently Detected

Soil

- Semi-volatile organic compounds (variable).

Groundwater

- 1,1-dichloroethane, 1,2-dichloroethene, and trichloroethene.

Sediments in Storm Sewer Drain

- Lead, cadmium, and chromium.

Preliminary Estimate of Contamination

- Groundwater contamination has been detected in only one well located north of the Building 400.

SITE CONCEPTUAL MODEL
SITE 10B - BUILDING 530, MISSILE REWORK OPERATIONS

Site History

- Site 10B is located to the west and south of the South Gate of NAS Alameda, and on the south side of Installation Restoration Site 13. Since its construction in 1972, the building has been used for missile rework operations. Current operations include electrical maintenance, cleaning, grinding, welding, painting, paint stripping, and parts fabrication. Wastes generated by these processes are disposed of in 55-gallon drums and sent to an off-site facility.

Potential Source(s)

- The potential sources of soil and groundwater contamination at Site 10B are underground storm sewer lines and residual contamination from historical refinery operations.

Chemicals Most Frequently Detected

Soil

- Toluene, ethylbenzene, xylenes, 2-methylnaphthalene, di-n-butylphthalate, pyrene, total petroleum hydrocarbons.

Groundwater

- Benzene, toluene, ethylbenzene, xylenes, naphthalene, 2-methylnaphthalene, total petroleum hydrocarbons.

Sediments from Storm Sewer Drain

- No data available; data will be available in November 1994.

Preliminary Estimate of Contamination

- In soil, toluene, ethylbenzene, xylenes, semi-volatile organic compounds and total petroleum hydrocarbons were detected from 2.5 to 14.5 feet below ground surface. The highest concentrations were found on the northeast corner from 11.0 to 14.0 feet below ground surface.

- In groundwater, the well on the northeast corner of the site contained benzene, toluene, ethylbenzene, xylenes, naphthalene, 2-methylnaphthalene, and oil and grease. Benzene was found at 19 micrograms per liter.

SITE CONCEPTUAL MODEL
SITE 11 - BUILDING 14, ENGINE TEST CELL

Site History

- Site 11 consists of Building 14 and is located across a narrow alley (Avenue I) directly south of Site 7B. Since its construction in 1946, Building 14 has been used for aircraft engine testing. The building is divided into a series of test cells. Each of the test cells contain floor drains that lead to an industrial waste gravity sewer system. In ten of the cells, the drains reportedly lead to underground storage tanks. The drains in the other two cells (currently in use) lead to an oil water separator and then to the storm sewer. Fuel for engine testing is supplied from the tank farm located due south of Building 14. Underground fuel lines connect the tank farm to the rooftop of Building 14 through risers located on the southern exterior wall of the building. Fuel types used in testing include AVGAS, JP-5 and JP-7.

- Building 14 contains a laboratory on the second floor. Past site visits and interviews revealed that minor spills of mercury have occurred from manometers and thermometers used in the laboratory. The spills have been washed into the industrial waste collection system.

- Groundwater is approximately 3.5 to 4.0 feet below ground surface and is tidally influenced in the vicinity of a storm drain that empties into the Seaplane Lagoon.

Potential Source(s)

- Underground fuel lines from the tank farm, industrial sewer line on the north side of the building, and USTs on south side of building, storm sewer on west side of building.

Chemicals Most Frequently Detected

Soil

- Petroleum hydrocarbons, semi-volatile organic compounds (variable), and lead (two discrete locations). In groundwater, 1,1-dichloroethane, 1,2-dichloroethene, trichloroethene, and vinyl chloride.

Groundwater

- 1,1-dichloroethane, 1,2-dichloroethene, trichloroethene, and vinyl chloride.

Sediment from Storm Sewer Drain

- No data available; data will be available in November 1994.

Preliminary Estimate of Contamination

- Petroleum hydrocarbons were present at elevated concentrations primarily on the south side of the building from the surface to 4 feet below ground surface (B11-04, and on the west side of the building from the surface to the water table interface (B11-05). Semi-volatile compounds were found at 10 feet below ground surface on the northeast and south east corners of the building. Lead was found in two borings on the south side of the building in surface soil.

- The groundwater on the northeast corner of the building contains 1,1-dichloroethane, 1,2-dichloroethene, trichloroethene, and vinyl chloride. The groundwater on the southeast corner contains 1,2-dichloroethane.

SITE CONCEPTUAL MODEL
SITE 12 - BUILDING 10, POWER PLANT

Site History

- Site 12 consists of Building 10, the NAS Alameda power plant. It is located in the southeast portion of the base just east of Building 5 (Site 5). Five underground bunker "C" fuel oil storage tanks exist at this site; the tanks have been closed in place and are filled with sand. A sixth underground storage tank on the southwest corner of the building (removed in 1993) contained white gas.

- Nine above ground storage tanks are located on the south and west sides of Building 10. All ten tanks are used for diesel fuel storage. There is no documented evidence of leaks from these tanks.

- Activities conducted in this building include steam generation and air compression. Historically, spills of diesel and petroleum products were documented and staining has been observed on the concrete floor of the building around the base of a diesel generator at the east end of the building. Staining was observed from two of four primary compressors at the west end of the building.

- Groundwater is approximately 6 to 7 feet below ground surface.

Potential Source(s)

- Underground storage tanks, industrial sewer lines, storm sewer lines.

Chemicals Most Frequently Detected

Soil

- Total petroleum hydrocarbons and semi-volatile organic compounds (variable).

Groundwater

- 1,2-dichloroethene, pyrene, phenanthrene, fluoranthene, acenaphthene.

Sediment from Storm Sewer Drain

- Total petroleum hydrocarbons, JP-5, semi-volatile organic compounds (variable), barium, chromium, copper, lead, nickel, zinc.

Preliminary Estimate of Contamination

- Total petroleum hydrocarbons in surface soil ranged from 31 to 20,500 parts per million, with the highest concentration on the east side of the building; from 3.5 to 14 feet below ground surface, the concentrations ranged from 30.7 to 83.2 parts per million. The groundwater well on the northeast corner of the building contained the volatile and semi-volatile organic compounds. Sediments in storm sewer drains on the east and southwest sides of the building contained chemicals of concern in elevated concentrations.

SITE CONCEPTUAL MODEL
SITE 13 - FORMER OIL REFINERY

Site History

- Site 13 consists of approximately 30 acres located in the southeast corner of the present-day air station. This site was formerly occupied by the Pacific Coast Oil Works refinery, which operated between 1879 and 1903. Refinery wastes and asphaltic residues were dumped at the site during the period in which the refinery operated. The refinery consisted of pump and lubricating houses, stills, two laboratories and agitators, as well as approximately 19 aboveground iron oil storage tanks, six underground iron storage tanks and a storage area containing drums of oil.

- The area once occupied by the refinery was later surfaced by the Navy. Sometime in the 1940s, a surface rupture occurred as a result of vapor pressure buildup from underground hydrocarbons and refinery wastes. The Navy excavated an area approximately 30 feet by 30 feet (depth not recorded), and a concrete slab was emplaced in the bottom of the excavation, which was then backfilled and resurfaced.

- Several Naval facilities now exist on the site of the former oil refinery. A former on-base annex service station, Building 547 (Site 7C) is located in the northeast corner of the former oil refinery area. In the northwest corner is a hazardous waste storage yard (Site 19), which is currently in operation. A missile rework facility is housed in Building 530 (Site 10B) which is located in the southern portion of the former oil refinery area.

- During a recent removal action, approximately 104 cubic yards of soil containing low pH and high lead concentrations was removed; another 50 cubic yards (approximately) will be removed in the near future. Soil containing lead at concentrations greater than 100 parts per million were and will be removed. The location of the removal is in the southern portion of the site.

- In February 1991, a JP-5 release occurred on the east side of Building 397. Following a period of heavy rains, several storm drain manholes overflowed, resulting in a pool that was covered with a layer of free hydrocarbon product. Twelve manholes in the area were found to contain floating free product hydrocarbon. Reportedly, the storm drain lines south of Building 397 were extensively damaged during a 1989 earthquake. Groundwater in the area may have been impacted by the JP-5 flowing into the storm sewer and subsequently leaking from damaged storm sewer lines.

- Groundwater is approximately 6 feet below ground surface.

Potential Source(s)

- The potential sources of soil and groundwater contamination include past oil refinery wastes and the JP-5 release on the east side of Building 397 which may have leaked from damaged storm sewer lines to the south of Building 397.

Chemicals Most Frequently Detected

Soil

- Petroleum hydrocarbons, benzene, toluene, ethylbenzene, xylenes, semi-volatile organic compounds, pesticides (4,4-DDT, 4,4-DDE, 4,4-DDD, and toxaphene).

Groundwater

- Benzene, ethylbenzene, xylenes 4,4-DDT, naphthalene, 2-methylnaphthalene.

Sediment in Storm Sewer Drain

- No data available; data will be available in November 1994.

Preliminary Estimate of Contamination

- Soil contamination from the surface to approximately 15 feet below ground surface is present in nearly all sample locations at Site 13. Benzene, toluene, and xylene contamination is highest in an area that historically was the central portion of the old refinery; this area is now bordered by Ninth and Eleventh streets to the west and east, and Avenue L and Avenue K to the south and north.

- Groundwater at the north end of the site, and to the east of Building 397 contains organic chemicals of concern.

SITE CONCEPTUAL MODEL
SITE 14 - FIRE TRAINING AREA

Site History

- Site 14 was used until 1987 for fire training and fire extinguisher discharging. The site consists of a steel tank installed on a 20-foot by 30-foot concrete slab that is surrounded on three sides by an earthen berm. Waste fuels from NAS Alameda plane defueling operations were burned in the tank. Ansulite fire fighting foam was mixed in a nearby tank and used to extinguish training fires. A sump is located in the northeast corner of the pad that apparently collects runoff from training activities.

- Groundwater is approximately 5 feet below ground surface and is tidally influenced. During low tide, groundwater flows toward Oakland Inner Harbor, and during high tide, groundwater flow is parallel to the Oakland Inner Harbor.

Potential Source(s)

- Spillage and combustion by-products of waste fuels used in fire training, fire fighting foam components (diethylene glycol monobutyl ether and surfactants), and potassium chloride from fire extinguishers are potential sources of contamination.

Chemicals Most Frequently Detected

Soil

- Petroleum hydrocarbons, 4,4-DDT, 4,4-DDD, chlordane, endrin aldehyde, PCB (aroclor 1260), dioxins, furans, semi-volatile compounds (variable).

Groundwater

- 1,2-dichloroethene

Sediment from Storm Sewer Drain

- No data available. There were no storm drains sampled at this site.

Preliminary Estimate of Contamination

- In soil, petroleum hydrocarbons, ethylbenzene, total xylenes, were found in elevated concentrations from the surface to 5 feet below ground surface and were found to be present beneath the concrete pad as well as in the berm area. Pesticides, polychlorinated biphenyls, and dioxin were found in surface soils approximately 25 feet outside the berm area.

- Groundwater results indicate only one well on the northeast corner of the fire training area is impacted with 1,2-dichloroethene.

SITE CONCEPTUAL MODEL
SITE 15 - BUILDINGS 301 AND 389, TRANSFORMER STORAGE AREA

Site History

- Site 15 consists of Building 301 and former Building 389, and is located north of Runway 7-25 between the Oakland Inner Harbor and Perimeter Road.

- The Navy constructed quonset huts at the site in the 1950s. Building 301 was used for storage of electrical equipment, oil-filled transformers, and old, unused machinery. During a site visit in March 1988, it was reported that several 55-gallon drums of hydraulic fluids were stored in Building 301 and the surface soils around Building 301 were discolored. Before Building 389 was torn down, it stored transformers.

- Prior to 1974, transformers were stored on bare ground in the vicinity of these buildings. An estimated 200 to 400 gallons of oil containing polychlorinated biphenyls (PCB) from transformers may have been stored at any one time. Personnel also recalled occasional leaks of the PCB-containing oil. The oil was also drained from the transformers on a regular basis and used to spray grounds around the nearby buildings for weed control before regulations were promulgated restricting this use.

- Currently, Building 301 is empty and the remainder of the site consists of an empty lot. Site access is restricted by an enclosed chain-link fence. A removal action is currently being performed at Site 15 to excavate and treat soil with high concentrations of PCBs and lead. Warning signs stating "Warning - PCB Contamination in Surface Soil - Unauthorized Personnel Prohibited" are posted around the site.

- The depth to groundwater is approximately 4 feet below ground surface.

Potential Source(s)

- The potential sources of soil contamination at Site 5 are (1) the past practices, spills, and leaks associated with the PCB-containing oil from transformers and (2) the lead-based paint on the buildings.

- No apparent source of groundwater contamination.

Chemicals Most Frequently Detected

Soil

- Polychlorinated biphenyls and lead.

Groundwater

- No significant chemicals of concern.

Sediments in Storm Sewer Drain

- No data available; data will be available November 1994.

Preliminary Estimate of Contamination

- The contamination appears to be limited to surface soil to 2 feet below ground surface. PCB contamination is distributed throughout the entire site; lead contamination appears to be limited to an area around former and existing site buildings.

SITE CONCEPTUAL MODEL
SITE 16 - CANS C-2 AREA

Site History

- Site 16 occupies 6.5 acres and is used as a storage yard. Large shipping containers, called CANS, have been converted into storage containers. Prior to the CANS being placed in this location, the storage yard was used for aircraft parking, and to store paints, solvents, acids and bases, and transformers containing polychlorinated biphenyl oils. Reportedly, the CANS and drums became corroded over a period of years and leaked onto the ground surface.

- In addition, polychlorinated biphenyl oil was used for weed control in the storage yard until 1963. In the northwest corner of the site, a transformer leaked polychlorinated biphenyl oil, and 10 cubic yards of soil was reportedly removed.

- Currently, the storage yard is used to store various obsolete equipment and miscellaneous equipment such as paint stripping baths, electrical equipment, and aircraft parts. The yard is primarily unpaved, but temporary runway plates made of perforated steel cover much of the surface.

- Groundwater is approximately 5 to 6 feet below ground surface.

Potential Source(s)

- Leaking drums, transformer and storage containers, and the application of polychlorinated biphenyl oil as weed control are potential sources of contamination.

Chemicals Most Frequently Detected

Soil

- Pesticides, polychlorinated biphenyls, semi-volatile organic compounds (variable), and toluene.

Groundwater

- Trichloroethene.

Sediment from Storm Sewer Drain

- No data available; data available in November 1994.

Preliminary Estimate of Contamination

- On the west side of the site, toluene was detected in most soil borings at depths ranging from 2.5 to 15.0 feet below ground surface. Chrysene, pyrene and phenanthrene were detected in surface soils primarily at the southern end of the site. Pesticides and polychlorinated biphenyls were detected in soil all across the west side of the site at depths from the surface to 1.5 feet below ground surface; one location on the west side contained pesticides at 9.5 feet below ground surface.

- Trichloroethene was detected in one well at the northwest corner.

SITE CONCEPTUAL MODEL
SITE 17 - SEAPLANE LAGOON

Site History

- Site 17 is the Seaplane Lagoon and is located on the south side of NAS Alameda, with Piers 1, 2, and 3 on its southern boundary. The Seaplane Lagoon has an area of 110 acres and is about 12 to 15 feet deep. The Seaplane Lagoon is a discharge point for some of NAS Alameda's storm sewer outfalls. The entrance to the lagoon is through an opening in the breakwater (which extends from Pier 1), and is approximately 800 feet long; tidal circulation occurs through this opening. In 1981, 21,000 cubic yards of sediment was dredged from the south side of the lagoon.

- From 1940 to 1975 the Seaplane Lagoon received approximately 300 million gallons of wastewater from industrial and storm sewer outfalls. Since 1975 it has received only storm sewer outfall and surface water runoff. Industrial wastewater was reported to contain heavy metals, solvents, paints, acids, caustic compounds, mercury, paints, oil and grease, PCBs, and detergents.

- The sediments from around Piers 1, 2, and 3 were sampled and analyzed in the past and found to contain polychlorinated biphenyls, heptachlor, phthalic esters, sulfides, zinc, lead, anthracene, and organatins. In the past, wastewater discharged from ships and known to contain solvents, chromium, waste oil, and fuel, was carried into the lagoon by tidal action.

- An ecological assessment was conducted for the Seaplane Lagoon. The activities included screening bioassays, bioaccumulation studies, analysis of benthic populations, and sediment sampling and analysis from the surface to approximately one meter deep. Further characterization of the Seaplane Lagoon is needed to provide data for remedial planning.

Potential Source(s)

- Industrial wastewater discharged from 1940 to 1975 and stormwater containing industrial pollutants used at many sites at NAS Alameda. Surface water runoff may also have contributed to contamination of the sediments.

Chemicals Most Frequently Detected

- Semivolatile organic compounds (variable), polychlorinated biphenyls, pesticides, metals.

Preliminary Estimate of Contamination

- Sediments were sampled from seven discreet locations in the lagoon. Those samples collected nearest to the storm sewer outfalls (three of the locations sampled) contained the highest concentrations of polychlorinated biphenyls and pesticides. The locations containing the highest metals concentrations included two near outfalls on the east and west sides of the lagoon, and one in the middle of the mouth where the lagoon opens to San Francisco Bay. The predominate metal found at each location was different. On the east side, lead was most dominant; on the west side, chromium was most dominant; and on the south side (mouth of lagoon) zinc and chromium were nearly equally dominant. Generally, metal concentrations increased with depth.

SITE CONCEPTUAL MODEL
SITE 18 - STATION SEWER SYSTEM

Site History

- Site 18, NAS Alameda's sewer system, consists of about 40,000 linear feet of sewer lines ranging in size from 4 inches to 36 inches in diameter. These lines empty into the Seaplane Lagoon, Oakland Inner Harbor, and San Francisco Bay. This system received untreated industrial wastewater from plating shop baths, paint shops, pesticide and herbicide mixing/disposal, cleaning solvents, polychlorinated biphenyls, oil and grease, and fuels.

- A study conducted in 1991 estimated the presence of approximately 560 cubic yards of sediment (solid material in drain system). Samples collected at that time show high levels of petroleum hydrocarbons.

- During recent field investigations; sediments from inside sewer manholes were sampled and analyzed. Future work includes a more comprehensive sampling of soil in the immediate vicinity of the storm sewers, and an evaluation of the integrity of the lines.

Potential Source(s)

- Industrial activities conducted at NAS Alameda are potential and known sources of contamination.

Chemicals Most Frequently Detected

- Petroleum hydrocarbons, semivolatile organic compounds, polychlorinated biphenyls, solvents, and metals.

Preliminary Estimate of Contamination

- As of 1994, the results show that nearly all manholes where sediment was sampled, contained elevated concentrations of petroleum hydrocarbons (primarily jet fuel or motor oil), chromium, lead, nickel, copper, zinc, polychlorinated biphenyls, gasoline constituents, and solvents. The most impacted samples to date were collected around IR Sites 4, 5, and 8.

SITE CONCEPTUAL MODEL
SITE 19 - YARD D-13, HAZARDOUS WASTE STORAGE

Site History

- Site 19 (Yard D-13) is located east of Ninth Street and north of K Street in an area southwest of Building 360. The site is enclosed by fences and encompasses approximately 1.5 acres. Building 616 is located in the northwest corner of the yard.

- Site 19 is located in the northwest corner of Site 13. Site 13 was formerly occupied by the Pacific Coast Oil Works refinery, which operated between 1879 and 1903. Refinery wastes and asphaltic residues were dumped at the site during the period in which the refinery operated. In February 1991, a JP-5 release occurred on the east side of Building 397, located southwest of Site 19. JP-5 was discovered in the storm sewer and industrial waste sewer systems that serve Building 397. An underground fuel supply line to Building 397 is located under Ninth Street and K Street.

- Yard D-13 has been used to store empty 55-gallon drums and drums containing hazardous wastes generated on the base. Drums containing wastes are segregated by chemical type and stored in separate bermed areas. The surface of the yard was repaved in March 1988.

- Yard D-13 is currently in use as a permitted storage area under the Resource and Conservation Recovery Act (RCRA) for containerized hazardous wastes generated by activities on NAS Alameda.

- The depth to groundwater is approximately 6 feet below ground surface.

Potential Source(s)

- The potential sources of soil and groundwater contamination at Site 19 include (1) past oil refinery wastes, (2) the JP-5 release on the east side of Building 397, (3) spills or leaks associated with the fuel supply line to Building 397, and (4) spills or leaks associated with past or current yard storage activities of hazardous wastes.

Chemicals Most Frequently Detected

Soil

- Total petroleum hydrocarbons, ethylbenzene, toluene, xylenes, 1,3-dichlorobenzene, semi-volatile organic compounds (variable), and lead.

Groundwater

- Total petroleum hydrocarbons, 1,1-dichloroethane, and 1,2-dichloroethene.

Sediments in Storm Sewer Drain

- No data available; data will be available November 1994.

Preliminary Estimate of Contamination

- Soil contamination (total petroleum hydrocarbons, ethylbenzene, toluene, xylenes, and semivolatile organic compounds [variable]) from the surface to approximately 15 feet below ground surface is present in nearly all sample locations at Site 19.

- Total petroleum hydrocarbons were detected in the shallow groundwater well west of Building 616. Concentrations of 1,1-dichloroethane and 1,2-dichloroethene were detected in all four shallow groundwater wells located in the northern, western, and southern portions of the site.

SITE CONCEPTUAL MODEL
SITE 20 - OAKLAND INNER HARBOR

Site History

- Site 20, Oakland Inner Harbor is adjacent to the northern boundary of NAS Alameda, and extends approximately 8,200 feet. The Oakland Inner Harbor is an area of San Francisco Bay, and as such, is exposed to tidal influences. The shoreline is modified by industrial activities including port facilities, ship building and repair facilities, sand and gravel offloading, and marinas. The Oakland Inner Harbor is annually dredged to a depth of 42 feet.

- Stormwater from NAS Alameda is discharged to the Oakland Inner harbor. It is estimated that historically, sewer discharges may have totalled 150 million gallons and that the discharge contained untreated industrial and non-industrial waste containing organic compounds, metals, oil and grease, herbicides, pesticides, solvents, and detergents.

- An ecological assessment was conducted at the Oakland Inner Harbor. Activities included sediment sampling from the surface to one meter, water sampling, and analysis of benthic populations.

Potential Source(s)

- Station sewer system and surface water runoff from Site 1 (landfill) and Site 2 (landfill).

Chemicals Most Frequently Detected

- Metals (chromium, nickel, zinc, lead, mercury), semivolatile organic compounds (primarily phthalates), total petroleum hydrocarbons, polychlorinated biphenyls and pesticides.

Preliminary Estimate of Contamination

- Ten sites were sampled during the ecological assessment. Samples collected near stormwater outfalls contained the highest concentrations of metals; specifically chromium, nickel, zinc, lead, and mercury were found at elevated levels. Metals detected in sediment cores generally decreased with depth. Polychlorinated biphenyls and pesticides were found also mostly associated with stormwater outfalls and in general, concentrations were highest at the east end of the channel, and lower in the west end. Semivolatile organic compounds were highest in one sample near a storm sewer outfall at the east end of the channel, and in one sample near the west end of the channel (not associated with a storm sewer outfall).

APPENDIX D

BACKGROUND SUMMARY TABLES

TABLE D-1

NAS ALAMEDA
SUMMARY OF BACKGROUND CONCENTRATIONS, EAST OF RUNWAY AREA
TABULATED JANUARY 1994

	Soils			Sediment (not available at this time)			Surface Water (not available at this time)		
	Number Detect	Number Non-Detect	Maximum (μg/kg)	Number Detect	Number Non-Detect	Maximum	Number Detect	Number Non-Detect	Maximum
Volatile Organic Compounds (μg/kg)[b]									
Acetone	12	4	140	NA	NA	NA	NA	NA	NA
Tetrachloroethylene	2	14	16	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds (μg/kg)[c]									
Acenaphthene	1	15	150	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	2	14	1600	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	2	14	2300	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	2	14	620	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	2	14	2600	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	1	15	1700	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	4	12	500	NA	NA	NA	NA	NA	NA
Chrysene	2	14	1500	NA	NA	NA	NA	NA	NA
Fluoranthrene	4	12	3600	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	1	15	1800	NA	NA	NA	NA	NA	NA
Naphthalene	1	16	99	NA	NA	NA	NA	NA	NA
Phenantrhrene	2	14	2200	NA	NA	NA	NA	NA	NA
Pyrene	6	10	6100	NA	NA	NA	NA	NA	NA
Herbicides/Pesticides/PCBs (μg/kg)[d]									
4,4'-DDE	1	15	7.19	NA	NA	NA	NA	NA	NA
4,4'-DDT	1	15	30.6	NA	NA	NA	NA	NA	NA

a Table includes only analytes which were detected at least once
b Volatile organic compounds were analyzed via method Contract Laboratory Program/Routine Analytical Service (CLP/RAS)
c Semivolatile organic compounds were analyzed via method CLP/RAS.
d Herbicides were analyzed via EPA method 8150.
Pesticides/PCBs were analyzed via CLP/RAS.

TABLE D-2

NAS ALAMEDA
TOTAL METAL RESULTS FOR BACKGROUND GROUNDWATER LOCATIONS

	Filtered Results		
Metal	Frequency of Detection	Maximum Concentration (μg/l)	Location of Maximum
Aluminum	1/8	58.7	MBG-1
Antimony	2/8	47.8	MBG-1
Arsenic	4/8	11.4	MBG-1
Barium	8/8	679	MBG-1
Beryllium	0/8	N/A	N/A
Cadmium	0/8	N/A	N/A
Calcium	8/8	627000	MBG-4
Chromium	0/8	N/A	N/A
Cobalt	0/8	N/A	N/A
Copper	4/8	20.4	MBG-4
Iron	6/8	2370	MBG-2
Lead	1/8	2.9	MBG-3
Magnesium	8/8	355000	MBG-1
Manganese	8/8	1760	MBG-1
Mercury	0/8	N/A	N/A
Nickel	0/8	N/A	N/A
Potassium	8/8	110000	MBG-1
Selenium	0/8	N/A	N/A
Silver	0/8	N/A	N/A
Sodium	8/8	3900000	MBG-1
Vanadium	8/8	24.5	MBG-1
Zinc	1/8	9.1	MBG-4

TAL metals were analyzed via Contract Laboratory Program/Routine Analytical Service (CLP/RAS)
Other inorganic constituent analyses included BOD, COD, TOC, anions, cyanide, and physical parameters

NA Not available

APPENDIX E

ENVIRONMENTAL ASSESSMENT APPROACH

FOR BRAC TYPE 7 PARCELS

CLEAN

Contract No. N62474-88-D-5086

Contract Task Order No. 0289
Modification No. 02

Navy Remedial Project Managers: Gary Munekawa and George Kikugawa
PRC Installation Coordinator: Duane Balch
Montgomery Watson Remedial Project Manager: Kenneth Leung

NAVAL AIR STATION, ALAMEDA
ALAMEDA, CALIFORNIA

ENVIRONMENTAL ASSESSMENT APPROACH TECHNICAL MEMORANDUM

DRAFT FINAL

Prepared by:

PRC ENVIRONMENTAL MANAGEMENT, INC.
11030 White Rock Road, Suite 190
Rancho Cordova, CA 95670
916/852-8300

and

MONTGOMERY WATSON
365 Lennon Lane
Walnut Creek, CA 94598
510/975-3400

July 6, 1994

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ABBREVIATIONS AND ACRONYMS

AACM	Assumed Asbestos-Containing Material
ACM	Asbestos-Containing Material
ARAR	Applicable or Relevant and Appropriate Requirement
ASTM	American Society for Testing and Materials
BCP	BRAC Cleanup Plan
BGS	Below Ground Surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CLP	Contract Laboratory Program
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
DOD	Department of Defense
EBS	Environmental Baseline Survey
EPA	U.S. Environmental Protection Agency
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
FS	Feasibility Study
HUD	Department of Housing and Urban Development
IRP	Installation Restoration Program
LBP	Lead-Based Paint
NAS	Naval Air Station
PWC	Public Works Center, San Francisco Bay
QA/QC	Quality Assurance/Quality Control
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
RFI	RCRA Facility Investigation
RI	Remedial Investigation
XRF	X-Ray Flourescence

1.0 INTRODUCTION

Naval Air Station (NAS) Alameda is scheduled for official closure in September 1997. Property and facilities will become available for use by the community as the Navy mission diminishes in preparation for closure. The Navy will be evaluating and identifying property that is suitable for lease or transfer to the community on an ongoing basis through the September 1997 closure. There are some properties and facilities not included in ongoing or planned investigations under NAS Alameda's Installation Restoration Program (IRP) or Resource Conservation and Recovery Act (RCRA) compliance program. Currently, there are no regulatory guidelines for evaluating the readiness of Federal property that has not been previously investigated. Such properties may include residential, industrial, and nonindustrial commercial parcels (for example, residential buildings, office buildings, laboratory facilities and medical facilities).

This document describes an approach for conducting environmental assessments of parcels at NAS Alameda that do not fall under either the IRP or RCRA programs. The parcels to be assessed are those identified during the basewide environmental baseline survey (EBS) (in progress) as Category 7 parcels, which are those that are unevaluated or require additional evaluation. Table 1 defines the seven categories used in the EBS. This environmental assessment approach is intended to allow the Navy to document the environmental conditions of each Category 7 parcel so that each can be appropriately reclassified into six other EBS parcel classifications. The ultimate goal of reclassification will be to identify parcels for which a finding of suitability to lease (FOSL) or finding of suitability to transfer (FOST) can be made, allowing the Navy to provide those parcels for interim use and leasing and eventual transfer.

A two-phased approach to environmental assessment is described in this document. Phase I is the nonintrusive investigation portion of the assessment, and consists primarily of record reviews, owner and occupant interviews, and site reconnaissance. Phase I is intended to identify, to the extent feasible as described in Section 2.0 of this document, "recognized environmental conditions" in connection with each parcel being assessed. "Recognized environmental conditions refers to the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release into structures on the property or into the ground, groundwater or surface water of the property" (ASTM

TABLE 1

BASE REALIGNMENT AND CLOSURE CLEANUP PLAN ENVIRONMENTAL CONDITION OF PROPERTY CLASSIFICATIONS

Category	Description
1	Areas where no storage, release or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas).
2	Areas where only storage of hazardous substances or petroleum products has occurred, but no release, disposal, or migration from adjacent areas has occurred.
3	Areas where storage, release, disposal and/or migration of hazardous substances or petroleum products has occurred, but at concentrations that do not require a removal or remedial action.
4	Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, and all remedial actions necessary to protect human health and the environment have been taken.
5	Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, and removal and/or remedial actions are under way, but all required remedial actions have not yet been taken.
6	Areas where storage, release, disposal, and/or migration of hazardous substances or petroleum products has occurred, but required response actions have not yet been implemented.
7	Areas that are unevaluated or require additional evaluation.

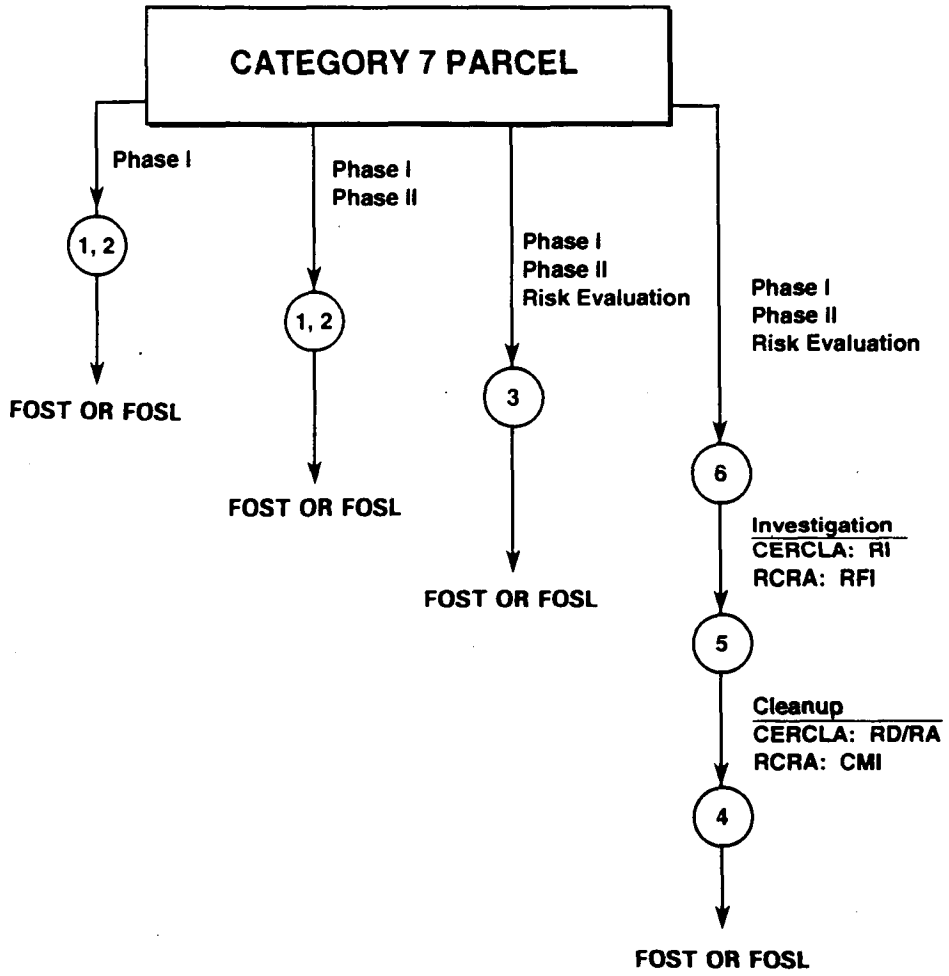
Source: BRAC Cleanup Plan Guidebook, United States Department of Defense (Fall 1993).

1993). The term is not intended to include conditions that generally do not pose a risk to public health or the environment and that would not be subject to a regulatory enforcement action. For example, motor oil spilled during vehicle maintenance at a residential dwelling is not considered a release subject to a regulatory enforcement action.

Phase II is the sampling (intrusive) and analysis portion of the environmental assessment, and primarily consists of collecting soil, groundwater, and other samples for chemical analyses. The purpose of Phase II is to collect parcel-specific data to evaluate whether chemicals of concern are present in the soil or groundwater associated with the parcel. The extent of sampling and analysis required for each parcel will be identified based on the results of Phase I. If a parcel is designated for Phase II sampling and analysis, the results of the analysis will be compared to specific analytical and risk-based screening levels (see Section 3.0) to determine the appropriate reclassification of the parcel.

Figure 1 shows the overall process for any parcel to move from BRAC Category 7 to FOST or FOSL. The figure illustrates the relationship and integration of the Phase I and Phase II environmental assessment approach with the current Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and RCRA cleanup processes at NAS Alameda. A BRAC Category 7 parcel is evaluated during Phase I and Phase II and is classified as a Category 1, 2, 3, and 6 parcel. Category 5 parcel classifications occur only for property where removal or remedial actions are underway; a Category 5 parcel identified during the initial EBS or after the Phase I and Phase II assessment is complete; property classified as Category 5 would be classified as Category 4 at the completion of remedial action. Figures 2 and 3, respectively, illustrate Phases I and II of the environmental assessment approach and the parcel classification described in this document.

This document is not intended to be a detailed sampling plan or to identify specific criteria for evaluating the final classification of parcels; rather it describes the protocols for conducting Phases I and II of the environmental assessment.



NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA
GETTING BRAC CATEGORY 7 PARCELS TO FOST OR FOSL

FIGURE 1

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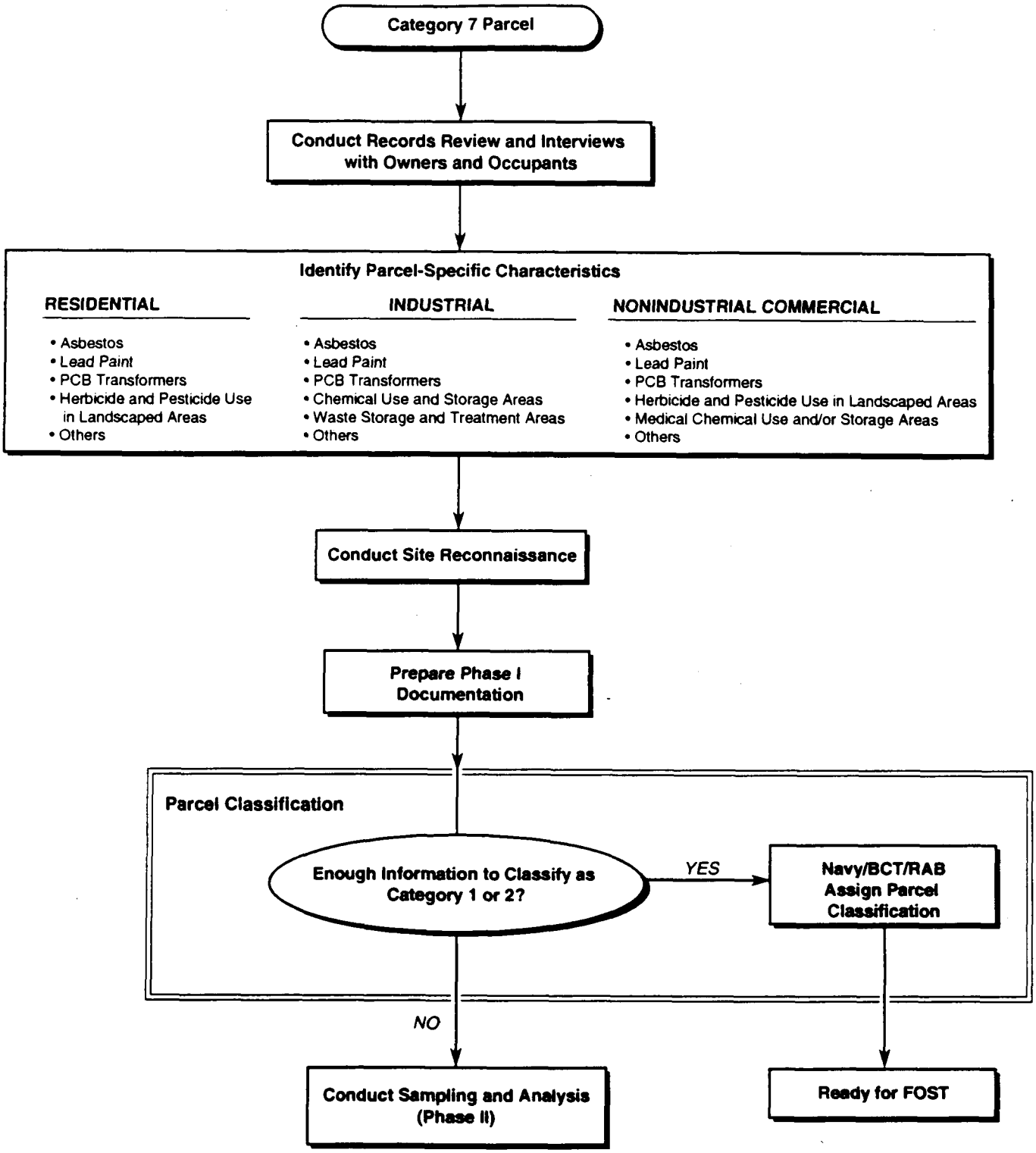

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

DECISION PROCESS FOR PHASE I ENVIRONMENTAL ASSESSMENT AND PARCEL CLASSIFICATION

FIGURE 2

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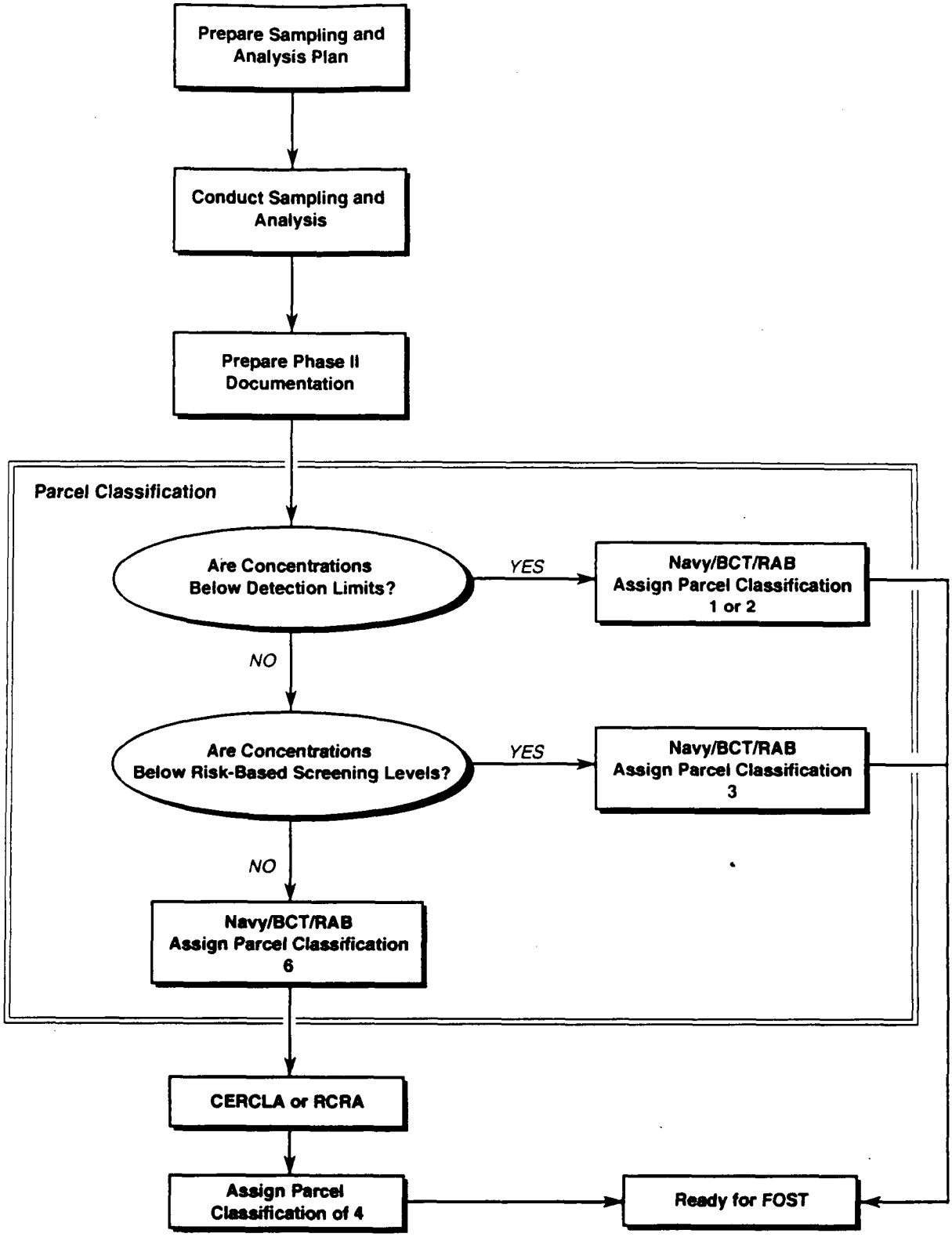

NAVAL AIR STATION ALAMEDA
ALAMEDA, CALIFORNIA

DECISION PROCESS FOR PHASE II ENVIRONMENTAL ASSESSMENT AND PARCEL CLASSIFICATION

FIGURE 3

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2.0 PHASE I: NONINTRUSIVE INVESTIGATION

The goal of Phase I of the environmental assessment is to conduct a nonintrusive investigation to establish the likelihood of "recognized environmental conditions" in connection with the property; there is no actual sampling of the environmental media. The American Society for Testing and Materials (ASTM) has developed standards for site assessment practices that satisfy the "due diligence" responsibilities of participants in commercial real estate transactions (ASTM 1993). The ASTM Phase I environmental assessment standard, designated as Practice E 1527-93, which was adopted in 1993, was established to provide consistent practices throughout the United States for environmental site assessments of commercial real estate, with respect to identifying contaminants within the scope of CERCLA, and petroleum products. The ASTM Practice E 1527-93 standard has been used as the primary reference in developing this Phase I environmental assessment approach.

The Phase I nonintrusive investigation to be conducted at NAS Alameda applies to residential, industrial, and nonindustrial commercial real estate. Examples of nonindustrial commercial real estate include undeveloped real property, and real property used for retail, office, medical, educational, or other commercial purposes.

The Phase I nonintrusive investigation includes four primary steps: (1) a records review; (2) interviews with owners and/or occupants, during which an evaluation is made of parcel-specific characteristics to be addressed during the site reconnaissance step; (3) site reconnaissance; and (4) data evaluation and report preparation.

2.1 RECORDS REVIEW

The objective of the records review is to obtain and review documents, photographs, maps, and all reasonably available information that will help identify "recognized environmental conditions" associated with a specific parcel. This includes information about the parcel itself, as well as information about properties surrounding the parcel, to help assess the likelihood of environmental conditions associated with hazardous substances or petroleum products. Reasonably available information is that which is publicly available, obtainable within reasonable time and cost constraints, and is "practically reviewable," which means that the information is available in a manner and form

that yields information relevant to the property without the need for extraordinary analysis of extraneous data. Information obtained from the records review for the parcel and surrounding properties should include the following:

- Current use or uses
- Historical uses
- Physical setting
- Chemical storage and waste disposal practices
- Compliance with state and federal environmental regulations
- Chemical spills and releases

At NAS Alameda, an EBS is currently underway and includes much of the Phase I stage of the environmental assessment. The EBS includes a review of records related to the entire NAS Alameda property. A 60-year time period was used for the EBS records review. Results of this review, along with interviews with owners and occupants, are currently being compiled into an electronic database as part of the EBS. This information has been used to make preliminary assessments regarding the parcel type classifications, described in the Base Realignment and Closure (BRAC) Cleanup Plan Guidebook (DOD 1993) and listed in Table 1. For the records review portion of the Phase I nonintrusive investigation at NAS Alameda, the EBS data should be used.

2.2 INTERVIEWS

Knowledgeable persons are interviewed to obtain information indicating "recognized environmental conditions" in connection with the site property. Owners and occupants are the primary focus of the interview, but it is sometimes useful to interview representatives from local government agencies, such as the fire department and the local state health agency. When possible, any information obtained through interviews should be supported by documentation.

The EBS currently being conducted at NAS Alameda includes interviews with key NAS Alameda personnel. For the interviews portion of the Phase I nonintrusive investigation at NAS Alameda, the EBS data should be used to support what is learned through the interviews.

The results of the interviews and records review will be evaluated to identify parcel-specific characteristics to be observed during site reconnaissance. Identification of parcel-specific

characteristics is an important component of step two because it allows a more thorough evaluation of the potential impacts of those parcel-specific characteristics during site reconnaissance. The ASTM standard indicates that only one visit to the property is expected to be made for the Phase I environmental assessment, so it is important to be thorough in the collection of information before the site reconnaissance. Examples of parcel-specific characteristics that require pre-site reconnaissance consideration include the identification of buildings that may contain asbestos or industrial buildings that may contain small waste treatment facilities. It is important to carefully evaluate the impact that these characteristics may have on future reuse. As described below, each existing property type (residential, industrial, and nonindustrial commercial) has a specific characteristic that can affect decisions made during Phase I.

Residential Properties: Although residential properties by definition do not support chemical- or manufacturing-type activities, there are other concerns associated with assessing the environmental condition of such property. NAS Alameda has historically used electrical transformers on power poles; such transformers are known to have used PCB-containing oil. Many residential buildings have these poles on or near property boundaries. Also, many residential buildings may contain lead-based paint and asbestos, and herbicides and pesticides have been used on landscaped areas. The Phase I environmental assessment for residential properties should focus on these concerns.

Industrial Properties: Other potential concerns associated with industrial properties must be evaluated during the Phase I environmental assessment. Many industrial activities require the use, storage, and disposal of chemicals and chemical wastes. Certain facilities may also have on-site facilities for treating wastes prior to their disposal. While the current or historical presence of on-site treatment facilities can be identified during the records review and interviews, their actual presence and potential impact on the environmental condition of the property should be evaluated during the site reconnaissance.

Nonindustrial Commercial Properties: Nonindustrial commercial parcels include such properties as undeveloped real property, and property used for retail, office, medical, laboratory, or educational purposes. These activities present special issues of potential concern that must be evaluated during the Phase I environmental assessment. For example, medical facilities require the use and storage, medical chemicals and disposal of medical wastes, while laboratories use and store chemicals and

dispose of chemical wastes. Certain facilities may also treat wastes on site. While the current or historical presence of such activities should be identified during the records review and interviews, their actual presence and potential impact on the environment should be further evaluated during the site reconnaissance.

Beyond concerns related primarily to commercial activities, there are other areas of concern in terms of assessing the environmental condition of a property. For example, the historical presence of numerous electrical transformers, known to have oil containing PCBs, is a base-wide issue of concern at NAS Alameda. Other potential base-wide issues include the use of lead-based paint and asbestos in and on buildings, and herbicides and pesticides on landscaped areas. Underground pipelines also pose a special concern at commercial properties. Section 2.3 describes the protocol for evaluating asbestos, lead-based paint, and underground pipelines during the site reconnaissance.

2.3 SITE RECONNAISSANCE

The objective of the site reconnaissance portion of the nonintrusive investigation is to gather information about a parcel through an inspection of current conditions to determine potential environmental impacts. The site is visited to view the conditions of the parcel itself and any structure(s) on the parcel. In addition to the site visit, an inventory will be conducted at NAS Alameda specifically to assess the integrity of fuel lines, industrial and sanitary sewers, and storm drains. The presence and conditions of asbestos and lead-based paint (LBP) in housing units will be addressed in a separate Navy inventory program. Details of the site visit, the evaluation of the underground pipeline systems, and the Navy asbestos and LBP inventory program are described below.

Site Visit: The objective of the site visit is to assess the current conditions of the parcel and to note any visible signs of environmental impacts from past activities, either on or adjacent to the parcel, identified during the records review and interviews. Results of the site visit should be used in combination with the results of the records review and interviews to assess whether the Phase II sampling and analysis is necessary. The ASTM standard indicates that only one visit to the property for visual inspection is expected to be necessary for Phase I environmental assessment.

During the site visit, the parcel and any structure(s) on the parcel are observed to the extent possible. Sometimes bodies of water, adjacent buildings, or other obstacles hinder observation. A systematic and organized approach should be used during the site visit, particularly at large properties. Both the exterior and interior of structures are observed, as is the periphery of the parcel. Accessible common areas of building interiors, expected to be used by occupants or the public (lobbies, hallways, utility rooms, recreation areas, and so forth), maintenance and repair areas, and a representative sample of occupant spaces, should be observed. Results of previous site assessments may be used for guidance, but should be reassessed during the Phase I site visit to document any changes in conditions. The parcel-specific characteristics identified in Section 2.0 should be noted, in addition to the following:

- Conditions and industrial activities on adjoining properties (for example, stationary sources of air emissions on adjacent parcels that may have resulted in deposits on nearby parcels)
- Geology, hydrology, and topography
- Structures and their conditions
- Roads
- Storage tanks, fuel lines, vent pipes, fill pipes, or access ways
- Odors (and their sources)
- Pools of liquid, standing surface water
- Drains and sumps
- Drums
- Hazardous substance and petroleum products containers
- Unidentified-substance containers
- Electrical or hydraulic equipment known or likely to contain PCBs
- Type of heating and cooling systems (for example, heating oil, gas boilers, electric systems, boiler water mixed with chromate solutions in steam systems)
- Condition and age of the indoor air handling systems (potential location for accumulation of airborne substances)
- Stains or corrosion on interior surfaces (for example, walls and floors)

- Stains or corrosion on exterior surfaces (for example, soils and pavement)
- Pits, ponds, or lagoons used for waste disposal or treatment
- Stressed vegetation (other than from dehydration, if a distinction can be made)
- Solid waste
- Wastewater
- Septic systems
- Wells (including abandoned wells)
- Railroad tracks

Underground Pipeline Evaluation: At NAS Alameda, underground pipelines including fuel lines, industrial and sanitary sewers, and storm drains are a concern. Since such lines typically cover an extensive area, the potential for release(s) of a chemical caused by a leak or break in the line is difficult to determine (because they are underground) unless records of the line repair are available.

Phase I also includes testing to determine the integrity of any pipeline within a parcel. The type of testing will depend on the type of line, as well as the size, age, length, and history of use. If line integrity can be demonstrated and there are no records to indicate past leaks or releases, then no additional investigation will be recommended. The approach for determining line integrity is described in Table 2. If evidence of a leak or past release is found, then the pipeline will be sampled during Phase II for chemical analysis.

Nonintrusive Environmental Assessments Under Other Navy Programs: As noted in Section 2.2, there are other areas of concern in terms of the environmental condition of a property, some of which are not necessarily related to past uses. Asbestos and LBP, in particular, are base-wide concerns at NAS Alameda and are not addressed in the Phase I site visit because they are being addressed under a separate program. The office of the Under Secretary of Defense has established a working group to develop DOD policies specifically for asbestos and LBP at BRAC properties. The DOD policy for asbestos, currently in draft version, is that property conveyed, leased, or otherwise disposed of through the BRAC process will not pose a threat to human health as a result of asbestos-containing materials (ACM). In other words, ACM that is damaged and accessible shall be remediated prior to

TABLE 2

UNDERGROUND PIPELINE INTEGRITY ASSESSMENT

Line Type	Integrity Assessment
Fuel Line, Active	Pressure test or inert gas integrity test.
Fuel Line, Abandoned	Pressure test or inert gas integrity test, if possible. If integrity testing is not possible, then Phase II sampling will be conducted.
Industrial Sewer	Pressure test, inert gas integrity test, or use video inspection or dye testing.
Sanitary Sewer	Pressure test, inert gas, or video/dye testing for line integrity if there is evidence to suggest that industrial wastes were discharged to the line.
Storm Drain	Video inspection, if possible, if there is evidence to suggest that industrial wastes were discharged to the storm drain. The Stormwater Prevention Plan by PRC and Montgomery Watson (September 1993) will be reviewed to identify activities supplying the drain, history, age, and flow direction.

property disposal. The DOD policy is to comply with all applicable federal, state, and local laws and regulations governing LBP hazards.

To gather information regarding the presence of ACM and LBP, the Navy has developed the Navy Family Housing Lead-Based Paint/Asbestos Inventory Program. The ACM and LBP inventory program includes both nonintrusive and sampling and analysis type activities. The nonintrusive portion of the program is the inventory which begins with a records review prior to a site visit during which a building or housing unit is inspected. A detailed plan for the inventory for NAS Alameda will be prepared by the Navy.

For nonresidential parcels where LBP will not be inventoried, the Navy will review the results of the Phase I nonintrusive investigation to determine if these materials are likely so that owners or occupants can be fully informed. The presence of LBP or asbestos in a building still in use and in acceptable condition may not pose a risk to human health or the environment and should not exclude a parcel from Category 1 or make it necessary to collect samples.

In response to concerns with the potential health effects associated with radon exposure, and in accordance with the Indoor Radon Abatement provisions of Subchapter III of the Toxic Substances Control Act, 26 U.S. C. §§ 2661 to 2671, DOD conducted a study to determine radon levels in a representative sample of is buildings. In addition, as part of DOD's voluntary approach to reducing radon exposure, DOD has applied the EPA guidelines for residential structures with regard to remedial actions.

DOD policy is to ensure that any available and relevant radon assessment data, pertaining to Base Realignment and Closure (BRAC) property being transferred, shall be included in property transfer documents.

DOD policy is not to perform radon assessment and mitigation prior to transfer of BRAC property unless otherwise required by applicable law.

2.4 DATA EVALUATION AND REPORT PREPARATION

If the Phase I nonintrusive investigation indicates that there is enough information to categorize a parcel in Category 1 or 2 in accordance with the DOD parcel classifications (See Table 1), then sampling and analysis will not be recommended. Phase I documentation should include references to support the analysis, identify professional judgment that has been applied, and prepare a report that presents conclusions. In general, the report should include (1) a summary of data gathered during each step of the Phase I nonintrusive investigation (including other Navy programs), (2) a summary of the site location, description, history, current use, (3) potential and actual concerns regarding on-site and off-site conditions, (4) a discussion of the limitations and uncertainties of the Phase I investigation, and (5) the recommendations regarding whether a Phase II investigation is warranted, including the rationale for the recommendation.

Parcels may be recommended for Phase II if, for example, stained soil is observed, which may indicate a contaminant release. Also, information discovered during the records review or interviews may point to a past release that should be addressed through sampling. For parcels recommended for Phase II environmental assessments, a detailed sampling and analysis plan should be prepared, to identify locations from which samples should be collected, the types of analyses that should be run, and data quality requirements.

3.0 PHASE II: SAMPLING AND ANALYSIS

Phase II is triggered when the Phase I nonintrusive investigation reveals the presence or likely presence of any hazardous substances or petroleum products under conditions that indicate an existing release, a past release, or a material threat of a release into structures on the property or into the ground, groundwater, or surface water of the property. Before beginning the Phase II sampling and analysis, a detailed sampling and analysis plan will be prepared to describe sampling procedures, analytical methods, sample packaging and shipping, and quality assurance/quality control (QA/QC) procedures. The sampling and analysis plan will be based on information collected during the Phase I nonintrusive investigation.

The goal of Phase II is to perform intrusive sampling and analysis in order to obtain parcel-specific data to be used to classify the parcel based on the seven parcel categories listed in Table 1. Figure 3 is a flow chart showing the decision process for the Phase II portion of the environmental assessment and the parcel classification.

The initial step of Phase II is to collect limited soil and groundwater samples. The sampling locations are selected based on the results of the Phase I nonintrusive investigation, as are the chemical parameters to be analyzed.

In order to assess whether a parcel will be designated as Category 1, 2, 3, or 6, detection limits and chemical-specific risk-based screening levels need to be established for those chemicals of concern likely to be present (based on Phase I information). The detection limits are determined prior to analyses and will be agreed upon by the Navy and the regulatory agencies. The risk-based screening levels will be conservative estimates of chemical concentrations that would not compromise human health or the environment, as described below.

The risk-based screening levels will be below action levels in that the concentration of any hazardous substance or petroleum constituent in any medium does not pose an unacceptable risk to human health or the environment. These screening levels will be selected based on the criteria described in the BRAC Cleanup Plan (BCP) Guidebook (DOD 1993). Concentrations below the screening level would mean that "risk estimates completed for the compound detected do not:

- Exceed 10^{-6} for any carcinogenic hazardous substance or petroleum constituent detected in any medium
- Result in a hazard quotient above 1 for any noncarcinogenic hazardous substance or petroleum constituent detected in any medium
- Exceed 10^{-6} for all carcinogenic hazardous substances and petroleum constituents, taken together, in any exposure pathway
- Result in a hazard index above 1 for all noncarcinogenic hazardous substances and petroleum constituents, taken together, in any exposure pathway
- Exceed 10^{-4} for all carcinogenic hazardous substances and petroleum constituents accumulated across all pathways

- Result in a hazard index above 1 for all noncarcinogenic hazardous substances and petroleum constituents cumulated across all pathways"

If no chemicals of concern are detected above detection limits at a parcel, then that parcel can be designated as Category 1 or 2. The actual designation will be based on the results of both the Phase I and Phase II portions of the environmental assessment. For example, samples may be collected from a residential parcel to evaluate oil-stained areas for petroleum products where cars have been parked. If concentrations are not detected, this parcel could be designated as a Category 1 parcel because there is no history of storage, release, or disposal of hazardous substances or petroleum products.

Parcels that are sampled during Phase II and are found to contain chemicals of concern above detection limits but below risk-based screening levels could be designated as Category 3. Parcels that are found to contain chemicals of concern above detection limits and above risk-based screening levels will be designated as Category 6. If remedial action is being conducted at the parcel, it could be designated as Category 5.

Section 3.1 describes in more detail sampling approaches for parcel-specific characteristics such as asbestos, lead paint, and PCB-containing transformers. Section 3.2 discusses Phase II data evaluation and report preparation.

3.1 SAMPLING AND ANALYSIS APPROACH

Each Category 7 parcel will be sampled to assess the presence or absence of the potential chemicals of concern identified during Phase I. The parcel-specific sampling and analysis approach will be described in a sampling and analysis plan prepared following the Phase I nonintrusive investigation. Information gathered during Phase I will identify specific areas where past or present practices may have caused a spill, leak, or other problem. The sampling will be focused in the suspected spill, leak, or other source area; therefore the concentrations of chemicals detected are expected to represent the highest concentrations at that parcel. The following sections define the strategy and protocol for intrusive sampling for each type of parcel-specific characteristic.

3.1.1 Landscaped Areas

Strategy: Landscaped areas will be sampled, based on historical pesticide and herbicide use. Soil samples will be collected and analyzed to assess whether pesticides and herbicides are present at levels consistent with standard gardening and landscaping, and to determine whether pesticide and herbicide concentrations are below risk-based screening levels. If the Phase I investigation indicates that the compounds used on a parcel are banned then that parcel will be sampled. If the Phase I investigation indicates that the parcel-specific compounds are restricted-use pesticides and herbicides or are considered to be environmentally persistent, again, samples will be collected. The evaluation of environmental persistence will be based on information provided by the manufacturers of the compounds.

Since pesticides and herbicides are typically sprayed or dusted onto landscaped areas, no point sources (i.e., leaking tanks) of chemicals are expected to be found. Therefore, samples will be collected as composites to represent a larger area of the parcel without unnecessarily increasing the number of sample analyses. Surface soil samples will be sufficient to assess the presence of pesticides and herbicides since these chemicals would have been applied to the surface where residues would remain.

Protocol: Each parcel to be sampled will be divided into three areas that should reflect any activities specific to that parcel or adjacent parcels. For example, if the parcel is surrounded by roads or buildings that may have been subjected to repeated application of pesticides and herbicides, then the perimeter of the parcel should constitute one area. The inner portion of the parcel can then be divided into the two remaining areas. One composited surface soil sample will be collected from each of these areas. The sample will be composited at the laboratory from three evenly spaced surface samples collected within each area. The sampling procedures, analytical methods, sample packaging and shipping, and QA/QC procedures will be described in a detailed sampling and analysis plan before the Phase II sampling begins.

3.1.2 Storage and Treatment Areas

Strategy: The Phase I report will identify whether the storage and treatment areas associated with either industrial or nonindustrial commercial parcels were used to store and treat: (1) chemicals, (2)

wastes, or (3) medical chemicals. The Phase I report will identify the chemicals of concern for which the collected samples will be analyzed.

Samples will be collected near areas identified during Phase I as most likely to have received surface releases such as storage areas, work stations, areas of stained soil, and floor drains not converted to sewers. If the most likely area of a release is a concrete floor or a storage pad that shows evidence of runoff toward soil, then soil samples should be collected at the runoff point. It is also possible that some areas of concern may have once been bare soil and are now covered with concrete or asphalt. Thus, the covering must be removed to allow sampling of the soil. If samples are to be collected near or within floor drains, any concrete or asphalt will be removed to allow collection of a soil sample from beneath the drain.

Protocol: As described earlier, soil borings will be located in the areas most likely to have received chemicals directly or as drainage from the floor or pad. The number of borings will depend on the number of areas of concern identified. These should be one boring per point of interest. The borings will be drilled until groundwater is encountered and samples will be collected at the ground surface and from 2.5 feet below ground surface (bgs). Depending on the chemical and physical properties of the chemicals of concern and the local lithology, a groundwater sample will be collected from each boring to assess the groundwater quality beneath each area of concern. Again, the sampling procedures, analytical methods, sample packaging and shipping, and QA/QC procedures will be described in a detailed sampling and analysis plan before the Phase II sampling begins.

3.1.3 Oil Water Separators

Strategy: The locations of oil water separators, as well as any history of leaks or spills from separators, will be identified in the Phase I report. Soil samples will be collected where (1) oil water separators reportedly leaked or spilled, (2) soil is stained, or (3) at the connections of the intake and outage lines to the oil water separator, if records and interviews with owners and occupants indicate the need to sample. For example, because oil water separators are typically underground, the installation date and history of use will be reviewed to evaluate the integrity of the separator and to assess the need to sample at the connections of the intake and outage lines; likewise, evidence of past leaks and spills may be found during records reviews and interviews. If there is any uncertainty

regarding the history of the oil water separator, sampling will be conducted to confirm that leakage has not occurred.

Protocol: Soil borings will be located as described earlier where soils are stained. The borings will be drilled until groundwater is encountered, samples will be collected at the ground surface and 2.5 feet bgs. A grab groundwater sample will be collected from each boring. The sampling procedures, analytical methods, sample packaging and shipping, and QA/QC procedures will be provided in a detailed sampling and analysis plan before the Phase II sampling begins.

3.1.4 Underground Pipelines

Strategy: The need for sampling along underground pipelines will be determined during the Phase I environmental assessment. Once determined, sampling locations will be based on the information gathered during the Phase I investigation. Since areas such as surface connections, joints, and manholes may be identified as potential sources of leaks, samples should be collected from such areas. Also stained areas or areas of distressed vegetation above the lines will be sampled. Sampling density along a particular line will be determined according to the size, age, length, leak history, usage, and integrity of the line; information about the surrounding fill and subsurface hydrogeologic conditions will also be used locate sample collection points.

Protocol: Both soil and groundwater samples may be collected if the line lies near the water table. Soil samples will be collected from the vadose zone. When possible, a screening-type method of sampling, such as soil gas testing for aromatic hydrocarbons, will be used. Soil gas testing allows a higher sampling density and can be used in conjunction with soil boring sampling. The type of sampling will be based on the compounds suspected to have been released. The sampling procedures, analytical methods, sample packaging and shipping, and QA/QC procedures will be described in a detailed sampling and analysis plan prepared before the Phase II sampling begins.

3.1.5 Sampling and Analyses Conducted Under Other Navy Programs

There are other environmental assessment programs already in place or planned for NAS Alameda.

This section describes the strategy and protocol for sampling and analysis for asbestos, LBP, and areas where there are or were transformers containing PCBs.

The Office of the Under Secretary of Defense has established a working group to develop DOD policies for asbestos and LBP at BRAC properties. The DOD policy for asbestos, currently in draft version, is that property conveyed, leased, or otherwise disposed of through the BRAC process will not pose a threat to human health as a result of asbestos containing materials. The policy also specifies that these properties must comply with applicable ACM statutes and regulations. The DOD policy for LBP specifies that all applicable federal, state, and local laws and regulations governing LBP hazards will be followed. The strategy and procedures described below for asbestos and LBP are compiled from the draft DOD policy, dated January 24, 1994, and from the scope of work prepared by the Navy for building surveys at Hunters Point Annex, San Francisco, California, dated April 13, 1993.

Transformer locations at NAS Alameda will be sampled for PCBs by the Public Works Center, San Francisco Bay (PWC). The sampling strategy and protocol described in this section is based on a customer request brief titled "Cost Estimate for PCB Soil Sampling," prepared by PWC and submitted to NAS Alameda, dated February 15, 1994.

Asbestos

Strategy: The Navy's policy is to document the existence, extent, and condition of ACM on DOD properties. ACM will be sampled for based on information gathered from an initial asbestos inventory of all buildings and facilities. Sampling points will be identified for bulk sampling and laboratory analysis to confirm the presence of ACM and to identify ACM that is damaged and accessible. Samples will be collected wherever ACM is suspected to be present and wherever there is assumed ACM. Suspect ACM will be classified as follows for sampling:

- Surfacing; spray-applied or troweled-on materials
- Thermal system insulation on pipes, boilers, and ducts
- Miscellaneous forms such as wallboard, ceiling tiles, dust accumulation, and any other material suspected of containing asbestos

Assumed ACM, which requires sampling, includes:

- Vinyl floor tile
- Mastic
- Sheet floor covering
- Mortar/grout
- Cinder block
- Fire brick
- Transite
- Fire doors
- Roofing material

Underground utility systems are also assumed to contain asbestos. Utility manholes or vaults will be sampled if signs of asbestos are seen during the asbestos inventory.

Suspected and assumed ACM could be sampled for in all areas in buildings and structures where the material may become airborne when disturbed through regular operations, maintenance, or renovation. Such areas includes:

- Building spaces such as basements, attics, and plenums (enclosures in which air or others gases are at a greater pressure than on the outside)
- Steam and hot water piping
- Mechanical, utility, furnace, or boiler rooms whether in attached, or nearby
- Asbestos-insulated duct work, heat exchanges, and any other similar equipment
- Utility lines or equipment insulated with or suspected of containing asbestos

Protocol: Bulk samples will be collected in areas of suspected and assumed ACM. The bulk sampling will be planned, monitored, and directed by an American Board of Industrial Hygiene-certified industrial hygienist qualified in asbestos sampling and control work. Sampling will conform to EPA 40 CFR 763 Asbestos Hazard Emergency Response Act guidelines, asbestos in buildings simplified sampling scheme for surfacing material (EPA-560/5-85-030A), and guidance for controlling asbestos-containing materials in buildings (EPA-560/5-85-024). The field sampling procedures and

analytical methods will be outlined in a detailed sampling and analysis plan before the sampling begins.

Lead-Based Paint

Strategy: The DOD policy, which follows provisions of the Residential Lead-Based Paint Hazard Reduction Act of 1992, focuses on housing built before 1978, with some exceptions for housing for the elderly or persons with disabilities, or for any dwellings with no bedrooms. According to provisions that take effect after January 1, 1995, housing identified in the 1992 Residential Lead-Based Paint Reduction Act as having been built before 1960 must be inspected for LBP hazards and any hazards found must be abated; housing built between 1960 and 1978 must be inspected for LBP or LBP hazards, but abatement is not required.

According to the Navy Family Housing Lead-Based Paint/Asbestos Inventory Program, dated November 9, 1992, the purpose of the LBP inventory is to locate and quantify LBP and lead in dust and soil. The strategy is to inspect a statistically representative sample of units in each adjacent group of residences built under the same contract. The number of units inspected in each area is to be based on Department of Housing and Urban Development (HUD) guidance (1990). The sample size is intended to provide 95 percent confidence concerning the presence of LBP or lead from LBP.

Protocol: Inspections and subsequent sampling and analysis for LBP and lead in dust will be based on the HUD interim guidelines and will be conducted by a certified lead inspector. Lead will be tested for in soil according to EPA guidelines. An x-ray fluorescence (XRF) spectrum analyzer will be used for most LBP tests. To test irregular or inaccessible surfaces or to confirm inconclusive XRF results, and for QA/QC, paint samples will be collected for laboratory analysis. Wipe samples will be collected to test for lead in dust, and soil samples will be tested with the XRF. Details of the field sampling procedures and analytical methods will be outlined in a sampling and analysis plan before sampling begins.

Transformers Containing PCBs

Strategy: Soil samples will collected from all locations where transformers or equipment are known to have contained or currently contain PCB concentrations greater than 5 parts per million. Based on transformers and equipment already sampled by the PWC at NAS Alameda, approximately 468 locations are estimated for sampling. These include:

- Transformers with PCB-containing oil and equipment that have been replaced or retrofilled with oil that does not contain PCBs
- Transformers and equipment sampled as part of the PWC survey
- Secondary equipment not sampled for PCBs
- Locations in NAS Alameda housing areas and Alameda Annex that once had transformers and equipment with PCB-containing oil

Protocol: One wipe sample from the pad and one composite soil sample from around the pad will be collected from each site to be sampled. Samples will be analyzed by EPA Method 8080 for PCBs. The sampling procedures, analytical methods, sample packaging and shipping, and QA/QC procedures will be described in a detailed sampling and analysis plan before the Phase II sampling begins.

3.2 DATA EVALUATION AND REPORT PREPARATION

The analytical results from the Phase II soil and water sampling (or soil gas testing) will be compared with the risk-based screening levels and the parcel-specific assessment of potential migration pathways agreed upon by the Navy and appropriate regulatory agencies. The Phase II report should include the findings of the Phase I portion of the environmental assessment, observations made during the Phase II sampling, and the analytical results from Phase II (including other Navy programs). The report should also include descriptions of the parcel, its location, and historic land use. Additionally, the report should include a discussion of the rationale for sampling, the sampling program, the investigation results, a summary of findings, and parcel classification recommendations. As part of the classification, those parcels requiring further investigation will be recommended for inclusion under the IRP or RCRA compliance program at NAS Alameda.

REFERENCES

American Society of Testing and Materials (ASTM). 1993. "ASTM Standards on Environmental Site Assessments for Commercial Real Estate, E1527-93 and E 1528-93." ASTM. Philadelphia, PA.

Department of Housing and Urban Development (HUD). 1990. Lead-Based Paint: Interim Guidelines for Hazard and Abatement in Public and Indian Housing. September.

Department of the Navy, Office of the Assistant Secretary, Installations and Environment. 1994. Memorandum: Draft DOD Policies on Asbestos, Lead-Based Paint, and Radon at Base Realignment and Closure Properties. For the Deputy Assistant Secretary of the Army, Deputy Assistant Secretary of the Air Force, and Director, Defense Logistics Agency. January 24.

Department of the Navy, Western Division, Naval Facilities Engineering Command (Navy-WESTDIV), 1993. Statement of Work: Asbestos Survey Parcels "B-E", Hunters Point Annex, San Francisco, CA. April 13.

PRC/Montgomery Watson. 1993. "Naval Air Station Alameda, Alameda, California, Stormwater Prevention Plan, Final (Revision 01)." Prepared for Navy-WESTDIV. September 24.

PRC/Montgomery Watson. 1994. "Naval Air Station Alameda, Alameda, California, Base Realignment and Closure Cleanup Plan, Draft." Prepared for Navy-WESTDIV. January 26.

Public Works Center San Francisco Bay (PWC). 1994. Cost Estimate for PCB Soil Sampling. Customer request prepared for NAS Alameda. February 15.

U.S. Department of Defense (DOD). 1993. "Base Realignment and Closure Cleanup Plan Guidebook." Fall.

APPENDIX F

FINDING OF SUITABILITY TO LEASE

AND

FINDING OF SUITABILITY TO TRANSFER GUIDANCE

DOD POLICY ON THE ENVIRONMENTAL REVIEW PROCESS TO REACH A FINDING OF SUITABILITY TO LEASE (FOSL)

I. PURPOSE

This policy provides guidance to Department of Defense (DoD) Components on the process to identify and document parcels of real property made available through the Base Realignment and Closure (BRAC) process and which are environmentally suitable for outlease. The DoD Components may develop implementing procedures containing additional requirements based on their own specific organizational needs and unique requirements but which will, at a minimum, include, but not conflict with, the following documentation and procedures.

II. APPLICABILITY AND SCOPE

This policy applies to all DoD installations slated for closure or realignment pursuant to the Base Closure and Realignment Act of 1988 (P.L. 100-526) (BRAC 88) or the Defense Base Closure and Realignment Act of 1990 (P.L. 101-510) (BRAC 91, 93, and 95) and on which property is being considered for outlease. This policy is effective immediately. However, where DoD Components have been following a similar policy for arriving at FOSLs, and converting to these specific requirements would delay requested leases already being processed, those existing similar Component procedures may be followed until January 1, 1994. Nothing in this policy affects any requirement to comply with the National Environmental Policy Act (NEPA). The policy meets the following objectives:

A. Ensure protection of human health and the environment.

B. Develop a DoD-wide process to assess, determine and document the environmental suitability of properties (parcels) for outlease.

C. Ensure outleases of properties do not interfere with environmental restoration schedules and activities being conducted under the provisions of law or regulatory agreements.

D. Ensure compliance with all applicable environmental requirements and establish the basis for the DoD Components to make notifications to lessees regarding hazardous substances (including asbestos and any substance regulated under CERCLA, RCRA or state law) and petroleum products (including their derivatives,

such as aviation fuel and motor oil) potentially on the property.

E. Provide adequate public and regulatory participation.

III. POLICY

A. Requirement for Assessment, Determination and Documentation of Properties Suitable for Outlease

In the case of real property to which this policy applies, the head of the DoD Component with accountability over the property, or his/her designated representative, shall assess, determine and document when properties are suitable for outleasing. This assessment and determination will be based on an Environmental Baseline Survey (EBS) and will be documented in a Finding of Suitability to Lease (FOSL) as described below.

B. Investigation

1. Environmental Baseline Survey (EBS). An EBS will be prepared encompassing any parcel to be outleased. The EBS will be based on all existing environmental information related to storage, release, treatment or disposal of hazardous substances or petroleum products on the property to determine or discover the obviousness of the presence or likely presence of a release or threatened release of any hazardous substance or petroleum product. In certain cases, additional data, including sampling and analysis, may be needed in the EBS to support the FOSL determination.

   A previously conducted EBS may be updated as necessary and used for making a FOSL determination, where appropriate. An EBS also may satisfy other environmental requirements (e.g., to reach a Finding of Suitability to Transfer [FOST] or meet the uncontaminated parcel identification requirements of the Community Environmental Response Facilitation Act [CERFA]).

2. Procedures for Conducting an EBS. The EBS will consider all sources of available information concerning environmentally significant current and past uses of the real property and shall, at a minimum, consist of the following:

a. Detailed search and review of available information and records in the possession of the DoD Components and records made available by the regulatory agencies or other involved Federal agencies. DoD Components are responsible for requesting and making reasonable inquiry into the existence and availability of relevant information and records to include any additional study information (e.g., surveys for asbestos, radon, lead-based paint, transformers containing PCB, Resource Conservation and Recovery Act Facility Assessments and Investigations [RFA and RFI]) to determine what, if any, hazardous substances or petroleum products may be present on the property.

b. Review of all reasonably obtainable Federal, state, and local government records for each adjacent facility where there has been a release of any hazardous substance or any petroleum product, and which is likely to cause or contribute to a release or threatened release of any hazardous substance or any petroleum product on the real property.

c. Analysis of aerial photographs that may reflect prior uses of the property which are in the possession of the Federal Government or are reasonably obtainable through state or local government agencies.

d. Interviews with current and/or former employees involved in operations on the real property.

e. Visual inspections of the real property; any buildings, structures, equipment, pipe, pipeline, or other improvements on the real property; and of properties immediately adjacent to the real property, noting sewer lines, runoff patterns, evidence of environmental impacts (e.g., stained soil, stressed vegetation, dead or ill wildlife) and other observations which indicate actual or potential release of hazardous substances or petroleum products.

f. Identification of sources of contamination on the installation and on adjacent properties

which could migrate to the parcel during the lease term.

g. Ongoing response actions or actions that have been taken at or adjacent to the parcel.

h. A physical inspection of property adjacent to the real property, to the extent permitted by owners or operators of such property.

i. Sampling, if the circumstances deem appropriate.

NOTE: For the purposes of paragraphs b, e, f, g, & h above, "adjacent properties" should be defined as either those properties contiguous to the boundaries of the property being surveyed or other nearby properties. In either case, the survey should be addressed to those portions of the properties relatively near the installation that could pose significant environmental concern and/ or have a significant impact on the results of the EBS.

3. Documentation of an EBS. At the completion of the EBS, a report will be prepared which will include the following:

a. An Executive Summary briefly stating the areas of real property (or parcels) evaluated and the conclusions of the survey.

b. The property identification (e.g., address, assessor parcel number, legal description).

c. Any relevant information obtained from a detailed search of Federal Government records pertaining to the property, including available maps.

d. Any relevant information obtained from a review of the recorded chain of title documents regarding the real property. The review should address those prior ownerships/uses that could reasonably have contributed to an environmental concern, and, at a minimum, cover the preceding 60 years.

e. A description of past and current activities, including all past and current DoD and non-DoD uses to the extent such information is

reasonably available, on the property and on adjacent properties.

f. A description of hazardous substances or petroleum products management practices (to include storage, release, treatment or disposal) at the property and at adjacent properties.

g. Any relevant information obtained from records reviews and visual and physical inspections of adjacent properties.

h. Description of ongoing response actions or actions that have been taken at or adjacent to the property.

i. An evaluation of the environmental suitability of the property for lease for the intended purpose, if known, including the basis for the determination of such suitability.

j. Reference to key documents examined (e.g., aerial photographs, spill incident reports, investigation results). (The documents will be made available by DoD upon request to DoD.)

C. Finding of Suitability to Lease (FOSL)

After completion and review of the EBS and any appropriate local community reuse plans, the DoD Component Official will sign a FOSL once a determination that the property is suitable to lease for the intended purpose has been made based on one of the following:

1. Hazardous substance notice need not be given because no hazardous substances or petroleum products were stored for one year or more, known to have been released, treated or disposed of on the parcel;

2. Hazardous substance notice will be given of the type and quantity of hazardous substances or petroleum products, and the time at which storage for one year or more, release, treatment or disposal took place, but the property is not now contaminated with hazardous substances or petroleum products (e.g., storage for one year or more but no release, a release has occurred but no

response action is required, or a response action has been completed); or

3. The property contains some level of contamination by hazardous substances or petroleum products, and hazardous substance notice will be given of the type and quantity of such hazardous substances or petroleum products, and the time at which storage for one year or more, release, treatment or disposal took place. However, this property can be used pursuant to the proposed lease, with the specified use restrictions in the lease, with acceptable risk to human health or the environment and without interference with the environmental restoration process. (The specific lease restrictions on the use of the parcel to protect human health and the environment and the environmental restoration process will be listed in the FOSL.)

IV. PROCEDURES AND RESPONSIBILITIES

A. Regulatory agencies will be notified at the initiation of the EBS and the FOSL. The process of development of these documents will be designed to assure that regulators are provided adequate opportunity to express their views. Regulators will be provided with workable draft documents as they become available. Regulatory comments received during the development of these documents will be reviewed and incorporated as appropriate. Any unresolved regulatory comments will be included as attachments to the EBS or the FOSL.

B. As required by CERCLA Section 120(h)(5), DoD shall notify the state prior to entering into any lease that will encumber the property beyond the date of termination of DoD's operations. These notifications shall include the length of lease, the name of lessee, and a description of the uses that will be allowed under the lease of the property. At National Priorities List (NPL) sites, DoD shall provide this notification to the United States Environmental Protection Agency (EPA) as well.

C. The DoD Components will provide public notice of signing the FOSL; will retain the signed FOSL, including all regulatory comments and responses on the EBS and/or FOSL, in the transaction file (and the Administrative Record, where applicable); and will make the FOSL available to the public upon request.

D. The EBS and the FOSL will be provided to each lessee prior to execution of the lease.

E. Conditions will be included in the lease to ensure:

1. Notification of the existence of a Federal Facility Agreement (FFA), Interagency Agreement (IAG), or other regulatory agreements, orders or decrees for environmental restoration (e.g., RCRA/HSWA permit), if any. Terms of the lease shall not affect the rights and obligations of parties under the FFA, IAG, or other regulatory agreements, orders, or decrees.

2. Environmental investigations and response oversight and activities will not be disrupted. Such conditions will include, but are not limited to:

   a. providing for continued access for DoD and regulatory agencies to perform investigations as required on, or adjacent to, the real property, to monitor the effectiveness of the cleanup as required, to perform five-year reviews as required, and/or to take additional remedial or removal actions as required. At a minimum, such rights shall include all rights existing under the FFA.

   b. ensuring that the proposed use will not disrupt remediation activities.

3. Human health and the environment are protected by preventing the inappropriate use of the property.

4. Compliance with health and safety plans.

5. Subsequent transactions involving the property shall include such provisions.

F. The attached model lease provisions will be included in all outleases and subleases, unless determined not to be appropriate by the DoD Component in consultation with the appropriate EPA or state representative. This determination will be documented by the DoD Component.

G. Leases will provide that both the EBS and restrictive conditions in the lease, dealing with environmental requirements limiting use, will also be included in subleases as they occur. Copies of all subleases will be provided to the DoD Components with jurisdiction

over the parcel, retained in the transaction file and made available to the public upon request.

H. Amendments, renewals or extensions of leases shall not require a new EBS or FOSL, or an updating of them, unless the leased premises change substantially or the permitted uses of them are to change in environmentally-significant ways.

ATTACHMENT

MODEL LEASE PROVISIONS

NOTE: [ ] Indicates the need for lease-specific information (e.g., installation name).

ENVIRONMENTAL PROTECTION

1. The sole purpose(s) for which the leased premises and any improvements thereon may be used, in the absence of prior written approval of the Government for any other use, [insert intended use of the leased premises].

2. The Lessee shall neither transfer nor assign this Lease or any interest therein or any property on the leased premises, nor sublet the leased premises or any part thereof or any property thereon, nor grant any interest, privilege, or license whatsoever in connection with this Lease without the prior written consent of the Government. Such consent shall not be unreasonably withheld or delayed. Every sublease shall contain the Environmental Protection provisions herein.

3. The Lessee and any sublessee shall comply with the applicable Federal, state, and local laws, regulations, and standards that are or may become applicable to Lessee's activities on the Leased Premises.

4. The Lessee and any sublessee shall be solely responsible for obtaining at its cost and expense any environmental permits required for its operations under the Lease, independent of any existing permits.

5. The Government's rights under this Lease specifically include the right for Government officials to inspect upon reasonable notice the Leased Premises for compliance with environmental, safety, and occupational health laws and regulations, whether or not the Government is responsible for enforcing them. Such inspections are without prejudice to the right of duly constituted enforcement officials to make such inspections. The Government normally will give the Lessee or sublessee twenty-four (24) hours prior notice of its intention to enter the Leased Premises unless it determines the entry is required for safety, environmental, operations, or security purposes. The Lessee shall have no claim on account of any entries against the United states or any officer, agent, employee, or contractor thereof.

NOTE: USE THE FOLLOWING PROVISION 6. IF THE LEASED PROPERTY IS PART OF A NATIONAL PRIORITIES LIST (NPL) SITE; ADAPT TO CLEANUP AGREEMENTS TO SUIT CLEANUPS UNDER STATE REGULATORY AUTHORITIES (E.G., A NON-NPL SITE).

6. The Government acknowledges that [insert name of military installation] has been identified as a National Priority List (NPL) Site under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980, as amended. The Lessee acknowledges that the Government has provided it with a copy of the [insert name of military installation] Federal Facility Agreement (FFA) entered into by the United states Environmental Protection Agency (EPA) Region [insert number], the state of [insert name of state], and the Military Department and effective on [insert date], and will provide the Lessee with a copy of any amendments thereto. The Lessee agrees that should any conflict arise between the terms of such agreement as it presently exists or may be amended ("FFA," "Interagency Agreement" or "IAG") and the provisions of this Lease, the terms of the FFA or IAG will take precedence. The Lessee further agrees that notwithstanding any other provision of the Lease, the Government assumes no liability to the Lessee or its sublessees or licensees should implementation of the FFA interfere with the Lessee's or any sublessee's or licensee's use of the Leased Premises. The Lessee shall have no claim on account of any such interference against the United States or any officer, agent, employee or contractor thereof, other than for abatement of rent.

NOTE: USE THE FOLLOWING PROVISION 7. IF A FEDERAL FACILITIES AGREEMENT (FFA) OR INTERAGENCY AGREEMENT (IAG) APPLIES TO THE PROPERTY BEING LEASED (E.G., AN NPL SITE).

7. The Government, EPA, and the [insert name of state agency] and their officers, agents, employees, contractors, and subcontractors have the right, upon reasonable notice to the Lessee and any sublessee, to enter upon the Leased Premises for the purposes enumerated in this subparagraph and for such other purposes consistent with any provision of the FFA:

(a) to conduct investigations and surveys, including, where necessary, drilling, soil and water sampling, test-pitting, testing soil borings and other activities related to the [insert name of military installation] Installation Restoration Program, FFA or IAG;

(b) to inspect field activities of the Government and its contractors and subcontractors in implementing the [insert name of military installation] IRP, FFA or IAG;

(c) to conduct any test or survey required by the EPA or [insert name of state agency] relating to the implementation of the FFA or environmental conditions at the Leased premises or to verify any data submitted to the EPA or [insert name of state agency] by the Government relating to such conditions;

(d) to construct, operate, maintain or undertake any other response or remedial action as required or necessary under the [insert name of military installation] IRP or the FFA or IAG, including, but not limited to monitoring wells, pumping wells and treatment facilities.

NOTE: USE THE FOLLOWING ALTERNATE PROVISION 7. IF THE INSTALLATION RESTORATION PROGRAM (IRP) OR OTHER ENVIRONMENTAL INVESTIGATION APPLIES TO THE PROPERTY BEING LEASED (E.G., A NON-NPL SITE).

7. The Government and its officers, agents, employees, contractors, and subcontractors have the right, upon reasonable notice to the Lessee and any sublessee, to enter upon the Leased Premises for the purposes enumerated in this subparagraph:

(a) to conduct investigations and surveys, including, where necessary, drilling, soil and water sampling, test-pitting, testing soil borings and other activities related to the [insert name of military installation] Installation Restoration Program (IRP);

(b) to inspect field activities of the Government and its contractors and subcontractors in implementing the [insert name of military installation] IRP;

(c) to conduct any test or survey related to the implementation of the IRP or environmental conditions at the Leased premises or to verify any data submitted to the EPA or [insert name of state agency] by the Government relating to such conditions;

(d) to construct, operate, maintain or undertake any other response or remedial action as required or necessary under the [insert name of military installation] IRP, including, but not limited to monitoring wells, pumping wells and treatment facilities.

8. The Lessee agrees to comply with the provisions of any health or safety plan in effect under the IRP or the FFA during the course of any of the above described response or remedial actions. Any inspection, survey, investigation, or other response or remedial action will, to the extent

practicable, be coordinated with representatives designated by the Lessee and any sublessee. The Lessee and sublessees shall have no claim on account of such entries against the United states or any officer, agent, employee, contractor, or subcontractor thereof. In addition, the lessee shall comply with all applicable Federal, state, and local occupational safety and health regulations.

9. The Lessee further agrees that in the event of any assignment or sublease of the Leased Premises, it shall provide to the EPA and [insert name of state agency] by certified mail a copy of the agreement or sublease of the Leased Premises (as the case may be) within fourteen (14) days after the effective date of such transaction. The Lessee may delete the financial terms and any other proprietary information from the copy of any agreement of assignment or sublease furnished pursuant to this condition.

10. The Lessee shall strictly comply with the hazardous waste permit requirements under Resource Conservation and Recovery Act, or its [insert name of state] equivalent. Except as specifically authorized by the Government in writing, the Lessee must provide at its own expense such hazardous waste management facilities, complying with all laws and regulations. Government hazardous waste management facilities will not be available to the Lessee. Any violation of the requirements of this condition shall be deemed a material breach of this Lease.

11. DoD Component accumulation points for hazardous and other wastes will not be used by the Lessee or any sublessee. Neither will the Lessee or sublessee permit its hazardous wastes to be commingled with hazardous waste of the DoD Component.

12. The Lessee shall have a Government-approved plan for responding to hazardous waste, fuel, and other chemical spills prior to commencement of operations on the leased premises. Such plan shall be independent of [insert name of installation] and, except for initial fire response and/or spill containment, shall not rely on use of installation personnel or equipment. Should the Government provide any personnel or equipment, whether for initial fire response and/or spill containment, or otherwise on request of the Lessee, or because the Lessee was not, in the opinion of the said officer, conducting timely cleanup actions, the Lessee agrees to reimburse the Government for its costs.

13. The Lessee shall not construct or make or permit its sublessees or assigns to construct or make any substantial alterations, additions, or improvements to or installations upon or otherwise modify or alter the leased premises in any

way which may adversely affect the cleanup, human health, or the environment without the prior written consent of the Government. Such consent may include a requirement to provide the Government with a performance and payment bond satisfactory to it in all respects and other requirements deemed necessary to protect the interests of the Government. For construction or alterations, additions, modifications, improvements or installations (collectively "work") in the proximity of operable units that are part of a National Priorities List (NPL) Site, such consent may include a requirement for written approval by the Government's Remedial Project Manager. Except as such written approval shall expressly provide otherwise, all such approved alterations, additions, modifications, improvements, and installations shall become Government property when annexed to the leased premises.

14. The Lessee shall not conduct or permit its sublessees to conduct any subsurface excavation, digging, drilling or other disturbance of the surface without the prior written approval of the Government.

15. The Lessee shall strictly comply with the hazardous waste permit requirements under the Resource Conservation and Recovery Act (RCRA), or its State equivalent and any other applicable laws, rules or regulations. The Lessee must provide at its own expense such hazardous waste storage facilities which comply with all laws and regulations as it may need for such storage. Any violation of the requirements of this provision shall be deemed a material breach of this Lease.

THE DEPUTY SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301-1000

1 JUN 1994

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
UNDER SECRETARIES OF DEFENSE
COMPTROLLER
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
GENERAL COUNSEL
INSPECTOR GENERAL
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR, ADMINISTRATION AND MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Finding of Suitability to Transfer for BRAC Property

On September 9, 1993, we issued DoD policy on Fast Track Cleanup at Closing Installations as part of the Department's implementation of the President's program to Revitalize Base Closure Communities.

The two documents attached to this memorandum provide guidance on the environmental review process for transferring property. The guidance was prepared by a joint OSD, Military Department, EPA workgroup and is a fundamental element in our guidance for the lease or transfer by deed of BRAC properties. The other elements are: (1) our 4 May 1994 memorandum of understanding with EPA on the suitability of leasing, required by the FY 94 Defense Authorization Act; and (2) the proposed procedures for DoD implementation of Section 2908 of this Act for "Transfer Authority in Connection with Payment of Environmental Remediation Costs."

I would like to call your attention to Section 330 of the National Defense Authorization Act for Fiscal Year 1993, as amended, that requires the Secretary of Defense to indemnify transferees of closing Defense property from claims that result from the release or threatened release by DoD activities of hazardous substances or petroleum products. The attached procedures provide the framework for ensuring that we do not assume unwarranted risks as we transfer property.

Our best efforts in this area are crucial to the successful transition from base closure to economic redevelopment. I ask for your continued personal support.

Attachments

11103

DoD GUIDANCE ON THE ENVIRONMENTAL REVIEW PROCESS TO REACH A FINDING OF SUITABILITY TO TRANSFER (FOST) FOR PROPERTY WHERE NO RELEASE OR DISPOSAL HAS OCCURRED

I. PURPOSE.

This policy provides guidance to the Department of Defense (DoD) Components on the process to document parcels of real property made available through the Base Realignment and Closure (BRAC) process and which are environmentally suitable for transfer by deed under Section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. 9620 (h)). The DoD Components may develop implementation procedures which may contain additional requirements based on their own specific needs and unique requirements but will, at a minimum, include the following documentation and procedures. This guidance applies to property where no release or disposal of hazardous substances or petroleum products has occurred and which is being considered for transfer by deed, whether or not storage of hazardous substances or petroleum products has occurred. Nothing in this policy negates the requirement to comply with the National Environmental Policy Act (NEPA).

II. APPLICABILITY AND SCOPE.

This policy applies to all DoD installations selected for closure or realignment pursuant to the Base Closure and Realignment Act of 1988 (P.L. 100-526) (BRAC 88) or the Defense Base Closure and Realignment Act of 1990 (P.L. 101-510)(BRAC 91, 93, and 95). The policy's scope intends to meet the following objectives:

A. Ensure protection of human health and the environment.

B. Develop a DoD-wide process to assess, determine, and document the environmental suitability of properties for transfer by deed.

C. Ensure transfer of properties by deed does not interfere with response actions being conducted at National Priorities List (NPL) sites under the provisions of a Federal Facilities Agreement or at non-NPL sites under the provisions of other types of agreements or any corrective action orders.

D. Ensure compliance with all applicable environmental cleanup requirements and allow the DoD Component to demonstrate compliance with Section 120(h) of CERCLA before properties are transferred by deed.

E. Provide for adequate public and regulatory participation without unduly encumbering the DoD Components' authority and mandate to make property available for reuse in a timely manner.

F. Ensure a sufficient environmental review of the real property being considered for transfer is conducted to avoid unwarranted risks of future liability.

III. POLICY.

A. Requirement for Assessment, Determination and Documentation of Properties Suitable for Transfer by Deed.

In the case of real property to which this policy applies, the head of the DoD Component with accountability over the property, or his/her designated representative, shall assess, determine and document when properties where no release or disposal of hazardous substances or petroleum products has occurred are suitable for transfer by deed. This assessment and determination will be based on an Environmental Baseline Survey (EBS) and will be documented in a Finding of Suitability to Transfer (FOST) as described below.

B. Investigation.

1. Environmental Baseline Survey (EBS). An EBS will be prepared encompassing any property to be transferred. The EBS will be based on all existing environmental information related to storage, release, treatment or disposal of hazardous substances or petroleum products on the property to determine or discover the obviousness of the presence or likely presence of a release or threatened release of any hazardous substance or petroleum product. In certain cases additional data, including sampling, if appropriate under the circumstances, may be needed in the EBS to support the FOST determination.

A previously conducted EBS may be updated as necessary and used for making a FOST determination, where appropriate. An EBS also may satisfy other environmental requirements (e.g., to reach a Finding of Suitability to Lease [FOSL] or satisfy the requirements of the Community Environmental Response Facilitation Act [CERFA]).

2. Procedures for Conducting an EBS. The EBS will consider all sources of available information concerning all environmentally significant current and past uses of the real property and shall, at a minimum, consist of the following:

a. Detailed search and review of available information and records in the possession of the DoD Components or records made available by the regulatory agencies or other involved Federal agencies. DoD Components are responsible for requesting and making reasonable inquiry into the existence and availability of relevant information and records to include any additional study information (e.g., surveys for radioactive materials, asbestos, radon, lead-based paint, transformers containing PCB, Resource Conservation and Recovery Act Facility Assessments and Investigations [RFA and RFI], Underground Storage Tank Cleanup Program) to determine the environmental condition of the property.

b. Review of all reasonably obtainable Federal, State, and local government records for each adjacent facility where there has been a release of any hazardous substance or any petroleum product, and which is likely to cause or contribute to a release or threatened release of any hazardous substance or any petroleum product on the real property.

c. Analysis of aerial photographs which are in the possession of the Federal Government or are reasonably obtainable through state or local government agencies that may reflect prior uses of the real property.

d. Interviews with current and/or former employees involved in operations on the real property.

e. Visual inspections of the real property; any buildings, structures, equipment, pipe, pipeline, or other improvements on the real property; and of properties immediately adjacent to the real property, noting sewer lines, runoff patterns, evidence of environmental impacts (e.g., stained soil, stressed vegetation, dead or ill wildlife)

and other observations which indicate actual or potential release of hazardous substances or petroleum products.

f. Identification of sources of contamination on the installation and on adjacent properties which could migrate to the real property.

g. Ongoing response actions and actions that have been taken at, or adjacent to, the real property.

h. A physical inspection of property adjacent to the real property, as appropriate, and to the extent permitted by owners or operators of such property.

NOTE: For the purposes of paragraphs b, e, f, g, & h above, "adjacent properties" are defined as either those properties contiguous to the boundaries of the property being surveyed or other nearby properties. In either case, the survey should be addressed to those portions of the properties relatively near the installation that could pose significant environmental concern and/or have a significant impact on the results of the EBS.

3. Documentation of an EBS. At the completion of the EBS, a report will be prepared which will include the following:

a. An Executive Summary briefly stating the areas of real property (or parcels) evaluated and the conclusions of the survey.

b. The property identification (e.g., address, assessor parcel number, legal description).

c. Any relevant information obtained from a detailed search of Federal Government records pertaining to the property, including available maps.

d. Any relevant information obtained from a review of the recorded chain of title documents regarding the real property. The review should address those prior ownerships/uses that could reasonably have contributed to an environmental concern, and, at a minimum, cover the preceding 60 years.

e. A description of past and current activities, including all past and current DoD and non-DoD uses to the extent such information is reasonably available, on the property and on adjacent properties.

f. A description of hazardous substances and petroleum products management practices (to include storage, release, treatment or disposal) at the property and at adjacent properties, to the extent such information is reasonably available.

g. Any relevant information obtained from records reviews and visual and physical inspections of adjacent properties.

h. Description of ongoing response actions or actions that have been taken at or adjacent to the property.

i. Reference to key documents examined (e.g., aerial photographs, spill incident reports, investigation results). (The documents will be made available by DoD upon request.)

4. Analysis of Intended Use. Before the signing of a FOST, an analysis of the intended use of the property, if known, will be conducted and will include:

a. An evaluation of the environmental suitability of the property for transfer by deed for the intended purpose, if known, including the rationale for the determination of such suitability.

b. A listing of specific recommended restrictions on use of the property, if any, to protect human health and the environment or the environmental restoration process. For remediated parcels such restrictions would include those documented in the Record of Decision (ROD) under the National Oil and Hazardous Substances Contingency Plan (NCP) or equivalent decision documents.

NOTE: The covenant required by CERCLA Section 120(h)(3) regarding hazardous substances must be based on either (1) a determination that no remedial action is required or (2) a determination that all remedial action

necessary to protect human health and the environment has been taken. The determination that no remedial action is required or that all remedial action has been taken shall be supported by the appropriate documentation required by the program (e.g., CERCLA, RCRA, UST, DERP, state law) under which the property was evaluated and addressed. Such decision document may include a CERCLA Record of Decision (ROD), No Further Action ROD, No Further Response Action Planned (NFRAP), or other such similar RCRA, UST, DERP, or state law documentation, or other documentation that describes a consensus between the lead regulatory agency and the DoD Component. The intent is to use the processes under existing cleanup authorities and programs, and not create an additional separate process, to determine whether property requires remedial action or can be transferred as is. For property that requires remedial action, whether or not an NPL site and regardless of which cleanup authority is used, the covenant that all remedial action has been taken may only be made after a demonstration to EPA that an approved remedy is installed and operating properly and successfully.

C. Finding of Suitability to Transfer (FOST).

After completion and review of the EBS, the intended use analysis, and any available local community reuse plan, the DoD Component will sign a FOST once a determination has been made that the property is suitable for transfer by deed for the intended purpose, if known, because the requirements of CERCLA Section 120(h)(3) have been met for the property, taking into account the potential risk of future liability. The DoD component will provide a copy of the signed FOST to the regulator.

IV. PROCEDURES AND RESPONSIBILITIES.

A. Regulatory agencies will be notified at the initiation of the EBS and the FOST. The process of development of these documents will be designed to assure that regulators are provided adequate opportunity to express their views. Regulators will be provided with workable draft documents as they become available, including the EBS and the proposed FOST. Regulatory comments received during the development of these documents will be reviewed and incorporated as appropriate. Any unresolved regulatory comments will be included as attachments to the EBS or the FOST.

B. The regulatory agencies and public will be notified of the intent to sign a FOST. This will take place at the earliest possible time, but no later than 30 days prior

to a transfer by deed. The notification will be mailed to the regulatory agencies and will include the draft FOST. Either the EBS report or a summary of the findings of the EBS process that pertain to the parcel to be transferred will be made available to the public. Additional supporting documentation will be made available upon request. The DoD Components will address relevant comments from regulatory officials and other appropriate entities that have been received within this 30-day period. After consideration of all relevant comments (unresolved comments will be included as an appendix to the FOST) and signing of the FOST, the DoD Component may proceed to convey the property by deed.

C. The DoD Components will provide public notice of the signing of the FOST and will retain the signed FOST, including all regulatory comments and responses on the EBS and/or FOST, in the transaction file (and the Administrative Record, where applicable) and will make the FOST available to the public upon request.

D. Conditions will be included in the transfer deed to:

1. Ensure environmental investigations and remedial and oversight activities will not be disrupted at any time. Such conditions will include, but are not limited to:

   a. Providing for continued access for DoD (or its designated contratctor) and regulatory agencies to monitor the effectiveness of cleanup, perform five-year reviews, and/or take additional remedial or removal actions.

   b. Prohibiting activities that could disrupt any remediation activities or jeopardize the protectiveness of those remedies such as the following:

      (1) Surface application of water that could impact the migration of contaminated ground water;

      (2) Subsurface drilling or use of ground water unless DoD determines that there will be no adverse impacts on the cleanup process; or,

      (3) Construction that would interfere with, negatively impact, or restrict access for cleanup work.

2. Limit use as required by the FOST.

DoD GUIDANCE ON THE ENVIRONMENTAL REVIEW PROCESS TO REACH A FINDING OF SUITABILITY TO TRANSFER (FOST) FOR PROPERTY WHERE RELEASE OR DISPOSAL HAS OCCURRED

I. PURPOSE.

This policy provides guidance to the Department of Defense (DoD) Components on the necessary process to document parcels of real property made available through the Base Realignment and Closure (BRAC) process and which are environmentally suitable for transfer by deed under Section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. Section 9620(h)). This policy does not apply to transfers of property to persons paying the cost of environmental restoration activities under the provisions of Section 2908 of the National Defense Authorization Act for FY 94. The DoD Components may develop implementation procedures which may contain additional requirements based on their own specific needs and unique requirements but will, at a minimum, include the following documentation and procedures. This guidance applies to property where release or disposal of hazardous substances or petroleum products has occurred and which is being considered for transfer by deed. Nothing in this policy negates the requirement to comply with the National Environmental Policy Act (NEPA).

II. APPLICABILITY AND SCOPE.

This policy applies to all DoD installations selected for closure or realignment pursuant to the Base Closure and Realignment Act of 1988 (P.L. 100-526) (BRAC 88) or the Defense Base Closure and Realignment Act of 1990 (P.L. 101-510)(BRAC 91, 93, and 95). The policy's scope intends to meet the following objectives:

A. Ensure protection of human health and the environment.

B. Develop a DoD-wide process to assess, determine and document the environmental suitability of properties for transfer by deed.

C. Ensure transfer of properties by deed does not interfere with response actions being conducted at National Priorities List (NPL) sites under the provisions of a Federal Facilities Agreement or at non-NPL sites under the provisions of other types of agreements or any corrective action orders.

D. Ensure compliance with all applicable environmental cleanup requirements and allow the DoD Component to demonstrate compliance with Section 120(h) of CERCLA before properties are transferred by deed.

E. Provide for adequate public and regulatory participation without unduly encumbering the Defense Department Components' authority and mandate to make property available for reuse in a timely manner.

F. Ensure a sufficient environmental review of the real property being considered for transfer is conducted to avoid unwarranted risks of future liability.

III. POLICY.

A. Requirement for Assessment, Determination and Documentation of Properties Suitable for Transfer by Deed.

In the case of real property to which this policy applies, the head of the DoD Component with accountability over the property, or his/her designated representative, shall assess, determine and document when properties where release or disposal of hazardous substances or petroleum products has occurred are suitable for transfer by deed. This assessment and determination will be based on an Environmental Baseline Survey (EBS) and will be documented in a Finding of Suitability to Transfer (FOST) as described below.

B. Investigation.

1. Environmental Baseline Survey (EBS). An EBS will be prepared encompassing any property to be transferred. The EBS will be based on all existing environmental information related to storage, release, treatment or disposal of hazardous substances or petroleum products on the property to determine or discover the obviousness of the presence or likely presence of a release or threatened release of any hazardous substance or petroleum product. In certain cases additional data, including sampling, if appropriate under the circumstances, may be needed in the EBS to support the FOST determination.

A previously conducted EBS may be updated as necessary and used for making a FOST determination, where appropriate. An EBS also may satisfy other environmental requirements (e.g., to reach a Finding of Suitability to Lease [FOSL] or satisfy the requirements of the Community Environmental Response Facilitation Act [CERFA]).

2. Procedures for Conducting an EBS. The EBS will consider all sources of available information concerning all environmentally significant current and past uses of the real property and shall, at a minimum, consist of the following:

a. Detailed search and review of available information and records in the possession of the DoD Components or records made available by the regulatory agencies or other involved Federal agencies. DoD Components are responsible for requesting and making reasonable inquiry into the existence and availability of relevant information and records to include any additional study information (e.g., surveys for radioactive materials, asbestos, radon, lead-based paint, transformers containing PCB, Resource Conservation and Recovery Act Facility Assessments and Investigations [RFA and RFI], Underground Storage Tank Cleanup Program) to determine the environmental condition of the property.

b. Review of all reasonably obtainable Federal, State, and local government records for each adjacent facility where there has been a release of any hazardous substance or any petroleum product, and which is likely to cause or contribute to a release or threatened release of any hazardous substance or any petroleum product on the real property.

c. Analysis of aerial photographs which are in the possession of the Federal Government or are reasonably obtainable through state or local government agencies that may reflect prior uses of the real property.

d. Interviews with current and/or former employees involved in operations on the real property.

e. Visual inspections of the real property; any buildings, structures, equipment, pipe, pipeline, or other improvements on the real property; and of properties immediately adjacent to the real property, noting sewer lines, runoff patterns, evidence of environmental impacts (e.g., stained soil, stressed vegetation, dead or ill wildlife)

and other observations which indicate actual or potential release of hazardous substances or petroleum products.

f. Identification of sources of contamination on the installation and on adjacent properties which could migrate to the real property.

g. Ongoing response actions and actions that have been taken at adjacent real property.

h. A physical inspection of property adjacent to the real property, as appropriate, and to the extent permitted by owners or operators of such property.

NOTE: For the purposes of paragraphs b, e, f, g, & h above, "adjacent properties" are defined as either those properties contiguous to the boundaries of the property being surveyed or other nearby properties. In either case, the survey should be addressed to those portions of the properties relatively near the installation that could pose significant environmental concern and/or have a significant impact on the results of the EBS.

3. Documentation of an EBS. At the completion of the EBS, a report will be prepared which will include the following:

a. An Executive Summary briefly stating the areas of real property (or parcels) evaluated and the conclusions of the survey.

b. The property identification (e.g., address, assessor parcel number, legal description).

c. Any relevant information obtained from a detailed search of Federal Government records pertaining to the property, including available maps.

d. Any relevant information obtained from a review of the recorded chain of title documents regarding the real property. The review should address those prior ownerships/uses that could reasonably have contributed to an environmental concern, and, at a minimum, cover the preceding 60 years.

e. A description of past and current activities, including all past and current DoD and non-

DoD uses to the extent such information is reasonably available, on the property and on adjacent properties.

f. A description of hazardous substances and petroleum products management practices (to include storage, release or treatment) at the property and at adjacent properties, to the extent such information is reasonably available.

g. Any relevant information obtained from records reviews and visual and physical inspections of adjacent properties.

h. Description of ongoing response actions or actions that have been taken at adjacent real property.

i. Reference to key documents examined (e.g., aerial photographs, spill incident reports, investigation results). (The documents will be made available by DoD upon request.)

4. Analysis of the EBS. Before the signing of a FOST, a listing will be made of specific recommended restrictions on use of the property, if any, to protect human health and the environment.

C. Finding of Suitability to Transfer (FOST).

After completion and review of the EBS, the DoD Component will sign a FOST once a determination is made that the property is suitable for transfer by deed because no hazardous substances or petroleum products were known to have been released or disposed of on the property, taking into account the potential risk of future liability. The DoD Component will provide a copy of the signed FOST to the regulator.

IV. PROCEDURES AND RESPONSIBILITIES

A. Regulatory agencies will be notified at the initiation of the EBS and the FOST. The process of development of these documents will be designed to assure that regulators are provided adequate opportunity to express their views. Regulators will be provided with workable draft documents as they become available, including the EBS and the proposed FOST. Regulatory comments received during the development of these documents will be reviewed and incorporated as appropriate. Any

unresolved regulatory comments will be included as attachments to the EBS or the FOST.

B. The regulatory agencies and public will be notified of the intent to sign a FOST. This will take place at the earliest possible time, but no later than 30 days prior to a transfer by deed. The notification will be mailed to the regulatory agencies and will include the draft FOST. Either the EBS report or a summary of the findings of the EBS process that pertain to the parcel to be transferred will be made available to the public. Additional supporting documentation will be made available upon request. The DoD Components will address relevant comments from regulatory officials or other appropriate entities that have been received within this 30-day period. After consideration of all relevant comments (unresolved comments will be included as an appendix to the FOST) and signing of the FOST, the DoD Components may proceed to convey the property by deed.

C. The DoD Components will provide public notice of the signing of the FOST and will retain the signed FOST, including all regulatory comments and responses on the EBS and/or FOST, in the transaction file (and the Administrative Record, where applicable) and will make the FOST available to the public upon request.

D. Conditions will be included in the transfer deed to:

1. Ensure that a response action or corrective action found to be necessary after the date of transfer by deed will be conducted by the United States.

2. Grant the United States access to the property in any case in which a response action or corrective action is found to be necessary at the property after the date of transfer by deed, or such access is necessary to carry out a response action or corrective action on adjoining property.