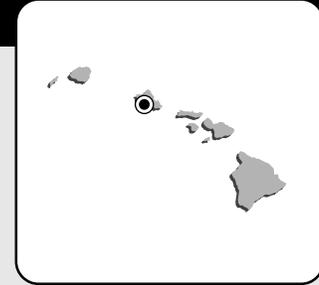


# BARBERS POINT NAVAL AIR STATION

## BARBERS POINT, HAWAII

Engineering Field Division/Activity: PACDIV  
 Major Claimant: CINCPACFLT  
 Size: 3,822 Acres  
 Funding to Date: \$19,270,000  
 Estimated Funding to Complete: \$46,236,000



**Base Mission:** Maintains and operates facilities and provides services and material support to operations of aviation activities and units of the operating forces of the U.S. Navy

**Contaminants:** POLs, heavy metals (chromium, copper, lead, zinc), ethyl acetate, hexane, PCBs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	21	High:	1	Not Evaluated:	4
RCRA Corrective Action:	0	Medium:	11	Not Required:	7
RCRA UST:	4	Low:	2		
<b>Total Sites:</b>	<b>25</b>				

<b>BRAC III</b>
Sites Response Complete: 7

### EXECUTIVE SUMMARY

Naval Air Station (NAS) Barbers Point is located on the island of Oahu, 13 miles west of Honolulu, Hawaii. The main base encompasses approximately 3,709 acres on the leeward coast of Oahu. Aviation activities began at Barbers Point in the 1930's. Originally, an emergency landing field, with the added requirements from World War II, it quickly grew and NAS Barbers Point was completed in 1943. Typical air station operations that contributed to contaminated sites on the facility include disposal pits, a pesticide shop, a landfill, and transformer sites. The primary contaminants of concern, affecting soil, include the chemical additive PCB, heavy metals, petroleum products, pesticides and solvents. Current operations include pollution prevention measures to prevent further contamination.

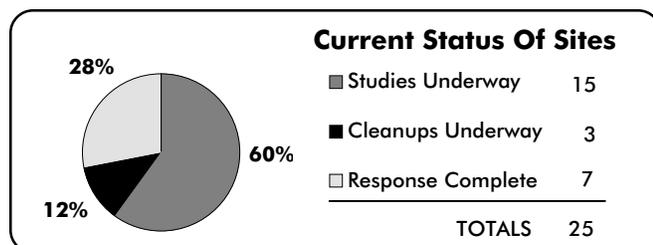
NAS Barbers Point is located toward the west end of the southern coastal plain. Streams do not enter or exit the base, and there is only one small pond on the station. The groundwater found on the base is brackish. Due to the highly permeable bedrock and poorly developed soils at the NAS, any leachates or liquid wastes in the ground may readily migrate to the water table. Two factors mitigate the danger from the migration potential: the groundwater discharge is generally toward the ocean and the salinity of the groundwater precludes its use as a domestic water source without pretreatment. Three endangered plant and animal species and six "depleted" plant species are present on the base. The base also contains several sensitive habitats. The land adjacent to the base, to the north and east, is used for small-scale agriculture and residential developments. The land to the west is used for industrial activities. Since the air station obtains its potable water from a well two miles north of the station, and most of the site-related contaminants do not appear to have migrated very far from the sites, there is little potential for human exposure to contaminants. The RI/FS conducted for the regional groundwater system indicates that operations at the base are not contaminating the groundwater.

To increase public involvement, a Restoration Advisory Board (RAB) was established for Barbers Point in FY94. The Community Relations Plan (CRP)

was updated in October 1997. An Administrative Record has been updated and there is a copy of its index available for viewing in the Information Repository in Ewa Beach, Hawaii. All CERCLA documents are also available at the Information Repository.

Nine CERCLA sites were identified during the initial Preliminary Assessment (PA), completed in FY83. Three sites were identified for further investigation. In FY94, a second PA (the Environmental Baseline Survey (EBS) was completed. Seventeen sites were identified for further investigation (including six sites included in the initial PA). Two of the sites identified in the initial PA and listed as Response Complete (RC) in FY87 were determined to require No Further Action (NFA). Seventeen sites are scheduled for Remedial Investigation/ Feasibility Study (RI/FS). Eight RI/FSs will be complete in FY98. The remaining sites will have a RI/FS completed between FY99 and FY01. Ten Interim Removal Actions (IRAs) will be completed at nine sites between FY99 and FY09. Two Underground Storage Tank (UST) group sites were added in FY94, following an Initial Site Characterization (ISC). Two sites requiring further action were identified for LTM, which is scheduled to be completed in FY98 and FY06. The Implementation (IMP) phase will be completed in FY98 for the other UST group. Cleanup for this site will be complete after the IMP is completed. One site (Site 15) may require groundwater remediation prior to final cleanup, which is expected in FY099. Site 20 will also require removal of contaminated concrete and/or soil. Six of the other sites at the installation will require some soil removal and are expected to be clean by FY01. Site 19 does not require Remedial Actions (RAs), but Long Term Monitoring (LTM) will be conducted at least until the property is transferred.

NAS Barbers Point was selected for closure by the Base Realignment and Closure Commission (BRAC III) of 1993. Base closure procedures began in September 1993 with the initiation of the EBS and a BRAC Cleanup Plan (BCP). Operational closure of the base is set for July 1999. The final property transfer date is anticipated to be in FY01, when IRAs at three of the sites are completed. Some property is expected to be available for transfer as early as FY99. The BRAC Cleanup Team (BCT) was formed in FY94. A Land Reuse Plan for the installation was completed in March 1997.



## BARBERS POINT NAS RELEVANT ISSUES

### ENVIRONMENTAL RISK



**HYDROGEOLOGY** - The island of Oahu was formed by two large volcanoes. NAS Barbers Point is located toward the west end of the southern coastal plain, in an area where depositions of coral reef limestone predominate in the uppermost sedimentary levels. It is a coral outcrop. There is very little soil cover. Streams do not enter or exit the base, and there is only one small pond on the station. The groundwater found on the base is brackish, and is in direct hydraulic connection with the Pacific Ocean. Below the uppermost coral aquifer, there are several layers of permeable coral limestone separated by less permeable materials. Due to the highly permeable bedrock and poorly developed soils at NAS, any leachates or liquid wastes in the ground may readily migrate to the water table. Once in the groundwater, contaminants could be subject to mixing, induced by tidal pulses within the brackish water zone. Since the groundwater flows to the southwest with some westerly gradients, it is assumed that it discharges to the ocean. Two factors mitigate the danger posed by the migration potential; the groundwater discharge is generally toward the ocean, and the salinity of the groundwater precludes its use as a domestic water source without pretreatment. Possible causes of potential degradation of the groundwater under the station are not limited to the NAS activities. The large-scale farming irrigation that has taken place adjacent to the NAS may have affected the groundwater flowing under the installation. Any other solubles applied to the crops or soil might eventually be transported under the NAS to the ocean. There is also an industrial park on the western boundary. A petroleum refinery in the industrial park has, in the past, injected its refinery wastes into a well near the installation boundary. Since the NAS obtains its potable water from a well two miles up gradient from the sites, there is little potential for human exposure to contaminants. The RI/FS conducted for the regional groundwater system indicates that operations at the base are not contaminating the groundwater.



**NATURAL RESOURCES** - Because of the isolation of the islands, there are a great number of animal and plant species that are unique to the Hawaiian Islands. Much of the plant life in the mountain areas is still native, but the vegetation found in the lowlands of Oahu is mostly non-native, due to extensive agriculture, urban development and a number of military installations. Animals native to Hawaii are limited to birds and insects. Two federal and state listed endangered plant species and six "depleted" plant species are present on the base. One endangered bird was observed at the base. Sensitive habitats on-site consist of wetlands, mangrove swamps, the coastal salt flats, the coastal region of Barbers Point, and portions of lowland scrub forest and coastal strand.



**RISK** - A baseline for Human Health Risk Assessment using EPA's guidance for assessing CERCLA sites has been completed for all sites, except Sites 17 and 20. An Ecological Risk Assessment will be performed for all sites except 9, 19, and 20. The Department of Defense's (DOD's) Relative Risk Site Evaluation Model (RRSEM) was used to rank the risk factors for 17 of the 19 active sites on the installation in FY95. One of the sites at NAS Barbers Point received a "High" relative risk ranking for soil contamination. Possible receptors include onsite workers, visitors, and construction workers. The groundwater is brackish and not used for drinking. However, it could be used as a drinking water source in the future if it is desalinated. Eleven sites received a "Medium" risk ranking. Three sites received a "Low" risk ranking, and one received no rank because the contaminant of concern was asbestos, a contaminant which is not handled by DOD's RRSEM. Two of the UST sites received a "Low" ranking, and the other two were not ranked because soil and tanks have been removed.

### COMMUNITY INVOLVEMENT



**RESTORATION ADVISORY BOARD** - In FY94, public involvement at Barbers Point was enhanced with the formation of the Restoration Advisory Board (RAB). The RAB has 19 members, consisting of representatives from the State of Hawaii, EPA Region IX, the Redevelopment Commission, the Oahu Civil Defense Agency, and members of several community associations. The community associations

involved include neighborhood associations and boards, Friends for Ewa, Save Ewa Beach Ohana, and Hawaii Thousand Friends. Since the RAB was established, the community has become more involved with the cleanup effort. RAB members have been provided copies documents for review. Meetings are held on quarterly basis.



**COMMUNITY RELATIONS PLAN** - The Community Relations Plan (CRP) was updated in October 1997.



**INFORMATION REPOSITORY** - The Administrative Record, first established in 1993, has recently been updated and copies are available for viewing at the installation and at Naval Facilities Engineering Command, Pacific Division (PACDIV) at Pearl Harbor. All documents pertaining to the restoration program and the Administrative Record File Index are sent to the Information Repository. The Information Repository was established in 1992, and is housed at the Ewa Beach Public School and Library in Ewa Beach, Hawaii.

### BASE REALIGNMENT AND CLOSURE



**BRAC** - NAS Barbers Point was selected for closure by the Base Realignment and Closure Commission of 1993 (BRAC III). Base closure procedures began in September 1993 with the initiation of the EBS and a BCP. Operational closure of the base is set for July 1999. The final property transfer date is estimated to be in FY01, when Interim Removal Actions (IRAs) at Sites 1, 14, and 22 are completed. Most of the property is expected to be available for transfer in FY99. The installation was selected for closure because existing operational units could be transferred to other military installations and still adequately perform their mission requirements.



**BRAC CLEANUP TEAM** - The BRAC Cleanup Team (BCT) was formed in FY94. The cleanup process was accelerated through BCT meetings, on-site visits, and concurrent review of documents.



**DOCUMENTS** - An EBS has been completed. The BCP is updated annually. The BCT identified 14 sites and three Operable Units (OUs) that required further investigation, in FY95, and the results of these investigations have been summarized in draft reports. Final reports for all sites, except Site 14, investigated under BRAC are expected to be completed in FY98. It is anticipated that following the investigation, eight of the sites will require No Further Action (NFA).

**Environmental Conditions of Property Classification**

1	2	3	4	5	6	7
0 acres	50 acres	2,492 acres				



**LEASE/TRANSFER** - None of the property at the base will be transferred until after closure in July 1999. The Environmental Condition of the Property (ECP) for the majority of the property at NAS Barbers Point is Categories 1 and 3. Approximately one-fifth of the property remains in ECP 7, property requiring further evaluation, pending further investigation of the groundwater in FY98. Drums have been removed from sites identified in the EBS. The Navy is retaining approximately 1,280 acres of property at NAS Barbers Point. There are four CERCLA sites and two UST sites within this area. Sites 6 and 7 were two of the three sites determined to require no further action in FY87 after the PA/SI phase was completed. Site 17 was identified for further investigation during the EBS. A RI/FS will be completed for this site in FY09 after an IRA is conducted. In FY95, Site 3 was designated for retention. The RI for this site was started using BRAC III funds, and will be completed using DERA funds in FY07 after an IRA has been conducted. Pesticides and herbicides are the major contaminants of concern at both of the two active sites. A fifth site, Site 16, is also in the retention area. No further action was required for this site after the PA/SI was completed. The Implementation (IMP) phase for UST 2 will be completed in FY98. LTM will be conducted at UST 7 until FY96

## BARBERS POINT NAS RELEVANT ISSUES



**REUSE** - A Land Reuse Plan for the installation was completed in March 1997. HUD approval is expected in December 1997, and the EIS is expected to be completed in April 1999. None of the property at the base will be transferred until after closure in July 1999. It is anticipated that most of the transfers will occur immediately after base closure.



**FAST-TRACK INITIATIVES** - The Navy is committed to or has implemented the following initiatives to accelerate environmental restoration efforts at Barbers Point NAS: technology review, immediate IRAs to eliminate "hot spots", overlapping phases, improved contracting procedures, interfacing with community reuse plan and schedule, emphasizing cleanup over studies, using technical input from experts, and use of innovative management techniques.

## HISTORICAL PROGRESS

### FY83

**Sites 1-9** - A Preliminary Assessment (PA) was completed and nine CERCLA sites were identified. Sites 1-3 were identified for further investigation.

### FY87

**Sites 6 and 7** - Site Inspections (SIs) were completed, No Further Action (NFA) required, listed as response complete (RC).

### FY93

**Site 1** - A SI was completed and a Remedial Investigation (RI) was required.

### FY94

**Sites 1, 2, 9, 13 and 20** - A Remedial Investigation/Feasibility Study (RI/FS) was started, with completion expected in FY04.  
**Site 3** - An RI/FS was started, and expected completion is in FY08.

**Sites 8, 10-12, 14, 15, 18 and 22** - An RI/FS was started and completion is expected in FY04.  
**Sites 10-20, 22 and UST 2** - Another PA, the Environmental Baseline Survey (EBS), was completed. Twelve CERCLA sites and one Underground Storage Tank (UST) site were added.  
**Sites 5 and 19** - An RI/FS was started and completion is expected in FY97.

### FY95

**Site 16** - It was determined that the site did not require further investigation, and it was listed as RC.

### FY96

**Sites 1, 2, 3, 5, 8-15, 17-20 and 22** - Continue data evaluation as part of the RI.  
**USTs 2 and 7** - A Removal Action for waste and soil removal started in FY95 as part of the Implementation (IMP) phase and completed the IRA.  
**UST 6** - A Remedial Action Plan (RAP) was started and completed.

## PROGRESS DURING FISCAL YEAR 1997

### FY97

**Site 1** - An Environmental Evaluation/Cost Analysis (EE/CA) was started as part of the RI/FS to evaluate alternatives for cleanup of soils contaminated with paint, pesticide, petroleum products, the chemical additive PCB, non-hazardous refuse, solvent, and heavy metals. Further monitoring was conducted, and will continue until FY99.

**Site 2** - An EE/CA will be started as part of the RI/FS to evaluate alternatives for cleanup of soil and sediment contaminated with ordnance compounds, scrap metal, and non-chlorinated solvents. Further monitoring was conducted and will continue until FY99.  
**Site 20** - An EE/CA and RD were started to support an IRA under the RI/FS phase to evaluate alternatives for cleanup of soils and concrete contaminated with PCB. They will be completed in FY98.  
**UST 6** - CAP completed.

## PLANS FOR FISCAL YEARS 1998 AND 1999

### FY98

**Sites 8, 9, 10, 11, 12, 13 and 19** - Complete RI/FS. Sites are expected to be RC.  
**Sites 1 and 2** - Complete EE/CA started in FY97. Continue monitoring through FY99.  
**Site 2** - Begin RD for IRA to be conducted as part of the RI/FS phase.  
**Site 15** - Continue RI/FS. Begin EE/CA and RD for IRA to remove sediment contaminated with solvents and heavy metals to be conducted as part of the RI/FS phase.  
**Site 18** - Prepare EE/CA and RD to support IRA to be conducted as part of the RI/FS for cleanup of lead-contaminated soil.  
**Site 19** - Conduct additional sampling under RI/FS. Begin Long-Term Monitoring (LTM).  
**Site 20** - Complete EE/CA and RD started in FY97. Begin IRA as part of RI/FS phase.  
**UST 2** - Complete IMP phase. Site is expected to RC.  
**UST 6** - Perform quarterly monitoring at UST 6 for one year. Site is expected to be RC.

### FY99

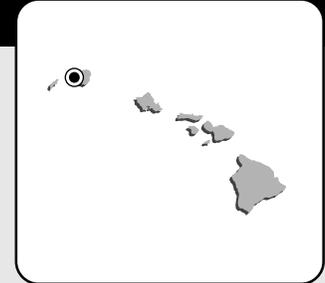
**Site 1** - Complete monitoring.  
**Site 2** - Begin IRA to remove sediment (as part of the RI/FS phase). Complete monitoring.  
**Site 14** - Conduct further sampling as part of RI/FS after facility is demolished.  
**Site 15** - Conduct IRA to remove sediment as part of the RI/FS phase.  
**Site 18** - Begin IRA to be conducted as part of the RI/FS.  
**Site 19** - Continue LTM through FY03.  
**Site 20** - Complete IRA as part of RI/FS phase.

## BARBERS POINT NAS PROGRESS AND PLANS

<b>CERCLA</b>	<b>FY96 and before</b>	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03 and after</b>
PA / SI	21							
RI / FS		3	4	3	1	3		3
RD		1	4		3	4		3
RAC								
RAO								
IRA				1(1)	1(1)	4(4)		10(10)
RC	4	3	4	3	1	3		3
Cumulative % RC	19%	33%	52%	67%	71%	86%	86%	100%
<b>UST</b>	<b>FY96 and before</b>	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03 and after</b>
SA	1							
CAP			1					
DES				1				
IMP			3	1				
IMO								
IRA	3(3)							
RC			3	1				
Cumulative % RC	0%	0%	75%	100%	100%	100%	100%	100%

# BARKING SANDS PACIFIC MISSILE RANGE FACILITY

## BARKING SANDS, HAWAII



Engineering Field Division/Activity: PACDIV  
 Major Claimant: CINCPACFLT  
 Size: 2,372 Acres  
 Funding to Date: \$3,824,000  
 Estimated Funding to Complete: \$1,936,000

**Base Mission:** Provides fully instrumented missile ranges and operational and base support facilities for fleet underwater, surface and air training exercises; provides Navy operational and technical evaluation programs to activities

**Contaminants:** Old fuel, lube oils, hydraulic fuels, lead, battery acid, hydrogen cyanide, Otto fuel

**Number of Sites:**

CERCLA: 4  
 RCRA Corrective Action: 0  
 RCRA UST: 0  
 Total Sites: 4

**Relative Risk Ranking of Sites:**

High: 1 Not Evaluated: 0  
 Medium: 0 Not Required: 0  
 Low: 3

Sites Response Complete: 0	

### PROGRESS AND PLANS

CERCLA	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
PA / SI	2		2					
RI / FS			2		1			
RD				1				1
RAC								
RAO								1
IRA				1(1)				2(2)
RC			2		1			1
Cumulative % RC	0%	0%	50%	50%	75%	75%	75%	100%

# CAMP H.M. SMITH OAHU

## OAHU, HAWAII

Engineering Field Division/Activity: PACDIV  
 Major Claimant: CMC  
 Size: 420 Acres  
 Funding to Date: \$1,025,000  
 Estimated Funding to Complete: \$2,791,000



Base Mission: Provides housing and training for Marine Corps personnel

Contaminants: PCBs

**Number of Sites:**

CERCLA: 2  
 RCRA Corrective Action: 0  
 RCRA UST: 0  
 Total Sites: 2

**Relative Risk Ranking of Sites:**

High: 2 Not Evaluated: 0  
 Medium: 0 Not Required: 0  
 Low: 0

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Sites Response Complete: 0
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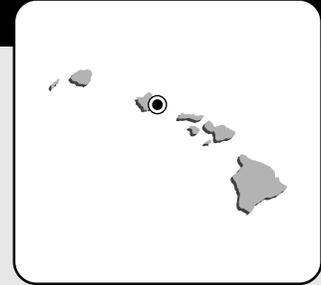
### PROGRESS AND PLANS

CERCLA	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
PA / SI	1							
RI / FS					1			1
RD								1
RAC								
RAO								
IRA			1(1)					1(1)
RC					1			1
Cumulative % RC	0%	0%	0%	0%	50%	50%	50%	100%

# KANEOHE BAY MARINE CORPS BASE

## KANEOHE BAY, HAWAII

Engineering Field Division/Activity: PACDIV  
 Major Claimant: CMC  
 Size: 2,951 Acres  
 Funding to Date: \$741,000  
 Estimated Funding to Complete: \$7,848,000



Base Mission: Maintains and operates facilities and provides services and materials to support operation of a Marine Corps brigade

Contaminants: Heavy metals (cadmium, chromium, lead), POLs

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	25	High:	1	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	2	Not Required:	19
RCRA UST:	0	Low:	2		
Total Sites:	25				

Sites Response Complete: 19	

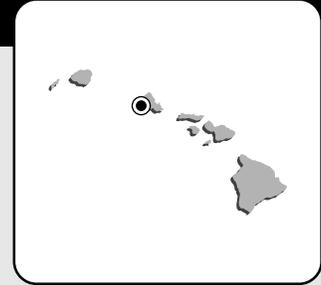
### PROGRESS AND PLANS

CERCLA	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
PA / SI	21	1						3
RI / FS								6
RD								3
RAC								
RAO								5
IRA	1(1)							8(8)
RC	18	1						6
Cumulative % RC	72%	76%	76%	76%	76%	76%	76%	100%

# LUALUALEI NAVAL MAGAZINE

## LUALUALEI, HAWAII

Engineering Field Division/Activity: PACDIV  
 Major Claimant: CINCPACFLT  
 Size: 12,000 Acres  
 Funding to Date: \$584,000  
 Estimated Funding to Complete: \$3,249,000



**Base Mission:** Receives, renovates, maintains, stores and issues ammunition, explosives, expendable ordnance items, weapons, and technical ordnance material

**Contaminants:** Unexploded ordnance, solvents, pesticides, acid, POLs

**Number of Sites:**

CERCLA: 6  
 RCRA Corrective Action: 0  
 RCRA UST: 1  
 Total Sites: 7

**Relative Risk Ranking of Sites:**

High: 1 Not Evaluated: 1  
 Medium: 0 Not Required: 5  
 Low: 0

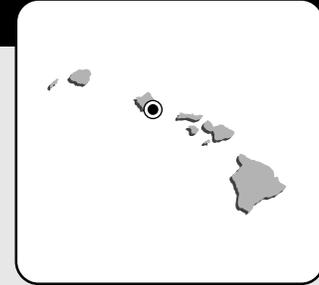
Sites Response Complete: 5	

### PROGRESS AND PLANS

CERCLA	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
PA / SI	6							
RI / FS								1
RD								1
RAC								
RAO								
IRA		1(1)						2(2)
RC	5							1
Cumulative % RC	83%	83%	83%	83%	83%	83%	83%	100%
UST	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
SA			1					
CAP								
DES			1					
IMP				1				
IMO								
IRA								
RC				1				
Cumulative % RC	0%	0%	0%	100%	100%	100%	100%	100%

# PEARL HARBOR NAVAL COMPLEX

## PEARL HARBOR, HAWAII



Engineering Field Division/Activity: PACDIV  
 Major Claimant: COMNAVSUPSYSCOM/COMNAVSEASYSYSCOM/CINCPACFLT/COMNAVFACENGCOM  
 Size: 2,162 Acres  
 Funding to Date: \$70,661,000  
 Estimated Funding to Complete: \$133,018,000

Base Mission: Provides primary Fleet support in the Pearl Harbor area

Contaminants: Heavy metals, PCBs, perchloroethylene, pesticides, POLs, Stoddard solvent, volatile and semi-volatile compounds

<b>Number of Sites:</b>		<b>Relative Risk Ranking of Sites:</b>			
CERCLA:	61	High:	45	Not Evaluated:	2
RCRA Corrective Action:	11	Medium:	1	Not Required:	22
RCRA UST:	1	Low:	3		
<b>Total Sites:</b>	<b>73</b>				

<b>NPL</b>	
Sites Response Complete: <b>22</b>	

### EXECUTIVE SUMMARY

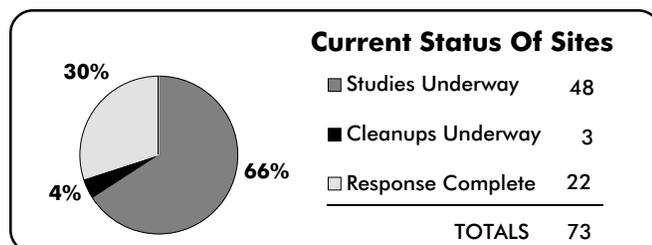
Pearl Harbor Naval Complex consists of six installations: Naval Station (NS), Public Works Center (PWC), Naval Shipyard (NSY), Fleet and Industrial Supply Center (FISC), Inactive Ship Maintenance Detachment (INACTSHIPDET), and Naval Magazine Lualualei (NAVMAG Lualualei). The Navy's first installation, NS, was established in 1901. Most landholdings lie within the southern coastal plain of Oahu, west of Honolulu. NS contains maintenance, administrative, supply, training buildings, bachelor housing, and personnel support facilities. PWC maintains Navy family housing units and utilities systems. NSY provides overhaul, repair, and conversion of surface craft and submarines. FISC includes aboveground and underground fuel storage facilities and a petroleum drumming plant. INACTSHIPDET provides for the inactivation, security, maintenance, cannibalization, disposal, readiness, and preparation for activation of naval ships and craft. NSB is homeport for almost 20 nuclear and conventional submarines, and provides facilities for operations, training, maintenance, housing, and personnel support. In the past, these types of operations have contaminated the soil and groundwater with volatile and semi-volatile organic compounds, heavy metals, the chemical additive PCB, pesticides, petroleum products, and solvents. Presently, the Navy complies with applicable environmental regulations to prevent further contamination.

A Technical Review Committee (TRC) was formed in September 1990 and was converted to a Restoration Advisory Board (RAB) in 1994. The Board meets quarterly. A Community Relations Plan (CRP) was completed in June 1992 and updated in January 1996. Three Information Repositories were established in FY90, and an Administrative Record was established in FY92.

Of the RI/FSs underway, four are expected to be completed in FY98, and 36 others by FY06. Thirty-three Remedial Designs (RDs) are scheduled through FY08. Seventeen Remedial Actions (RAs) are expected to be completed by FY15. Of the IRAs underway, one is expected to be completed in FY98, seven by FY01. A total of 27 IRAs are expected to be completed after FY01.

The Pearl Harbor Naval Complex was officially listed on the National Priorities List (NPL) in the 14 October 1992 Federal Register with a Hazard Ranking Score (HRS) of 70.82. A Federal Facility Agreement (FFA) was signed in March 1994 and the effective date of the FFA was 10 June 1994.

Installations within the Pearl Harbor Complex are situated either at the Harbor itself or at the Pacific Ocean. Adjacent land use remains agricultural. However, fields are gradually being converted to housing and commercial uses. There are four significant wetland habitats in the Pearl Harbor area. Contaminants in this area could potentially migrate slowly toward the harbor or the Pacific Ocean, driven by low groundwater gradients induced by infiltration of local rainfall, or surface water runoff.



## PEARL HARBOR NAVAL COMPLEX RELEVANT ISSUES

### ENVIRONMENTAL RISK



**HYDROGEOLOGY** - The Hawaiian Archipelago is composed of a series of immense volcanic ridges with the Hawaiian Islands being located at the southernmost end. The island of Oahu is the result of two large shield volcanoes. The caprock in the vicinity of Pearl Harbor is composed of alternating layers of shallow marine limestone and volcanic alluvium. Local fracturing and bedding structures may complicate migration pathways. The Navy installations are underlain by a shallow water table which approximates the elevations of sea level. This groundwater probably migrates generally toward either Pearl Harbor or the Pacific Ocean and is replenished by rainfall infiltration. For near shore areas it is reasonable to assume that waterborne contaminants would reach the harbor. Groundwater in near-shore areas must be subject to some degree of tidal influence, which would result in increased dispersion of contaminants migrating toward the harbor. For inland areas influenced by the Honolulu volcanics, migration pathways are less certain. Contaminants in the shallow groundwater system should eventually reach the harbor or the Pacific Ocean. Several streams cross Navy lands before emptying into Pearl Harbor or the Pacific Ocean. Some groundwater flow may discharge to the streams crossing Navy land. The streams would also constitute possible pathways for potential contaminant migration. Potable water supplies for the Pearl Harbor and Honolulu areas are developed further inland in the Koolau Range basalts. In the Pearl Harbor area, water in the Koolau basalt is confined under artesian pressure by several tens to several hundreds of feet of the caprock sequences. No contamination in the Pearl Harbor area can migrate downward into the artesian system or upgradient to supply areas, except in the Red Hill area, where Koolau basalt is exposed at the surface and not covered by caprock. Water in the basalt aquifer is trapped by the confining layers of the coastal plain caprock, creating an artesian condition. In the early part of the century, numerous wells were drilled in the vicinity to develop increasing water supplies from the artesian portion of the basalt aquifer. Extensive withdrawals eventually caused a decline in the pressure and induced more saline waters to rise into the producing zone. Many wells had to be abandoned. The naval base obtains 70-90 percent of its potable water supply from a water tunnel located in Waiawa. The remainder is supplied by tunnels at Red Hill and Halawa.



**NATURAL RESOURCES** - In the vicinity of Pearl Harbor, wetland areas support a variety of plant and animal life. There are four significant wetland habitats in the Pearl Harbor area. Sport fish and commercial bait fish are caught in Pearl Harbor. Endangered species in Hawaii include one Hawaiian mammal and 28 Hawaiian birds - more than half of the nation's endangered birds. Threatened or endangered species that may be found near known sites include the plant 'Ewa Plains 'akoka and birds: the Hawaiian coot or 'Alae Ke'oke'o, the Hawaiian duck or Koloa, the Hawaiian gallinule or 'Alae 'ula, the Hawaiian stilt or Ae'o, and the Hawaiian owl or pueo. Pearl Harbor Naval Complex has been designated as a National Historic Landmark.



**RISK** - There are 45 sites currently ranked with a high relative risk. The high ranking was primarily due to contamination in the soil and marine sediment. There have been various releases of contaminants to the soil. The pathway of concern is direct contact with the soil by humans. Also, contaminants have been identified in the marine sediment of Pearl Harbor. Contaminants reach the harbor via surface runoff or subsurface migration. Pathways of concern are consumption of fish and shellfish by humans and endangered species.

### REGULATORY ISSUES



**NATIONAL PRIORITIES LIST** - Pearl Harbor Naval Complex was included on the National Priorities List (NPL) on 14 October 1992 based on a Hazard Ranking System (HRS) score of 70.82. The HRS was based on the aggregate score of six sites within the Pearl Harbor Naval Complex which included a laundry, landfill, pesticide rinseate pit, gyro repair shop, pickling waste disposal area, and a PCB disposal storm drain.



**LEGAL AGREEMENTS** - A Federal Facility Agreement (FFA) was signed on 17 March 1994 and became effective on 10 Jun 1994 after a public comment period. The agreement required the Navy to develop a Site Management Plan (SMP) which defines priorities, approaches and long range objectives throughout the remedial process and is updated annually. As part of the FFA requirements, the Navy's RCRA Corrective Action obligations were integrated into the CERCLA response actions. Therefore, the RCRA Part B Permit to operate a hazardous waste storage facility was modified to exclude the RCRA Corrective Action Program.



**PARTNERING** - In 1994, several partnering sessions were held with the installation, the state and EPA Region IX. The partnering relationship resulted in the identification and resolution of problems prior to implementation of work at various sites. The installation also holds meetings with the state to reach a consensus on investigation and cleanup goals, which help expedite the review process and reduce impediments to cleanup.

### COMMUNITY INVOLVEMENT



**RESTORATION ADVISORY BOARD** - A Technical Review Committee (TRC) was formed in September 1990 and was converted to a Restoration Advisory Board (RAB) in 1994. The board meets quarterly. There are ten RAB members from the community. Two members represent local neighborhood boards, two members represent environmental interest groups, three members represent elected officials, one member represents a group of employees on the installation, and two members are interested citizens from the local community. The RAB has recommended changes in the scope of an investigation that has helped to identify contamination in an area previously regarded as clean and to prepare a more comprehensive risk assessment. The RAB has also identified the need to initiate work to mitigate possible further migration of contaminants from a site.



**COMMUNITY RELATIONS PLAN** - A Community Relations Plan (CRP) was completed in June 1992 and updated in January 1996. Fact Sheets are routinely distributed during TRC/RAB meetings.



**INFORMATION REPOSITORY** - Three Information Repositories were established in FY90, and an Administrative Record was established in FY92. The Information Repository for the sites within the Pearl Harbor Complex is located at the Aiea Public Library. The Information Repository for sites at outlying areas is located at the Pearl City Public Library. A third Information Repository is located at the Ewa Beach Public and School Library for sites at Naval Magazine Lualualei. The Administrative Record is located at Pacific Division (PACDIV), Naval Facilities Engineering Command. A copy of the Administrative Record documents are contained in the Information Repositories.

## PEARL HARBOR NAVAL COMPLEX HISTORICAL PROGRESS

### FY84

**Sites 1-30** - An Initial Assessment Study (IAS), equivalent to a Preliminary Assessment (PA), was completed in October 1983 which identified 30 potential sites and recommended further action at Sites 4, 7 and 22.

### FY87

**All SWMUs** - A RCRA Facility Assessment (RFA), completed in January by EPA Region IX, identified 182 potential Solid Waste Management Units (SWMUs). Several of the 182 SWMUs are being managed under the Installation Restoration Program (IRP) or the Underground Storage Tank (UST) program, or were recommended for NFA.

### FY88

**Site 7 (NS)** - A Site Inspection (SI) was completed. The report found minimal presence in the soil of the chemical additive PCB and recommended NFA.  
**Site 4 (PWC)** - An SI was completed. Petroleum products in groundwater were significantly below cleanup action guidelines. Petroleum products in sediment were very low or below the detection limit. Biological samples were within expected ranges except for calcium and aluminum. Semi-volatile organic compounds (SVOCs) were found at low concentrations indicating no threat to human health or the environment.  
**Site 33 (FISC)** - A PA was completed in August.

### FY89

**Site 2 (PWC)** - An SI was completed. The report found soil contaminated with pesticides, arsenic, and unidentified organic compounds.  
**Site 31 (NS)** - This additional site was identified during a DON safety inspection.  
**Site 36 (FISC)** - This site was added to the IRP when free floating product was discovered during the installation of new underground tanks.  
**Site 22 (FISC)** - An SI was completed. The report found soil contaminated with petroleum products and SVOCs.  
**SWMU SB-37 (NSB)** - An RFA was completed.

### FY90

**Site 31 (NS)** - An SI was completed. The report confirmed the presence of the organic solvent PCE in the soil.  
**Sites 35 and 38 (NS)** - A PA was completed that identified these two new sites. Site 35 was recommended for further action due to the potential subsurface transport of contaminants. Site 38 was not recommended for further action because there was no indication of hazardous material used or generated at the site.  
**Site 37 (NSY)** - This new site was discovered in 1990. The site consists of a sump in an abandoned building.  
**Site 36 (FISC)** - A PA was completed; the site was recommended for a Remedial Investigation/Feasibility Study (RI/FS) without an SI.  
**Sites 21, 24 and 27 (FISC)** - An SI was completed. The report found evidence of sludge contaminated with petroleum products at Site 21, petroleum products contaminated soil at Site 24, and free product accumulation in a trench, but found no indication that free product had migrated beyond the trench at Site 27. The report recommended that floating product in the trench be removed, and recommended all three sites for an RI/FS.  
**Site 28 (NSB)** - An SI was completed in July. The report found no significant contamination, and the site was recommended for NFA.  
**SWMU SB-37 (NSB)** - A RCRA Facility Investigation (RFI)/Corrective Measures Study (CMS) was initiated.

### FY91

**Site 31 (NS)** - Additional characterization of this site was completed in January 1991 to identify areas of significant contamination requiring a Removal Action (RA). The organic solvents TCE and Stoddard Solvent were detected in soils.

**Site 32 (NS)** - This additional site was identified during the RA at one transformer station contaminated with the chemical additive PCB. An SI was completed in April. The report confirmed the presence of the chemical additive PCB in the soil at the site. An Interim Remedial Action (IRA) was completed in September. This action involved the excavation and off-site disposal of the presence of PCB in the soil. NFA is anticipated at Site 32.  
**Site 35 (NS)** - An SI was completed in June and petroleum product contamination was confirmed.  
**Site 39 (FISC)** - This new site was identified prior to proposed property transfer to the State of Hawaii.  
**Site 34 (PWC)** - This new site was identified in April upon completion of a Preliminary Assessment/Site Inspection (PA/SI). The report found that the concrete floor under approximately 139 transformers have PCB-contaminated concrete floor slabs. Twelve of these sites have PCB contamination. The remaining 127 sites will be characterized further in an RI/FS.  
**Site 44 (FISC)** - This new site was added due to concerns regarding possible fuel leaks.

### FY92

**Sites 10 and 13 (NSY)** - The Remedial Investigation (RI) field work was completed in June.  
**Site 19 (NS)** - An SI was completed in June. The report confirmed silver, petroleum products, and the chemical additive PCB contamination at the site.  
**Sites 10, 13 and 16-18 (NSY)** - An SI, completed in June, found lead in the soil at Site 10, the chemical additive PCB in sediment at Site 13, metals in soil at concentrations below regulatory action levels at Site 16, concentrations of chromium, lead, and zinc at levels allowable for industrial land use at Site 17. Site 18 could not be located. The SI recommended NFA at Sites 16-18, and further investigation for Sites 10 and 13.  
**Site 37 (NSY)** - A PA was completed in March; the site was recommended for an RI/FS without an SI.  
**Site 13 (NSY)** - An RA involving the removal of sludge and sediment containing the chemical additive PCB was completed in February.  
**Site 34 (PWC)** - An IRA was completed. Transformers with oil containing the chemical additive PCB were removed, fencing was installed around the areas of containment, and a monitoring program was implemented for retrofitted transformers.

### FY93

**Site 8 (NS)** - An SI was completed in September. Sediments were sampled in several locations offshore of Ford Island. Metals, volatile organic compounds (VOCs), petroleum products, pesticides, and the chemical additive PCB were detected in the sediments; metals, volatile organics, and pesticides were detected in the groundwater; and metals, petroleum products, volatile and semi-volatile organic compounds, chlorinated solvents, pesticides, herbicides, and the chemical additive PCB were detected in soils.  
**Site 4 (PWC)** - An Expanded Site Inspection (ESI) was completed in March. The ESI found the chemical additive PCB, the Navy fuel JP-4, benzene, mercury, and lead, and the site was recommended for RI/FS.  
**Site 39 (FISC)** - An SI was completed in January. Test results showed elevated concentration of the chemical additive PCB, petroleum products, the pesticide dieldrin, and heavy metals in the soil. Further investigation and a risk assessment to examine the pesticide dieldrin contamination were recommended. Based on the SI recommendations and the need to expedite cleanup for the property transfer, DON decided to move directly to Remedial Design/Remedial Action (RD/RA) without an RI/FS. The IRA involving the excavation of soil contaminated with the chemical additive PCB was completed in March.  
**SWMUs NAS-3, NAS-4 and NAS-6 (NS); SY-5, SY-17, SY-35, SY-44 and SY-84 (NSY); NSC-13, PWC-1, PWC-10, PWC-13 and PWC-15-18 (PWC)** - The RFI Report was completed and submitted to EPA Region IX.

## PEARL HARBOR NAVAL COMPLEX HISTORICAL PROGRESS

### FY94

**Site 31 (NS)** - An RA was completed in December. This action involved the excavation and off-site disposal of contaminated soil, removal of four USTs, and removal of one drain line.

**Sites 40-42 (NSY)** - Three new sites were identified by the activity. Site 40 was found during the RI phase. A PA/SI began in June.

**Site 43 (PWC)** - An SI began in June (converted to an SI at the planning document stage).

**Site 33 (FISC)** - An SI was completed; the site was recommended for an RI/FS.

**Site 44 (FISC)** - A PA was initiated in August.

**Sites 19 and 31 (NS) and 33 (FISC)** - An RI/FS began.

**Site 34 (PWC)** - A second RA was initiated to remove contaminated soil.

**Site 36 (FISC)** - An IRA involving a free floating fuel recovery system was completed in March. A pilot-scale extraction test pumped groundwater and skimmed free product. No hazardous waste was generated because the free product was recovered and recycled in the Navy's Fuel Reclamation Facility.

**Site 37 (NSY)** - A removal action was initiated to prepare a performance design package (removal site evaluation, EE/CA, action memorandum (AM), and design) to remove free-floating product at Building 8.

**Site 39 (FISC)** - The RA involving the excavation of soil contaminated with the pesticide dieldrin was completed in February.

**Sites 46 (NSY)** - An IRA (a removal site evaluation, EE/CA, AM, and design package) was initiated to prepare a performance design package for a removal action.

**Site 47 (PWC)** - An IRA was initiated.

**Site 22 (FISC)** - An IRA was completed. It involved the removal and closure of a stilling basin which contained oily wastes, mainly sludge from UST cleaning. The stilling basin structure and the grossly petroleum product contaminated soil beneath and surrounding the stilling basin were removed. Soils were treated by a low temperature thermal desorption facility. Treated soils were returned to the site and used to backfill the excavation. The area was then capped.

**UST 1 (NS)** - An RA was initiated.

### FY96

**Site 27 (FISC)** - Phase II of the RI (involving off site sampling) began in January.

**Site 22 (FISC)** - Phase II of the RI began in December 95.

**Site 47(PWC)** - An IRA was completed.

**Site 4 (PWC)** - An IRA (EE/CA, AM, draft design) was initiated to prepare a performance design package for a removal action at the landfill.

**Site 8 (NS)** - Removal Action (Designed and install a cap and a ground water monitoring system for the landfill) in progress.

**Site 19 (NS)** - RI/FS in progress.

**Site 31 (NS)** - Removal Action (Designed and installed a soil vapor extraction system for PCE and degradation compounds) in progress. RI/FS in progress.

**Site 33 (FISC)** - Completed the removal of arsenic-contaminated soil and transferred the property to the City and County of Honolulu. Other removal work is in progress.

**Site 34 (PWC)** - Continued work on the preparation of a performance design package for removal of PCB-contaminated soil and concrete.

**Site 36 (FISC)** - Awarded construction contract delivery order for installation of the extraction system.

**Site 43 (PWC)** - RI planning documents were completed.

The Community Relations Plan (CRP) for the Pearl Harbor Naval Complex was updated in January 1996.

**UST 1 (NS)** - An IRA was completed.

**Site 9 (NSY)** - Completed a RI/FS with a response complete (RC).

### FY95

**Site 2 (PWC)** - An RI was completed. Contamination is minimal.

**Site 10 (NSY)** - The RI/FS was completed.

**Site 44 (FISC)** - A PA was completed.

**Site 36 (FISC)** - A performance design package for a removal action was initiated to remove free-floating product at the gas station.

**Site 48 (PWC)** - A PA was completed.

**Site 50 (NS)** - Site 50, the NEX Warehouse site, was added to the IRP in FY95. An IRA was completed. Soil contaminated with petroleum products was removed.

**Site 10 (NSY)** - Two IRAs were initiated: one for dust control measures, the other for a removal site evaluation, EE/CA, AM, and performance design package.

**Site 13 (NSY)** - Two IRAs were completed.

## PROGRESS DURING FISCAL YEAR 1997

### FY97

**Site 4 (PWC)** - Continued preparation of an IRA performance design package for the landfill.

**Site 8 (NS)** - LTM/LTO of landfill cap initiated and will continue for 5 years.

**Site 10 (NSY)** - IRA completed.

**Site 9 (NSY)** - RI/FS completed. IRA initiated.

**Site 19 (NS)** - Continued RI/FS.

**Site 31 (NS)** - LTO/LTM for Removal Action initiated and will continue for 3 years. Continued RI/FS.

**Site 34 (PWC)** - Continued preparation of an IRA performance design package for the cleanup of PCB-contaminated soil and concrete.

**Site 36 (FISC)** - Awarded Post Construction Award Service (PCAS) and Operation and Maintenance (O&M) for two years for the extraction system. Extraction system installed.

**Site 37 (NSY)** - IRA initiated to install an extraction trench for the removal of Bunker C fuel. PCAS and O&M initiated.

**Site 44 (FISC)** - Completed PASI. IRA initiated. RSE completed.

**Site 45 (NS)** - IRA initiated for M4 docks (Quarry Loch), including EE/CA, AM, and performance design package.

**Site 46 (NSY)** - Awarded PCAS and O&M for two years for the extraction system.

**UST 1 (NS)** - Completed CAP.

**UST 1 (NSY)** - Completed RI/FS.

## PLANS FOR FISCAL YEARS 1998 AND 1999

### FY98

**Site 08 (NS)** - Continue LTM/LTO of landfill cap

**Site 10 (NSY)** - Initiate IRA.

**Sites 13, and 41 (NSY)** - RI/FS to be completed.

**Site 19 (NS)** - Continue RI/FS

**Sites 22 and 27 (FISC)** - Phase II RI planning documents completed. Initiate Phase II RI.

**Sites 29 and 36 (FISC)** - Continue GW monitoring. Initiate IRA RSE, EE/

CA, and AM.

**Site 31 (NS)** - Continue LTO/LTM for SVE system. Initiate IRA for removal of diesel product on groundwater. Complete RI Report. Initiate detailed FS.

**Sites 4 and 34 (PWC)** - IRA performance design package to be completed. Cleanup (IRA) to be initiated.

**Site 39 (FISC)** - Complete IRA. Initiate RI planning documents for groundwater investigation.

**Site 45 (NS)** - Continue IRA.

**Site 46 (NSY)** - Continue groundwater monitoring.

**PEARL HARBOR NAVAL COMPLEX  
PLANS FOR FISCAL YEARS 1998 AND 1999**

SWMU 6 (NS) - Removal Action to be initiated.  
 SWMUs 4 (NS), 12 (SB), 13 (SB), - IRA (EE/CA, AM, design) to be initiated.  
 SITE 45 (NS) - Complete RI/FS.  
 Site 33 (FISC) - Initiate RI planning documents for groundwater investigation.  
 Sites 40, 41, 42(NSY) - Complete PA/SI and RC sites.  
 Sites 4 and 34 (PWC) - Complete RD  
 UST 01 (NS) - Complete RD  
 UST 1 and Sites 10 and 37 (NSY) - Complete RD  
 Sites 4 and 34 (PWC) - Complete RD  
 Sites 20 and 21 (FISC) - Complete RIFS  
 Sites 34 (PWC) - Complete 2 IRAs.

**FY99**

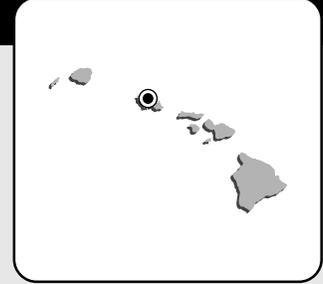
Site 8 (NS) - Continue LTO/LTM for landfill cap.  
 Site 19 (NS) - Continue RI/FS.  
 Sites 22 and 27 (FISC) - Complete RI Phase II.  
 Site 29 ( FISC) - Complete RIFS, IRA, RSE, EE/CA, and Action Memo.  
 Site 31 (NS) - Continue SVE LTM/LTO. Continue IRA for diesel extraction for groundwater. Continue detailed FS.  
 Sites 33 and 39 (FISC) - Complete RI planning documents.  
 Site 36 (FISC) - Continue groundwater monitoring.  
 Site 43 (PWC) - RI/FS field work to be initiated.  
 Sites 35 and 45 (NS) - Complete RD.  
 Sites 10 and 13 (NSY) - Complete IRA.  
 UST 1 (NS) - Complete RA.

**PROGRESS AND PLANS**

<b>CERCLA</b>	<b>FY96 and before</b>	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03 and after</b>
PA / SI	53	1	3					1
RI / FS	1	2	5	1	1	6		29
RD			4	2	3	1	4	25
RAC					1		1	11
RAO								31
IRA	7(10)	1(1)	2(3)	3(3)	7(7)	2(2)	7(7)	29(32)
RC	16		3		1			41
Cumulative % RC	26%	26%	31%	31%	33%	33%	33%	100%
<b>RCRA CA</b>	<b>FY96 and before</b>	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03 and after</b>
RFA	11							
RFI / CMS	5					1		4
DES								5
CMI								
CMO								1
IRA	1(1)							5(7)
RC	6					1		4
Cumulative % RC	55%	55%	55%	55%	55%	64%	64%	100%
<b>UST</b>	<b>FY96 and before</b>	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03 and after</b>
SA	1							
CAP		1						
DES			1					
IMP				1				
IMO								1
IRA	1(1)							
RC								1
Cumulative % RC	0%	0%	0%	0%	0%	0%	0%	100%

# WAHIAWA NAVAL COMPUTER AND TELECOMMUNICATIONS AREA MASTER STATION EASTERN PACIFIC WAHIAWA, HAWAII

Engineering Field Division/Activity: PACDIV  
 Major Claimant: COMNAVCOMTELCOM  
 Size: 2,422 Acres  
 Funding to Date: \$5,893,000  
 Estimated Funding to Complete: \$45,753,000



**Base Mission:** Operates and maintains communications facilities and equipment for Naval shore installations and fleet units in the Eastern Pacific

**Contaminants:** Metals, petroleum hydrocarbons

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	24	High:	18	Not Evaluated:	1
RCRA Corrective Action:	0	Medium:	1	Not Required:	2
RCRA UST:	5	Low:	7		
<b>Total Sites:</b>	<b>29</b>				

<b>NPL</b>	
<b>Sites Response Complete: 2</b>	

## EXECUTIVE SUMMARY

Naval Computer and Telecommunications Area Master Station (NCTAMS), Eastern Pacific (EASTPAC), is located on the island of Oahu, the third largest of the 132 islands that comprise the Hawaiian archipelago. As the area master station, NCTAMS EASTPAC is tasked with operating and maintaining communications facilities and equipment for naval shore installations and fleet units in the eastern Pacific area. In order to carry out this mission, NCTAMS EASTPAC operates the following facilities: NCTAMS Wahiawa; Naval Radio Transmitting Facility (NRTF) Lualualei, a small satellite communications system (Opana), a microwave relay station at Kokekole Pass, satellite Naval Telecommunications centers at various areas on Oahu, and a special position operator switchboard at Pearl Harbor. Industrial operations are primarily conducted at NCTAMS Wahiawa and NRTF Lualualei, and have been the focus of the Navy's Installation Restoration Program (IRP). At these two facilities, maintenance and operation of electrical transformers and switches have been the primary source of contamination. Transformers containing the chemical additive PCB have resulted in contamination of the soil surrounding electrical transformers. Due to PCB contamination in the soil of working and residential areas (Site 14), NCTAMS EASTPAC was added to the National Priorities List (NPL) on May 31, 1994. Other contamination resulting from operations and maintenance activities include metals, petroleum, and underground storage tanks (USTs). The Navy has changed its operational processes to prevent further contamination.

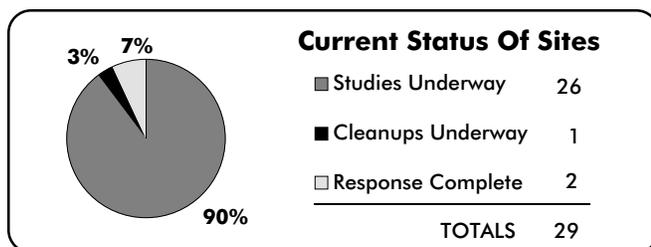
NCTAMS Wahiawa is located on approximately 700 acres of land in the central plateau region of Oahu. Lands adjacent to the station are largely devoted to the cultivation of pineapples. The nearest towns of Wahiawa and Whitmore Village each lie approximately one mile southwest and west, respectively, from the station. Due to the heavy rainfall (50 to 60 inches per year) and topography of the station, contaminant migration via surface water is of primary concern. NCTAMS Wahiawa is drained by Poamoho Stream and its tributaries to the west, and North Fork Kaukonahua Stream to the

extreme south. The North Fork Kaukonahua Stream empties into the Wahiawa Reservoir which is located less than three miles from the southern edge of the station. NRTF Lualualei occupies approximately 1,700 acres of the Lualualei Valley, which is a large coastal valley near the southwestern shoreline of Oahu. The nearest urban town is the town of Maili, which lies approximately one mile west from the station. The semi-arid conditions, flat to gently rolling topography, and permeable surface soils restrict the runoff from the base. There are no known downstream users of the groundwater or surface water.

Since NCTAMS EASTPAC is comprised of two installations, two Restoration Advisory Boards (RABs) have been established. The Wahiawa RAB was established in February 1995, and the Waianae/Lualualei RAB was established in March 1995. The Community Relations Plan (CRP) was finalized in August 1995. Information Repositories have been set up at the Wahiawa and Waianae Public Libraries.

Of the 29 sites in the IR program, one is Response Complete (RC), four have cleanups underway, and the remaining 23 are in the study phase. An Interim Remedial Action (IRA) has been delayed due to funded shortfall at eight transformer sites to remove PCB-contaminated soils that pose a threat to public health.

An interim removal action for soils contaminated with the chemical additive PCB at Sites 17, 18, and 20 is scheduled in FY98. This clean up will reduce potential exposure of workers and residents to PCB-contaminated soils. Implementation of the Remedial Investigation/ Feasibility Study (RI/FS) planning documents at Sites 1 and 5 is underway.



## WAHIAWA NCTAMS EASTPAC RELEVANT ISSUES

### ENVIRONMENTAL RISK



**HYDROGEOLOGY** - NCTAMS Wahiawa is located on the east side of the Schofield Plateau in north central Oahu. Most of the station is drained westward by the Poamoho Stream and its tributaries. The extreme southern edge of NCTAMS Wahiawa is drained by the North Fork Kaukonahua Stream less than three miles to the Wahiawa Reservoir. The soils of Wahiawa are derived from weathered Koolau volcanics, and are mostly silty clay or silty clay loam. The soil zone extends down about 20 feet from the surface, where it grades into deeply weathered volcanics of the Koolau range. The Koolau volcanics are mostly basaltic flows in this area. The Schofield groundwater body underlies the Schofield Plateau. The water table at NCTAMS Wahiawa is probably more than 700 feet below the surface. Because of water table depth, underlying clays, and steep ravines edging the property which intercept groundwater, contamination of the deep groundwater is unlikely. The 50 to 60 inches per year of rainfall tends to come in intense tropical cloudbursts, most of which would tend to run off rather than infiltrate the soils. For these reasons, contaminants would more likely migrate by surface water than groundwater pathways. Potable water at this station is supplied by the Army from deep wells at the east end of Schofield Barracks, just south of Wahiawa.

NRTF Lualualei is located on the central west side of Oahu, near the flat center of the Lualualei Valley. This station is drained by Mailiilii Stream on the north side of the base. The semi-arid conditions, flat to gently rolling topography, and permeable surface soils restrict the runoff from the base. The soils and rock underlying NRTF Lualualei consist of coral or calcareous deposits intermixed with alluvium from weathered volcanics of the Waianae Range. Alluvium and other debris in the area of NRTF Lualualei range in depth from less than 75 feet to 1,200 feet before Waianae volcanics are encountered. Groundwater in the area of NRTF Lualualei is shallow and brackish. There are no known downstream users of either groundwater or surface water. Upstream, in the southwest corner of the base, are a series of sewage treatment/oxidation ponds. Potable water is supplied by Naval Magazine (NAVMAG) Lualualei from deep wells in the Waianae Range, which would not be threatened by potential contamination from NRTF Lualualei.



**NATURAL RESOURCES** - Wildlife associated with NCTAMS Wahiawa and NRTF Lualualei include many exotic species that are commonly found in Hawaii. A 31-acre wildlife refuge has been established at NRTF Lualualei in cooperation with the U.S. Department of the Interior and the state of Hawaii. The area of the refuge which includes the Niulii Reservoir and NRTF oxidation ponds has been identified as habitat for three endangered bird species. An endangered fern is found near the Old NRTF Landfill, Site 13.



**RISK** - NCTAMS EASTPAC sites have been ranked for risk under the Department of Defense (DOD) Relative Risk System. Under this system, sites are qualitatively ranked High, Medium, or Low relative risk to prioritize sites for funding. Seventeen CERCLA sites have received a high ranking due to soil contamination and potential for direct exposure as well as via surface water and sediment runoff exposure. During Phase I Remedial Investigation/Feasibility Study (RI/FS) work, Human Health and Ecological Risk Assessments will be performed. The Navy has performed a Public Health Assessment on the eight transformer sites following the removal action, and deemed that institutional controls (e.g. fences) and further removal action activities were unnecessary.

### REGULATORY ISSUES



**NATIONAL PRIORITIES LIST** - NCTAMS EASTPAC has been on the National Priorities List (NPL) since May 31, 1994 with a Hazard Ranking System (HRS) score of 50.00. NPL listing was determined by the identification of the chemical additive PCBs in soil surrounding electrical transformers in residential and general work areas at NCTAMS Wahiawa and NRTF Lualualei (Site 14). In addition to PCB contamination in the soil, elevated levels of lead and mercury have been confirmed at the Old Wahiawa Landfill and Building 6 Disposal Area. Contamination at both sites has the potential to migrate to nearby gulches.



**LEGAL AGREEMENTS** - A Draft Federal Facility Agreement (FFA) between the EPA Region IX and the Navy was established on 26 October 1994. On 16 November 1994, the Navy acknowledged the receipt of the draft FFA and its willingness to start negotiations on the FFA. Since then, through informal communications, it was agreed that the need for a FFA is a low priority since the Navy is progressing with the cleanup program at NCTAMS EASTPAC.



**PARTNERING** - An informal partnering agreement exists between the Navy, EPA Region IX, and State of Hawaii Department of Health. This facilitates implementation of the Navy's Installation Restoration Program (IRP).

### COMMUNITY INVOLVEMENT



**RESTORATION ADVISORY BOARD** - The Technical Review Committee (TRC) has been converted to a Restoration Advisory Board (RAB). Since NCTAMS EASTPAC is composed of two installations, two RABs exist: the Wahiawa RAB and the Waianae/Lualualei RAB. The Wahiawa RAB was established in February 1995, and the Waianae/Lualualei RAB was established in March 1995. Each RAB meets quarterly and is headed by Navy and community co-chairs. RAB meetings are open to the public and announced in newspapers as well as at neighborhood board meetings. Any citizen interested in becoming a community RAB member may apply for membership. Community RAB members vote on the new individual. Currently, each RAB has 24 to 25 permanent community members. The agenda items of the RAB meetings include the Navy's IRP, technical presentation of ongoing environmental work, funding and schedules, and the roles and responsibilities of RAB members.



**COMMUNITY RELATIONS PLAN** - The final Community Relation Plan (CRP) was completed in August 1995. Fact sheets are issued prior to RAB meetings. Site tours were conducted at NCTAMS Wahiawa and NRTF on 13 May and 3 June 1995 for RAB members and any other interested personnel.



**INFORMATION REPOSITORY** - Two Information Repositories were established in 1991. They are located at the Wahiawa Public Library in Wahiawa, HI, and the Waianae Public Library in Waianae, HI. The Administrative Record is maintained by the Navy at three locations: Pacific Division (PACDIV), Naval Facilities Engineering Command, Pearl Harbor, Hawaii, NCTAMS Wahiawa, and NRTF Lualualei.

## WAHIAWA NCTAMS EASTPAC HISTORICAL PROGRESS

### FY86

Sites 1-14 - An Initial Assessment Study (IAS) was completed. Four sites were recommended for Confirmation Study (CS): Sites 1, 5, 11 and 14. No Further Action (NFA) was recommended for Sites 2-4, 6-10, 12 and 13.

### FY89

Sites 1, 5, 11 and 14 - A Site Inspection (SI) was completed. Analysis of soil samples indicated no volatile or semi-volatile organics, there were some petroleum hydrocarbons, and significant quantities of lead and mercury.

### FY91

Sites 1, 5, 11 and 14 - An Extended Site Inspection (ESI) was completed. The study recommended implementing a downgradient monitoring program to detect any contaminant migration. Further investigation was recommended for Sites 1 and 5, and NFA for Site 11. The planning documents for Remedial Investigation/Feasibility Study (RI/FS) at Sites 1, 5, 11 and 14 were initiated.

An investigation was conducted for approximately 12 Underground Storage Tanks (USTs) to determine whether any releases had occurred in the past.

### FY92

Sites 14-16 - A removal action was completed at Site 14, PCB transformer site. PCB-contaminated soils were removed from eight transformer sites. An SI was completed for Sites 15 and 16. An NFA was recommended for these sites. Approximately eight out-of-service USTs were removed. Four tank areas were identified as contaminated with petroleum hydrocarbons and recommended for site characterization during tank removal.

### FY93

USTs 5-8 - An Initial Site Characterization (ISC) was completed for four UST sites (USTs 5-8). A Corrective Action Plan (CAP) was completed for UST 7.

Site 14 - Site 14 was regrouped so that the eight transformer sites which had undergone a Remedial Action (RA) were retained as Site 14, and the remaining transformer sites became Sites 17-19.

### FY94

Site 20 - Four additional transformer sites were identified by activity personnel and added to the Navy's Installation Restoration Program (IRP) as Site 20.

Sites 1, 4-6, 10-13, 17, 18 and 20 - The planning documents for RI/FS were initiated.

UST 6 - Completed Corrective Action Plan (CAP), site is Response Complete (RC).

### FY95

Sites 4-6, 10, 12, 13, 17, 18 and 20 - RI/FS planning documents were completed.

Sites 21-24 - New sites were identified for inclusion in the Navy's IRP.

### FY96

Sites 1 and 5 - Remedial Investigation (RI) (implementation of RI/FS planning documents) underway.

Sites 17, 18 and 20 - Awarded Removal Action.

USTs 5 and 7 - Awarded correction action designs.

PCB transformer sites - Many of the removal actions were delayed due to funding shortfall.

UST 6 - Determined no-further-action required.

UST 8 - Completed Study Area (SA). Design (RD) was underway.

## PROGRESS DURING FISCAL YEAR 1997

### FY97

Sites 1 and 5 - Remedial Investigation/Feasibility Study (RI/FS) continued.

Sites 2 and 22 - Remedial Investigation/Feasibility Study (RI/FS) began

Sites 17, 18 and 20 - Removal Action continued.

UST 7 - Completed Design (RD).

UST 5 - IRA completed

## PLANS FOR FISCAL YEARS 1998 AND 1999

### FY98

Sites 1, 2, 5 and 22- Complete Remedial Investigation/Feasibility Study (RI/FS).

UST 8 - Complete SA

USTs 5 and 8 - Complete design.

### FY99

Sites 2 and 17 - Initiate Engineering Evaluation/Cost Analysis (EE/CA).

Site 18 - Initiate Characterization under RI/FS, Initiate Treatability Study, complete IRA and complete design.

Sites 2 and 17 - Initiate Design

Site 17 - Initiate Interim Removal Action.

UST 8 - Complete CAP

Site 20 - Complete IRA

USTs 5 and 8 - Complete Implementation and Response Complete site.

**WAHIAWA NCTAMS EASTPAC  
PROGRESS AND PLANS**

<b>CERCLA</b>	<b>FY96 and before</b>	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03 and after</b>
PA / SI	19							
RI / FS					6	1	1	16
RD				1	2	3	1	12
RAC								
RAO								1
IRA				2(2)		3(3)	1(1)	16(16)
RC					6	1	1	16
Cumulative % RC	0%	0%	0%	0%	25%	29%	33%	100%
<b>UST</b>	<b>FY96 and before</b>	<b>FY97</b>	<b>FY98</b>	<b>FY99</b>	<b>FY00</b>	<b>FY01</b>	<b>FY02</b>	<b>FY03 and after</b>
SA	3		1					
CAP	3			1	1			
DES		1	2					
IMP				2				
IMO								
IRA		1(1)						
RC	2			2	1			
Cumulative % RC	40%	40%	40%	80%	100%	100%	100%	100%