

AGANA NAVAL AIR STATION AGANA, GUAM

Engineering Field Division/Activity: PACDIV
 Major Claimant: COMNAVFACENGCOM
 Size: 2,435 Acres
 Funding to Date: \$25,504,000
 Estimated Funding to Complete: \$40,641,000



Base Mission: Closed; NAVFAC is caretaker until transfer. Previously provided services and material support for transitioning aircraft and tenants

Contaminants: Asbestos, paint, solvents, POL sludges, scrap metal, heavy metals

Number of Sites:		Relative Risk Ranking of Sites:		
CERCLA:	38	High:	1	Not Evaluated:
RCRA Corrective Action:	0	Medium:	7	Not Required:
RCRA UST:	0	Low:	1	
Total Sites:	38			

BRAC III
Sites Response Complete: 11

EXECUTIVE SUMMARY

The island of Guam is located at the southern end of the Mariana Island chain, approximately 3,600 miles west of Hawaii and 1,250 miles east of the Philippines. The former Naval Air Station (NAS) Agana is located just north of the center of the island where it is the narrowest. The Guam International Airport Authority (GIAA) is adjacent to the base and uses the base's runways for all commercial flights through Guam. Typical operations on the air station that may have contributed to contamination include machine shops, painting and paint stripping, instrument and gauge maintenance, vehicle maintenance, aircraft maintenance, fire fighting training, facilities maintenance shops for Public Works and the Seabees, photographic laboratories, boiler plants, medical laboratories, landfilling of wastes, handling and storage of materials (including hazardous and chemicals), supplies, and fuels. All active military operations have ceased as a result of base closure on March 31, 1995. The sites of primary public concern are those that may have a contaminant migration pathway to the underlying groundwater aquifer beneath the former NAS Agana. The water quality in the aquifer beneath the former NAS Agana is of concern to the Navy and to the public because the water is a source of drinking water. This base is not under any legal agreements prescribing cleanup schedules.

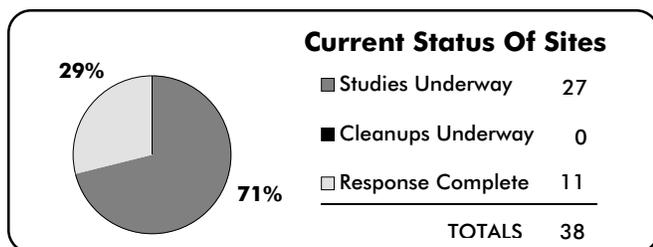
The former NAS Agana is located on the highly permeable northern limestone plateau which allows high rainfall to quickly migrate to the groundwater aquifer. As a result, there is little surface water flow except during the rare periods of torrential rains, which flows to sinkholes in the limestone and to the man-made underground injection control (UIC) wells. Precipitation recharging through the limestone is the primary potential migration pathway for contaminants found on the base to reach groundwater. The base is surrounded by commercial and residential developments and drinking water wells are located within one mile of the base. There is one production well located on the base that is currently operated by the local government utilities agency. The issue of groundwater contamination and migration needs to be resolved before any parcels can be transferred. Due to

the complex hydrogeology of the area, an aggressive groundwater investigation is in progress to characterize the groundwater regime beneath the base.

A Restoration Advisory Board (RAB) has been established for NAS Agana. A Community Relations Plan (CRP) has been developed and three Information Repositories have been established. The NAS Agana RAB has been a major success in the cleanup program on this base. The RAB currently consists of 10 members of which 8 are from the local community. Members of the Reuse Committee also participate as RAB members. The RAB has reviewed all of the planning documents produced in connection with the cleanup and the closure process. The RAB has met on a monthly basis since its formation in December 1993 but now meets on a quarterly basis. The RAB meetings are a primary source of information for the general public on the environmental cleanup ongoing at NAS Agana.

By end of FY00, RI/FS phase will be completed for all of these sites and a removal action will be considered for the sites as necessary.

The Base Realignment and Closure (BRAC) of 1993 commission listed NAS Agana for closure in the 1993 BRAC Report. The military operations on the air station have ceased since the operational closure on March 1995. The environmental restoration of contaminated sites is continuing. Currently, the former air station is subdivided into three areas under a licensing and leasing agreements with the Government of Guam (GOVGUAM) and Guam International Airport Authority (GIAA). Accordingly, three Findings Of Suitability for Lease (FOSL) have been completed for these parcels. One other area is under a long-term Joint Use Agreement between the Navy and GIAA. The Joint Use Agreement with GIAA allowed commercial airport operations to continue after the operational closure of NAS Agana.



AGANA NAS RELEVANT ISSUES

ENVIRONMENTAL RISK



HYDROGEOLOGY - Guam has two equal-sized hydrogeologic provinces. In the southern half of the island, groundwater is found in volcanic rock of low permeability and the water-table elevation rises to hundreds of feet above mean sea level. In the northern Guam, most of the groundwater is contained in the aquifer termed the "northern lens" that is situated in the karst and permeable Barrigada and Mariana limestones. The water-table rises from sea level at the shore to less than 10 feet above the mean sea level in the interior. The groundwater lens of northern Guam was designated as a "principal source aquifer" in 1978 by Guam Environmental Protection Agency.

The rainy season in Guam is from July through November with a mean annual rainfall of approximately 87.4 inches at NAS Agana (central Guam). On the northern plateau, most rain infiltrates the permeable limestone quickly to reach the groundwater aquifer and then travels laterally to the sea. In the South, rain is primarily translated into runoff due to the impermeability of the terrain, creating many rivers and streams that drain to the nearest surface water body or to the sea. Rain that does infiltrate is trapped in small aquifers between the rock formations and discharges as small seeps and springs.

NAS Agana is located on the south end of the northern limestone plateau in the center of the island. The limestone bedrock is overlain with well-drained sandy clayey soils with limestone gravel. Normally, precipitation drains rapidly through the soil and into the porous and fractured limestone, except during infrequent torrential rains when there is some surface runoff. Rainwater percolates downward through 200 to 300 feet of limestone to reach the water table that is three to five feet above sea level and flows toward discharge zones along the seashore. Runoff from the paved areas flows into the storm water collection ditches or UIC wells through the limestone where it quickly percolates to the groundwater. On the northwestern edge of the base, the limited surface flow is over the cliffs and through the stormwater drainage system. There are no perennial streams on the northern plateau. The high rainfall and the quick penetration to the groundwater aquifer and the surface runoff to collection ditches and UIC wells, provide pathways for potential contaminant migration. One groundwater production well exists on-site and several others are present less than one mile from the base.



NATURAL RESOURCES - The limestone plateau of northern Guam is covered with what is known as a limestone forest; composed of trees, shrubs and other flora that make up the richest natural regions on Guam. These forests contain the greatest number of plant species that are unique to Guam. The terrestrial animal life of Guam is not as diverse but native species include several fruit eating bats, species of monitor lizards, and several thousand different insects. There are 16 animal and 3 plant species listed as endangered under the Federal law and many more under the local laws of Guam. Areas of critical habitats located around the island have been identified and are protected by the Federal and local Government. Directly surrounding the base are commercial and residential areas and the neighboring Naval Communications Station.



RISK - A Baseline Human Health and Screening Ecological Risk Assessment is being conducted as part of the RI/FS in accordance with U.S. EPA guidelines. Majority of those sites studied under the RI/FS phase showed low levels of human health risk for the proposed industrial use of the site as specified in the Reuse Plan.

REGULATORY ISSUES



NATIONAL PRIORITIES LIST - The sites on the installation have not been scored under the EPA's Hazard Ranking System (HRS).



LEGAL AGREEMENTS - There are no legal agreements other than BRAC requirements driving the schedule for environmental cleanup.



PARTNERING - A partnering agreement was signed by the regulatory agencies in January 1995 and a follow-up partnering session was held in September 1995. These partnering sessions have led to an open and effective communication with all parties and facilitated the ongoing cleanup programs.

COMMUNITY INVOLVEMENT



RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed in November 1992 and held three meetings before being converted to a Restoration Advisory Board (RAB) in December 1993. Currently, the RAB membership includes personnel from the Naval Facilities Engineering Command (NAVFAC) Pacific Division (PACDIV), PACDIV Caretaker Site Office (CSO), U.S. EPA Region IX, Guam Environmental Protection Agency (GEPa), Guam Community College, the local Reuse Committee and Commander Naval Forces Marianas (COMNAVMARIANAS). Initially the RAB met monthly, but now meets on a quarterly basis. The RAB has 10 members of which eight are from the community. The RAB charter was signed in August 1994. Tours of the contaminated sites on the installation were conducted for the RAB in 1994 and 1995. The RAB meetings have been very successful and are a primary source of environmental information for the public. The RAB has received training and presentations on the cleanup programs from the Navy and the BRAC Cleanup Team (BCT). The RAB has reviewed all documents produced to date for the environmental cleanup process and have provided comments from the community perspective.



COMMUNITY RELATIONS PLAN - A Community Relations Plan (CRP) was published in September 1992. The first Fact Sheet was produced in August 1993 for public distribution and are currently issued on a quarterly basis. An open public meeting was held in August 1995 with a presentation given by the Navy on the cleanup progress.



INFORMATION REPOSITORY - Three Information Repositories were established in 1992 at the Neives M. Flores Memorial Library, the Robert F. Kennedy Library and at the Micronesian Area Research Center.

BASE REALIGNMENT AND CLOSURE



BRAC - The Base Realignment and Closure (BRAC) committee recommended NAS Agana for closure in 1993. The base was operationally closed on 31 March 1995. As of 1 April 1995, the major claimant became NAVFAC instead of CINCPACFLT.



BRAC CLEANUP TEAM - A BRAC Cleanup Team (BCT) was established in 1993. The BCT members are the PACDIV BRAC Environmental Coordinator (BEC), U.S. EPA Region IX and GEPa. The BCT meets quarterly and conducts teleconference calls monthly. The BCT has been instrumental in establishing a partnering process with the regulatory agencies. This partnering process has helped in making key decisions on regulatory issues and determining appropriate regulatory cleanup guidance and risk assessment requirements.



DOCUMENTS - A BRAC Cleanup Plan (BCP) was published in February 1994 and three updates of the BCP have been completed. An Environmental Baseline Survey (EBS) was completed in April 1994 and one update has been completed. The Environmental Condition of Property assessment as required by the Community Environmental Response Facilitation Act (CERFA) resulted in the following:

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
0	0	0	0	0	42	2,090
acres	acres	acres	acres	acres	acres	acres

AGANA NAS RELEVANT ISSUES



LEASE/TRANSFER - Currently, the former air station is subdivided into three areas under a licensing and leasing agreements with GOVGUAM and GIAA. Accordingly, three FOSLs have been completed for these parcels. One other area is under a long-term Joint Use Agreement between the Navy and GIAA. In addition, approximately 6 acres will be transferred to the Federal Aviation Administration (FAA) and to the U.S. Department of Commerce in a federal agency-to-agency transfer agreement.



REUSE - A community reuse committee has been formed by local community members called the Komitea Para Tiyan. On 26 December 1995, an adapted reuse plan was forwarded to the

Department of Housing and Urban Development (HUD) and the Assistant Secretary of Defense for Economic Security for review. However, the reuse plan has not been approved by the HUD since it failed to adequately address the homeless provider issues. The reuse plan was resubmitted to HUD in March 1997 and is awaiting approval from HUD.



FAST TRACK INITIATIVES - Soil contamination investigations for 17 sites were fast tracked. By implementing a fast ten-day turnaround time for samples at the laboratory, critical decisions were able to be made in the field in a timely manner. Hot spots could be immediately investigated, saving the time and cost of remobilizing the field crew and sampling equipment.

HISTORICAL PROGRESS

FY84

Sites 1 and 2 - An Initial Assessment Study (IAS), similar to a Preliminary Assessment (PA) under CERCLA, was completed in October. It identified two potential sites, both of which were recommended for further study.

FY86

Sites 1 and 2 - The Confirmation Study (CS) was started.

FY90

Site 2 - Another CS was completed.

FY93

Sites 3-15 - A PA was completed recommending further study for the 13 new sites.

FY94

Sites 16-23 - An Environmental Baseline Survey (EBS) was completed recommending further study for additional eight new sites.
Sites 1 and 2 - The CS (now referred to as Site Inspection (SI)) phase was completed. The SI Report identified the presence of both soil and groundwater contamination at both sites.
Site 1 - A removal action was planned to install a cap on the landfill.
Site 2 - A removal action was planned to install drainage controls around the holding pond.

FY95

Sites 16-29 - An EBS was updated in 1995 and identified additional 6 sites (Sites 24-29) for further investigation.

Site 10 - An SI was completed.

Sites 3-9, 11-16 and 28 - The SI phase was started.

Sites 1-5, 7-11, 18, 20, 21 and 26 - An interim removal action was performed at each of these 14 sites to install fencing to limit access to the contaminated areas.

Site 29 - The SI phase for the groundwater study was initiated but later was transitioned into the RI phase. As part of the groundwater characterization study, 17 monitoring wells were installed. The collection of groundwater contaminant data from the monitoring wells began at the end of the fiscal year. Preliminary results from the first quarter of groundwater sampling indicated low concentrations of volatile organic solvents such as trichloroethene (TCE).

FY96

Sites 1-2 - Non-time-critical removal action was started.

Sites 3-9, 11-16 and 28 - RI field work continue.

Sites 3, 5-6, 8-9, 11-15 and 28 - No further action were recommended for these 11 sites. However, these sites are pending BCT concurrence.

Sites 20, 21 and 23 - RI field work was started. These sites were identified as having high reuse priority and are scheduled for leasing to the Guam International Airport Authority once the sites are determined to be clean.

Site 29 - As part of the groundwater characterization study, second, third, and fourth quarter groundwater sampling have been completed. TCE was determined as the main contaminant of concern. Additionally, a small-scale dye trace study and the installation of a groundwater treatment system at the on-site production well are underway.

PROGRESS DURING FISCAL YEAR 1997

FY97

USTs - Continued permanent closure of all ASTs and USTs by removal. Project is planned to be completed in Oct 1997.

Sites 3, 5, 6, 8, 9, 11-15, 20, 21 and 28 - Navy Recommend No Further Response Action to the BCT. BCT accepted Sites 3, 5, 6, 8, 9, 11, 20 and 21.

Sites 2 and 16 - Conducted non-time-critical removal action with additional surface soil sampling.

Site 7 - Conducted ecological risk assessment and sampling.

Site 10 - Conducted screening risk assessment.

Site 23 - Completed RI field work activities.

Sites 25 and 27 - Completed confirmatory soil sampling.

Sites 17-19, 22, 24 and 26 - Remedial Investigation was started.

Site 29 - Installed wellhead treatment system (Granular Activated Carbon Adsorption) on one production well (NAS-1). Complete Remedial Investigation.

**AGANA NAS
PLANS FOR FISCAL YEARS 1998 AND 1999**

FY98

Sites 2, 4, 10, 12, 13, 14, 15, 25, 27 and 28 - Recommend No Further Response Action Planned to BCT. Sign NFA Action Memorandum.
 Sites 1, 7, 17-19, 22, 23, 24, 26 and 29 - Conduct/continue Remedial Investigation and Feasibility Study.
 Sites 16, 23 and 29 - Prepare Removal Design.
 Site 29 - Complete small scale dye tracer study and implement 5th and 6th quarterly sampling. Implement GAC treatment system at NAS-1.

FY99

Sites 1 and 7 - Prepare Removal Design.
 Sites 16 and 23 - Conduct Interim Removal Action
 Sites 17, 18, 19, 22, 24 and 26 - Complete Remedial Investigation and Feasibility Study
 Site 29 - Conduct Removal Action

PROGRESS AND PLANS

CERCLA	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
PA / SI	29							
RI / FS		11	26		1			
RD			8	15	1	1		
RAC					9			
RAO								1
IRA	12(12)	1(1)	1(1)	2(2)	11(11)	3(3)	1(1)	1(1)
RC		11	17		9			1
Cumulative % RC	0%	29%	74%	74%	97%	97%	97%	100%

GUAM NAVAL COMMUNICATIONS AREA MASTER STATION WESTERN PACIFIC GUAM

Engineering Field Division/Activity: PACDIV
 Major Claimant: COMNAVCOMTELCOM
 Size: 5,000 Acres
 Funding to Date: \$1,395,000
 Estimated Funding to Complete: \$13,450,000



Base Mission: Operates and maintains computer and communication facilities and equipment for Naval Shore Installations and fleet units in the eastern Pacific area

Contaminants: Metals, POLs

Number of Sites:

CERCLA: 9
 RCRA Corrective Action: 0
 RCRA UST: 0
 Total Sites: 9

Relative Risk Ranking of Sites:

High: 0 Not Evaluated: 0
 Medium: 0 Not Required: 8
 Low: 1

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Sites Response Complete: 8

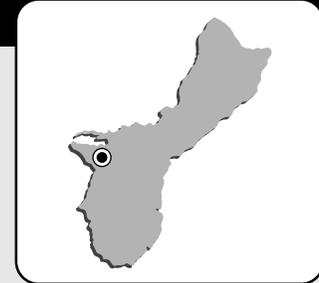
PROGRESS AND PLANS

CERCLA	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
PA / SI	8							1
RI / FS								1
RD								1
RAC								1
RAO								
IRA								1(1)
RC	8							1
Cumulative % RC	89%	89%	89%	89%	89%	89%	89%	100%

GUAM NAVAL COMPLEX

GUAM

Engineering Field Division/Activity: PACDIV
 Major Claimant: COMNAVSUPSYSCOM/CINCPACFLT/COMNAVFACENGCOM
 Size: 8,922 Acres
 Funding to Date: \$75,805,000
 Estimated Funding to Complete: \$75,707,000



Base Mission: Provides supplies, services and public works support for fleet units and ships; drydocking and emergency repair; and stores and issues ordnance and weapons

Contaminants: Acid, asbestos, heavy metals, low-level radiation, ordnance compounds, paint, PCBs, pesticides, plating wastes, POs, solvents

Number of Sites:		Relative Risk Ranking of Sites:			
CERCLA:	32	High:	28	Not Evaluated:	2
RCRA Corrective Action:	27	Medium:	8	Not Required:	19
RCRA UST:	0	Low:	2		
Total Sites:	59				

BRAC IV
Sites Response Complete: 19

EXECUTIVE SUMMARY

The island of Guam is located approximately 3,500 miles west of Hawaii and 1,200 miles east of the Philippines. The Guam Apra Harbor Naval Complex consists of Naval commands located around the Apra Harbor area and the former Naval Magazine (NAVMAG) area southeast of the harbor. The Complex consists of numerous Naval commands, four of which were recommended for realignment or closure by the Base Realignment and Closure (BRAC) Commission in 1995 and are covered here: Guam Naval Activities (NAVACTS) formerly the Naval Station (NS) and NAVMAG, the Naval Fleet and Industrial Supply Center (FISC), the Naval Ship Repair Facility (NSRF), and the Public Works Center (PWC). Other Naval commands in the harbor area which are not BRAC activities, and are not included here are: the Naval Regional Dental Center (NRDC), and the Naval Regional Medical Center (NRMC). These commands have little pieces of property all over the harbor area so that it has the appearance of a crazy quilt. The United States Coast Guard (USCG) also has facilities in the harbor and there are pieces of private property scattered around.

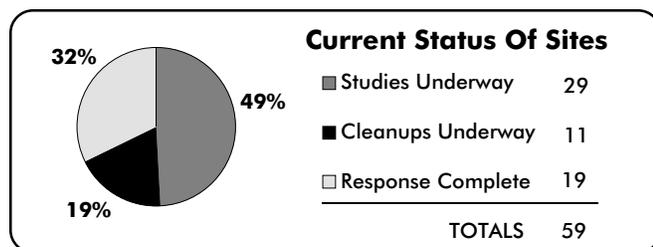
Typical operations at the Navy activities in the Apra Harbor Complex that contributed to contamination include shops such as machine, plating, chemical treatment and dips, plumbing, pipefitting, welding, shipfitting, foundry, electrical, painting and paint stripping, woodworking, instrument and gauge maintenance, and vehicle maintenance. Other operations include photographic and printing shops, dry cleaning, power plants and boilers, pest control, and chemical and medical laboratories. Wastes were stored and disposed of in landfills, incinerators, and wastewater treatment plants (WWTPs). Materials, supplies, fuels and ordnance were stored on the complex. Past practices at these operations which created contaminated sites have been modified to prevent further contamination from occurring. The sites of primary public concern are those that have a contaminant migration pathway to the ecological receptors in the nearby wetlands and the harbors and bays. The cleanup of some of the sites is under a RCRA Part B Permit. The only permitted Hazardous Waste Disposal Facility on the island is located in the Apra Harbor Complex.

A Restoration Advisory Board (RAB) has been established for all the Naval activities in the Apra Harbor Complex. A joint Community Relations Plan (CRP) has been produced and a local Information Repository has been set up at the Nieves M. Flores Memorial Library.

Combined, NAVACTS, NSRF, FISC and PWC have 29 CERCLA sites that are in the Installation Restoration Program (IRP) and 38 RCRA sites, and 12 are considered Response Complete (RC). Of the RCRA sites, one is considered Response Complete (RC) after the cleanup was completed, and another 17 sites are considered response complete because of no further remedial action required.

Five interim removal actions (IRAs) have been completed: One to remove the remaining underground storage tanks (USTs) and sumps at NAVACTS Site 31; two to remove contaminated soil at NAVACTS Solid Waste Management Unit (SWMU) 30 and NSRF SWMU 51; and, two to install a fence at PWC Site 2810 and NAVACTS Site 1 to restrict access. There are seven removal actions underway for CERCLA and one for RCRA. Three removal actions for removal of objects such as tanks, and oil/water separators; one removal action for thermal desorption; two removal actions to install caps on landfills; and one for treatment of PCB contaminated soils using BCDP are currently being planned under the IRA phase. In FY98, the study phase will be on going at seven SWMUs, corrective measure designs are planned or on-going for 12 SWMUs. Eleven removal actions at CERCLA sites and three removal actions at RCRA sites are planned for the future.

The BRAC committee listed NAVACTS, NSRF, FISC, and PWC for closure or realignment in the 1995 BRAC Report. Which parcels within the Apra Harbor Complex that will actually be excessed is still being determined. The Navy will retain some of the parcels, especially waterfront assets to allow continued support for the fleet in the area.



GUAM NAVAL COMPLEX RELEVANT ISSUES

ENVIRONMENTAL RISK



HYDROGEOLOGY - Guam is one of a series of South Pacific islands created by submarine volcanoes on the north-south oriented Marianas rift. The volcanic rock is overlain with coral reef limestone. There are four distinct physical features on Guam, a limestone plateau in the northern half of the island, an area of karst topography with steep limestone capped volcanic mountains in the southern half of the island, a sediment filled basin in the center of the southern mountainous area, and coastal alluvial deposits.

The rainy season in Guam is from July through November with a monthly average rainfall of about 12.5 inches. On the northern limestone plateau, most rain infiltrates the permeable formation quickly to reach the large groundwater aquifer and then travels laterally to the nearest coast. In the south, rain is primarily runoff due to the impermeability of the terrain creating many rivers and streams which drain to the nearest surface water body or the coast. Rain that does infiltrate is trapped in small aquifers between the rock formations and discharges as small seeps and springs. In the basin area is the Fena Reservoir, the primary water supply for the island, which is fed by runoff through numerous rivers.

The Naval Complex is located all around Apra Harbor and a large area in the southern mountainous area. Apra Harbor is located near the midpoint of the western shore and receives runoff from the mountainous area. Wetland areas exist all around the harbor, especially on the eastern side. The area is very permeable and underlain by a shallow unconfined fresh water aquifer at depths of less than a foot near the wetlands areas to five feet in other areas. The general direction of groundwater flow is to the nearest wetlands and surface water body such as the harbor, Agat Bay, or the Philippine Sea. Surface water from paved areas in the Apra Harbor Complex enters storm drains which discharge to the harbor and the Philippine Sea. Pathways exist for contaminants from the Apra Harbor Complex sites to reach the ecologically sensitive wetlands, harbors and bays. Diluted contaminant levels have been detected in the wetlands areas near several Installation Restoration (IR) sites.

The former NAVMAG area just to the southeast of the harbor is in the mountainous region and the Fena Valley watershed containing the Fena Reservoir is on the southeast side of the compound. Depth to groundwater is approximately 450 feet. Potential pathways exist for contaminants from sites on the former NAVMAG to enter the Fena Valley watershed. No contamination has been detected in the Fena Reservoir to date.



NATURAL RESOURCES - The Apra Harbor was originally a marine estuarine area filled with Mangrove trees. Due to dredging and filling operations started around 1900, and development in the harbor, only a remnant of the Mangrove wetlands remains on the east side of the harbor. Site 24 on NSRF impacts a wetlands area that is the habitat for the endangered Common Moorhen.

Reef-building corals in the outer areas of the harbor have also been reduced by human activities. Over 100 species of reef-building corals have been identified. Both the harbor and the wetlands are major habitats for a multitude of native species. The harbor was a major fishery and some spawning and nursery areas are still active. The harbor is used for fishing, recreation, and by the Navy and United States Coast Guard.

The inland areas on the former Magazine are also habitats. Many non-native species, both plant and animal, have had a negative impact on the island. There are 16 animal and three plant species listed as endangered under Federal law and many more under the local laws of Guam.



RISK - For NAVACTS, a Human Health Risk Assessment and an Ecological Risk Assessment following EPA guidance were prepared for the IR sites. For Sites 4, 14 and 31, data collected so far indicates no significant risk to human health or the ecosystem near the sites. Site 1 was found to present a definite risk to both human health and the

nearby ecosystems. Site 28 was determined to pose both a human health and ecological risk according to the EPA risk assessment guidelines. For NAVACTS Site 35, the need for a Baseline Risk Assessment will be determined during the Remedial Investigation (RI) phase.

For the NSRF, a Human Health Risk Assessment and an Ecological Risk Assessment were performed following EPA guidance for the area behind the NSRF fence line (Site 24). The results indicated that contaminants on the site (sandblast grit, volatile organics, chlorinated pesticides, and PCB) posed a significant risk to ecological receptors, but no risk to human health.

For the FISC, a Screening Human Health Risk Assessment and an Ecological Risk Assessment were conducted according to EPA guidance for Site 19. Contaminants found in the wetlands and drainage channel sediments were found to present a significant risk to ecological receptors, but not to human health.

The combined total number of sites ranked as high risk in the Department of Defense (DOD) Relative Risk Ranking System is 31. These sites are ranked high primarily because of the potential impact to groundwater and risk to ecological receptors. A couple of the high ranked sites result from on-site workers having the potential to have direct contact with soil known to be contaminated.

REGULATORY ISSUES



NATIONAL PRIORITIES LIST - The installations have been scored under the EPA's Hazard Ranking System (HRS), however, to date, they have not been listed on the National Priorities List (NPL).



LEGAL AGREEMENTS - The Apra Harbor complex has the only Hazardous Waste Permitted Facility on the island. It is jointly operated by the FISC's Defense Reutilization and Marketing Office (DRMO) and the PWC. It is under a RCRA Part B Permit which is renewed every three years. The most recent permit was signed in August 1993 by the Navy, Guam Environmental Protection Agency (GEPA) and EPA Region IX. This permit requires the investigation and cleanup of all Solid Waste Management Units (SWMUs) identified in the contiguous Apra Harbor area as a condition of granting the permit. The initial RCRA Facility Assessment (RFA) was conducted by the EPA Region IX between 1986 and 1987 during which 48 SWMUs were identified. The permit specifies a Corrective Action (CA) schedule and required documents for the following SWMUs: eight SWMUs on NAVACTS (SWMUs 14, 15, 16, 17, 19, 25, 26 and 28); seven SWMUs on NSRF (SWMUs 36, 38-40, 42, 43 and 45); two SWMUs at the FISC (SWMUs 12 and 49); and three SWMUs at the PWC (SWMUs 1, 10 and 11). A Current Conditions Report, an update of the original RFA, was completed in 1994.



PARTNERING - No formal partnering agreement is in place. The agencies involved in the Apra Harbor complex cleanup program cooperate to achieve the cleanup goals. The agencies involved include EPA Region IX, the GEPA, the U.S. Army Corps of Engineers Guam Operations Office, the Government of Guam's Department of Agriculture Division of Aquatic and Wildlife Resources (GDoADAWR), the Government of Guam's Division of Historic Preservation, the U.S. Department of Interior Fish and Wildlife Service Pacific Islands Office and the University of Guam (UofG).

COMMUNITY INVOLVEMENT



RESTORATION ADVISORY BOARD - A Technical Review Committee (TRC) was formed for NAVACTS in 1989 and expanded to include all the Apra Harbor Naval activities in March 1993. The TRC met periodically on an as needed basis to discuss plans and review documents. TRC members were representatives of the Navy, GEPA, EPA Region IX, the GDoADAWR, U.S. Army Corps of Engineers, Guam Historic Preservation Office, U.S. Geological Survey (USGS), National Oceanic and Atmospheric Administration (NOAA), and the UofG. The TRC

GUAM NAVAL COMPLEX RELEVANT ISSUES

was converted to a Restoration Advisory Board (RAB) in February 1995. The RAB has about 30 members and meets on an as needed basis. Three RAB meetings were held in FY95, four RAB meetings were held in FY96, and three RAB meetings were held in FY97. A site visit of the sites with the public is usually conducted in the morning or in the afternoon before the RAB meeting. The RAB meetings and tours of the Installation Restoration Program (IRP) sites are open to the public to attend. Several publicly available Fact Sheets have been distributed in conjunction with the RAB.

In FY97, the RAB members were given presentation on the draft Engineering Evaluation/Cost Analysis (EE/CA) for the FISC Lower Sasa Fuel Burning Pond Site. A general RAB meeting was held in July to discuss various RAB issues. A meeting to provide training on "What Constitutes Healthy Soil" to the RAB members was held in September.



COMMUNITY RELATIONS PLAN - Community relations activities are conducted jointly for Guam NAVACTS, FISC, NSRF, PWC and other tenants on the complex at Apra Harbor. The Community Relations Plan (CRP) was completed in September 1992. The CRP is currently being updated.



INFORMATION REPOSITORY - A publicly available Information Repository was set up in the Nieves M. Flores Memorial Library in Agana in October 1992. It is updated and maintained by the Navy. It contains site reports along with other program information.

BASE REALIGNMENT AND CLOSURE



BRAC - Four of the Apra Harbor Naval Complex activities were recommended for closure or realignment by the Base Realignment and Closure (BRAC) Act in 1995, NAVACTS, NSRF, FISC and PWC. Due to the uncertainties regarding Navy force support requirements and local political considerations, it is not certain yet which parcels will be excessed. Due to the closure of NSRF and Agana NAS, the customer base for the FISC, PWC and some NAVACTS operations has been reduced leading to further realignment of operations. Some NAVACTS and PWC operations will continue and some tenant activities will remain. The waterfront facilities will be retained to support fleet operations in the area.



BRAC CLEANUP TEAM - The BRAC Cleanup Team (BCT) has been formally established. Membership will include the Navy BRAC Environmental Coordinator (BEC) from Pacific Division of Naval Facilities Engineering Command (PACDIV), and a representative from both Guam EPA (GEPA), and EPA Region IX.



DOCUMENTS - Work on a BRAC Cleanup Plan (BCP) began in June 1995 and was completed in October 1996. Several Environmental Baseline Surveys (EBSs) were completed by Nov. 1996. Additional parcels have been included in the EBS effort. These sites may also be available for transfer or lease. As part of the EBS, the Environmental Condition of Property will be assessed as required by the Community Environmental Response Facilitation Act (CERFA) which classifies parcels of property into one of seven categories, depending on their degree of contamination. Preparation of a CRP for BRAC IV sites in Guam has started in 1997. After its completion, a RAB will be formed soon thereafter.

Environmental Conditions of Property Classification						
1	2	3	4	5	6	7
0	0	0	0	0	0	8,922
acres	acres	acres	acres	acres	acres	acres



LEASE/TRANSFER - The Local Redevelopment Authority (LRA) has expressed interest in leasing certain parcels. The Ship Repair Facility and portions of Victor Wharf have been leased to the LRA in 1997. To date, one parcel at NAVACTS has been identified for transfer.



REUSE - A Reuse Committee, known as the Local Redevelopment Authority (LRA), was established on 15 December 1995 by the Government of Guam. An Interim Reuse Plan for Apra Harbor (Dry Dock Island, Drum Lot at Polaris Point, and Victor Wharf) was completed in June 1996. A final reuse plan is scheduled to be completed in December 1996.



FAST TRACK INITIATIVES - The BRAC-funded sites will be examined for possible application of fast track initiatives when it has been determined which parcels of land could be leased or transferred.

HISTORICAL PROGRESS

FY83

Sites 1-29 (Apra Harbor Complex) - Volume I of the Initial Assessment Study (IAS), which is similar to the EPA's Preliminary Assessment (PA), identified 29 potential sites on the various Navy properties in Guam. The IAS covered the Guam NS, FISC, NSRF, PWC, NRMC, and NRDC in the Apra Harbor area. Sites 5, 12, and 13 required no further study after the IAS.

FY84

Site 31 (NAVACTS) - The grassy area behind Building 256-Laundry, was added to the Installation Restoration Program (IRP) by the EPA upon review of the IAS. It was covered in the section on industrial operations on the NS (now NAVACTS).
Sites 33-37 (NAVACTS) - Volume II of the IAS was completed for Agana NAS, NAVMAG, NAVCAMs WESTPAC, Naval Hospital, and NAVFAC. These five sites were identified on the NAVMAG (now NAVACTS). Site 36 required no further study after completion of the PA. Volume III of the IAS, completed in December, contains hydrogeological and ecological information for all Guam Naval installations.

FY86

SWMUs - A RCRA Facilities Assessment (RFA) was started for all the Naval activities in the Apra Harbor Complex.

FY87

Sites 24 and 25 (NSRF) - The Site Inspection (SI) phase was started.
SWMUs - The RFA was completed as part of the RCRA Part B permit process. A total of 48 Solid Waste Management Units (SWMUs) were identified on the Naval activities in the Apra Harbor Complex.

FY91

Site 32 (NAVACTS) - This site was discovered by the Navy during a routine examination of a parcel of land on the NS (now NAVACTS). A PA was completed for this site.
Sites 33 and 34 (NAVACTS) - The SI phase was completed in October 1990. Neither site required any further study and are Response Complete (RC).
Sites 1, 4, 14, 28, 31, 32-35 and 37 (NAVACTS) - The SI phase was completed in September 1991. Sites 32-34, and 37 required no further study and were designated RC. Site 35 requires an expanded SI.
Sites 1, 4, 14, 28 and 31 (NAVACTS) - The RI/FS phase was started in September.
Sites 24 and 25 (NSRF) - The Remedial Investigation/Feasibility Study (RI/FS) phase was started.
Sites 18 and 19 (FISC) - The SI phase was completed and Site 18 required no further study.

GUAM NAVAL COMPLEX HISTORICAL PROGRESS

FY92

Site 32 (NAVACTS) - The SI was completed and no further study is needed.
Site 19 (FISC) - The RI/FS phase began.

FY93

Sites 24 and 25 (NSRF) - An SI phase was completed. Site 24 is a major concern because it is the habitat for the endangered Common Moorhen.

FY94

Sites 1, 4, 14, 28 and 31 (NAVACTS) - The Draft Remedial Investigation (RI) Reports were completed and sent to the regulatory agencies for review. The Draft RI Reports showed contamination levels sufficient to warrant a Baseline Human Health Risk Assessment and an Ecological Risk Assessment.
Site 31 (NAVACTS) - A non-time critical removal action took place to remove six Underground Storage Tanks (USTs) and two concrete sumps.
SWMUs 14-17, 19, 22 and 24-30 (NAVACTS) - An updated RFA was conducted and the Corrective Measures Study (CMS) was started for these SWMUs.
SWMUs 36, 38-40, 42, 43 and 45 (NSRF) - The CMS phase started.
SWMUs 12 and 49 (FISC) - The CMS phase started. (SWMU 49 FISC has since then been transferred to NAVACTS).

FY95

Sites 1, 4, 14, 28 and 31 (NAVACTS) - RI/FS continued.
Site 24 (NSRF) - RI report completed. Initiated preparation of a design package for a removal action.
SWMU 30 (NAVACTS) - The Design and the Corrective Measures Implementation (CMI) phases were completed. A removal action took place to remove contaminated soil from the site and this constituted the final cleanup on the site.
SWMUs 36, 42, 43 and 45 (NSRF) - The RFI/CMS process began to remove contaminated soil from these sites and remediate groundwater.

Sites 33 and 34 (FISC) - The RI/FS phase began.

Site 19 (FISC) - The removal action process was started to remove contaminated sediment.
SWMUs 12 and 49 (FISC) - The CMS phase continued. (SWMU 49 (FISC) has since then been changed to NAVACTS)
SWMUs (NAVACTS) 22, 24, 27, 29 and 30 - Completed RFI/CMS.

FY96

SWMUs 22, 24 and 27 (NAVACTS) - require no further study or action following the RFA.
Sites 1, 4, 14, 28 and 31 (NAVACTS) - The RI report was finalized in February 96. However, additional comments from the regulator were received on Site 31 after the report was finalized. Interim Removal Action phase was started for these sites. The draft Removal Site Evaluation (RSE) was prepared for Site 1, the draft EE/CA was prepared for Site 4, and the draft closure work plan was prepared for Site 14.
Site 28 (NAVACTS) - moved to the BRAC program.
Site 31 (NAVACTS) - Completed IRA to remove the USTs.
Site 2810 (PWC) - Completed the first phase of the IRA.
Sites 16 and 17 (PWC) - The removal action at Site 16 continued. The treatment of the contaminated soil began continuous operations in this fiscal year. The RI/FS phase continued for Site 17. The Draft RI report for Site 17 was completed this fiscal year and recommended no further action.
Site 19 (FISC) - The RSE field work began this fiscal year for Site 19 under the IRA phase.
Site 24 (NSRF) - Work continued on the preparation of the design package for a removal action at the site.
SWMUs 1, 10 and 11 (PWC) - Completed the draft RFI/CMS
SWMUs (FISC) 12 - Completed the draft RFI/CMS
SWMUs (NAVACTS) 15, 16, 17, 19, 25, 26, 28 - Completed the draft RFI/CMS
SWMUs (SRF) 1N21,2N21, 1N2047, 1N2074, 2N2074, 3N2074 and 40LOT1 - Completed the draft RFI/CMS

PROGRESS DURING FISCAL YEAR 1997

FY97

Site 1 (NAVACTS) - Final Removal Site Evaluation (RSE).
Site 14 (NAVACTS) - Final Work Plan for removal action.
Site 28 (NAVACTS) - Re-sampling (field work) to confirm suspect data was completed. In addition, an Expanded Remedial Investigation has begun for the additional adjacent areas which have been contaminated due to migration.
Site 16 (PWC) - Removal action continued.
Site 2810 (PWC) - Work continued on the final design package for a removal action.
Site 19 (FISC) - Draft EE/CA prepared.
Site 33 (FISC) - SI started .

Site 24 (NSRF) - The planned removal action to remove contaminated soil, creosote-treated logs buried on the site, and the UST was suspended until FY00 due to higher priority environmental risk ranking projects.
SWMUs 14-17, 19, 25, 26 and 28 (NAVACTS) - The CMS continued into FY98 and the draft design of the corrective measures for SWMUs 16 and 17 was completed.
SWMUs 36, 38-40, 42, 43 and 45 (NSRF) - The draft RFI/CMS report was completed.
SWMUs 12 and 49 (FISC) - The RFI/CMS phase continued. (SWMU 49, FISC is presently under BRAC).
SWMUs 1, 10 and 11 (PWC) - The RFI/CMS phase continued into FY98. The draft design for SWMU 1 was completed.

**GUAM NAVAL COMPLEX
PLANS FOR FISCAL YEARS 1998 AND 1999**

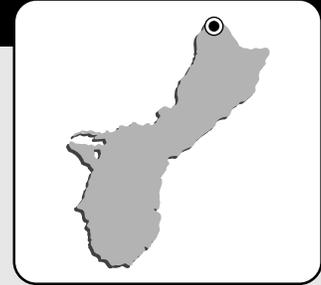
FY98	FY99
<p>Site 1 (NAVACTS) - Draft EE/CA and draft design for the landfill cap and seawall will be prepared. The construction phase of the IRA to install the seawall should start.</p> <p>Sites 4 and 14 (NAVACTS) - Construction phase for the removal actions at sites 4 and 14 should start.</p> <p>Site 28 (NAVACTS) - Complete the RI/FS.</p> <p>Site 16 (PWC) - Continue the Removal Action and begin the Planning Documents for the RI.</p> <p>Site 2810 (PWC) - begin construction phase for IRA.</p> <p>Site 19 (FISC) - Continue EE/CA and design package for removal action.</p> <p>Site 33 (FISC) - Complete SI.</p> <p>SWMU 16, 17 and 26 (NAVACTS) - Complete design.</p> <p>UST 1 (NAVACTS) - Complete design.</p> <p>SWMUs 1 and 11 (PWC) - Complete design.</p> <p>SWMU (NAVACTS) 14 - Complete RFI/CMS</p> <p>SWMU 49 (NAVACTS) - Complete the RFI/CMS.</p> <p>...SWMUs 36, 38-40, 42, 43 and 45 (NSRF) - Complete RCRA Facilities Investigation.</p> <p>SWMU 12 (FISC) - Complete the RFI/CMS phase.</p> <p>SWMUs 1, 10 and 11 (PWC) - Complete the RFI/CMS phase.</p> <p>AOC 1, 2 and 3 (NAVACTS) - SI should be completed.</p> <p>AOC 4 (NAVACTS) - SI will start.</p> <p>AOC 1 (NSRF) - SI will start.</p> <p>Site 25 (NSRF) - Complete RI.</p>	<p>Site 1 (NAVACTS) - Start the IRA to install the landfill cap.</p> <p>Sites 4 and 14 (NAVACTS) - Complete IRA .</p> <p>Site 31 (NAVACTS) - Start Draft Sampling and Analyses Plan for the additional groundwater sampling as requested by Guam EPA.</p> <p>Site 16 (PWC) - Complete RI planning documents . Begin work on the draft RI.</p> <p>Site 17 (PWC) - Continue work on the sampling and analyses plan for additional groundwater sampling as requested by GEPA. Begin additional groundwater sampling.</p> <p>Site 2810 (PWC) - Closure ROD. Begin LTO and continue until FY28.</p> <p>Site 19 (FISC) - Continue Removal Action.</p>

PROGRESS AND PLANS

CERCLA	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
PA / SI	23	7						2
RI / FS		2	1	3		1	1	13
RD			1	2		1		10
RAC								
RAO								2
IRA	3(3)	2(2)	1(1)	5(5)	1(2)	2(2)	1(1)	12(13)
RC	11	2	1	3		1		14
Cumulative % RC	34%	41%	44%	53%	53%	56%	56%	100%
RCRA CA	FY96 and before	FY97	FY98	FY99	FY00	FY01	FY02	FY03 and after
RFA	26	1						
RFI / CMS	15	2	7	3				
DES	2	1	8	3	9			
CMI	1		4	6	9	1	1	
CMO					3		1	
IRA	1(1)		1(1)	20(23)		1(1)		
RC	5	1	4	3	11	1	2	
Cumulative % RC	19%	22%	37%	48%	89%	93%	100%	100%

GUAM NAVAL FACILITY GUAM

Engineering Field Division/Activity: PACDIV
 Major Claimant: COMNAVFACENGCOM
 Size: 322 Acres
 Funding to Date: \$155,000
 Estimated Funding to Complete: \$0



Base Mission: Conducts oceanographic observations in the Pacific Ocean

Contaminants: POLs, paint, refuse with hazardous waste, solvents, plating waste

Number of Sites:

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

Relative Risk Ranking of Sites:

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

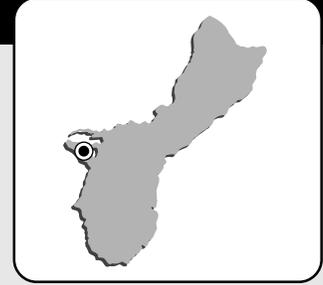
Sites Response Complete: 1	

PROGRESS AND PLANS

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

GUAM NAVAL REGIONAL DENTAL CENTER GUAM

Engineering Field Division/Activity: PACDIV
 Major Claimant: BUMED
 Size: 3 Acres
 Funding to Date: \$0
 Estimated Funding to Complete: \$0



Base Mission: Provides complete dental services to Navy and Marine Corps personnel

Contaminants: Heavy metals

Number of Sites:

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

Relative Risk Ranking of Sites:

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

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Sites Response Complete: 1

PROGRESS AND PLANS

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