MINUTES
RESTORATION ADVISORY BOARD
NAVY AREA-WIDE

A Restoration Advisory Board meeting for the Navy Area-Wide Installation Restoration sites was held on Wednesday, July 14, 1999 at the Hyatt Regency's Santa Rita/Rosa Ballroom at 7:00 p.m. Enclosure (1) is a list of attendees.

1. Lieutenant Prather did the opening remarks. He introduced the following key personnel:

   a. Mr. Mike Gawel, Guam Environmental Protection Agency, the Navy Area-Wide Community Co-Chairperson
   b. Mr. Roy Tsutsui, Regional Environmental Manager and Facilitator, COMNAVMAR
   c. Mr. Lance Richman, Special Assistant to the Administrator, Guam Environmental Protection Agency
   d. Mr. Tony Roberson, Director, Environmental Services Department, U.S. Navy Public Works Center, Guam
   e. Ms. Darlene Ige, Head, Installation Restoration Branch, Pacific Division, Hawaii
   f. Ms. Helen Lam, Project Manager, Pacific Division, Hawaii
   g. Mr. Cowan Azuma, Project Manager, Pacific Division, Hawaii

A copy of the minutes from the February 1999 RAB meeting was provided. Lieutenant Prather mentioned that there were two key questions that required research. Mr. Cowan Azuma will provide the answers prior to his presentation. Mr. Mike Gawel mentioned that the RAB meetings are normally held quarterly, although the last meeting was held in February 1999. For those who are not familiar with this meeting, other Navy Restoration Advisory Boards entail the NAS Agana and SRF, while this Restoration Advisory Board is looking at other sites on Guam

2. Ms. Darlene Ige presented an updated progress report on nine Installation Restoration (IR) sites on Guam (enclosure (2)). In addition, Ms. Ige provided a brief summary on the funding in terms of what is spent to date and what the spending plan will be for the next fiscal year. The start of this program was focused on the investigation study. In early 1990s, with the exception of 1993, dollars increased until 1996. In 1997, funds decreased and have been leveled since then. To date, a total of $71 million was spent on Guam, in which $41 million was for cleanup and $30 million was for studies. For the next six (6) years, we are projecting an average of $3.2 million per year for a total of $19 million.

Ms. Ige briefly discussed the prioritization and what is being looked at. The primary factor that is looked at is the relative risk. The Department Of Defense (DOD) has developed this model, which takes into account the contaminant hazard, migration potential and receptors. It calculates risk in terms of high, medium and low risks. The Navy goal focuses on the cleanup and high relative risk sites. 70% of our total dollars has to be spent on cleanup and 80% of our total dollars has to be spent on high relative risk sites versus medium or low. The Navy goals are consistent with the DOD goals.

The DOD goal is that they want 50 percent of the Navy's high relative risk sites completed by the year 2002, 100 percent of high relative risk sites by 2007, all medium risk sites by 2011, and all low relative risk sites completed by 2014. This indicates that the Navy is committed to cleanup all the sites.

There are a total of 18 active IR sites on Guam. Half of the sites are high relative risk. The sites discussed in this meeting are in the high relative risk category. There are seven (7) medium relative risk sites and two (2) low relative risk sites. Although there are high relative risk sites, these sites do not pose imminent threat to human health and the environment. Immediate action is taken when there is an imminent threat to human health and the environment. By next year, we will perform two cleanups and two studies. The cleanups entail the removal of septic tank and partial piping at the NEX Garage Site and the installation of landfill cap at the Orote Landfill. The studies entail taking additional groundwater sampling at the Dry Cleaning Shop and the sediment sampling at the Lower Sasa Fuel Burning Pond. In summary, we have an active IR program on Guam that has made tremendous progress throughout the years.

3. Lieutenant Prather recognized and welcomed Mayor of Agat, John Reyes.

4. Ms. Helen Lam presented an updated status on the seawall construction at the Orote Landfill (enclosure (3)). Debris was removed from the beach. The casting of concrete blocks is about 75 percent complete. The construction of the seawall was started in March 1999 and is scheduled for completion in January 2000. The draft design for the landfill cap will be available in September 1999. The revegetation pilot test will start in September 1999. The following questions and answers are provided:

Q1: **With the heavy rain on Guam, how much of the silt will affect the ocean?**
A: *Occasionally, we have some silt going out to the ocean, but we try our best to keep the silt within the silt curtain.*

Q2: **Did you remove the rusted metal from the water?**
A: *Yes we did. We removed the rusted metal and other debris from the water within 30 feet of the site shoreline.*

Q3: **Do you have an estimate of how long the seawall was designed to last?**
A: *The design of the seawall is based on a 100-year storm event, that means we obtained storm data from the last 100 years and we picked the biggest storm. It was designed to sustain less than 5 percent damage based on the biggest storm.*

Q4: **If there isn't a 100-year storm, what is the severity?**
A: *The seawall needs to be maintained and inspected. If there's excessive damage, it needs to be repaired.*

Q5: **Who is responsible for the area?**
A: *The Navy is responsible for maintaining the seawall.*

5. Cowan Azuma followed up on two inquiries from the February 1999 RAB meeting regarding the Carpentry Shop Dip Tank site on U.S. Navy Public Works Center. The following questions and answers are provided:

Q1: **Was there much contamination in the soil around the sump?**
A: *The removal was done under the underground storage tank (UST) program. I reviewed the final Tank Assessment Report to determine the results of samples taken under the sump. The results were 5.1 parts per million (ppm) pentachlorophenol (PCP). The EPA Region IX preliminary remediation goal (PRG) (for PCP) for residential use is 2.5 ppm and for industrial use is 15 ppm. The area is within PWC complex, which is an industrial setting, and it meets the Region IX PRG.*

Q2: **Do you know where the soil was removed to?**
A: *The soil that was excavated was used as backfill, so it was not removed from the site. Confirmation samples of the excavated soil were taken and ranged from 0.53 to 4.2 ppm of pentachlorophenol (PCP), which meets the Region IX level of PRG for industrial use.*

6. Mr. Cowan Azuma presented the following:

a. An update on the cleanup at the South Finegayan Construction Battalion Landfill, U.S. Navy Public Works Center (enclosure (4)). He provided the results of the baseline groundwater monitoring and drinking well sampling that were conducted in May of this year.

b. Information was also provided on some utility service assets which are part of the Customer Service Agreement (CSA). Five (5) new IR sites are part of the utility service contract known as the CSA. These assets are currently being leased to the Guam Power Authority (GPA). The CSA entails that GPA shall sell and deliver, and the Navy will purchase and receive utility services. It also included the provisions for the Navy to transfer the assets to GPA. An Environmental Baseline Study (EBS) was completed and resulted in suspected or potential contamination on some of the assets (enclosure (4)).

Q1: **Are these CSA properties classified as releasable after the properties have been cleaned up?**
A: *Potential releases were identified in the Environmental Baseline Survey. Once the properties have been determined to be safe for human health and the environment (site characterization), the properties can be transferred.*

Q2: **Is the Tanguissan Power Plant considered CSA?**
A: *Yes it is, but it is not an Installation Restoration site.*

Q3: **Can you briefly discuss the impact or procedure followed, if GPA is trying to do construction at the site?**
A: *According to the lease agreement, if Guam Power Authority needs to do some type of expansion at the sites, they need to do testing. They need*

to work with Guam EPA and the Navy to determine exactly what they're working with to ensure that the materials are properly handled and disposed of and that their employees are properly protected. We are not jeopardizing GPA's employees.

Q4: **Is there a Guam Power Authority environmental coordinator?**

A: *Mr. Alex Andres represents GPA on the Harmon Substation project. For each site that GPA does expansion work, GPA will contract an engineering firm. At one of the sites, Harmon Substation, the engineering firm was asked to design for the installation of a new 115k transformer. What's related to this project is the installation of additional substation structures. The grounds that are being disturbed would be tested, and we have a remediation plan that was prepared by Duenas and Associates.*

Q5: **In terms of mitigation plan, is there a Guam Power Authority person that looks out for the environmental consideration?**

A: *For the Harmon Substation project, we have a designated person. As for the other sites, it will be up to GPA to determine who will be designated. Mr. Miguel Bordallo from Duenas and Associates provided a remediation plan to address problems and considerations prior to doing the expansions or developments of the Harmon Annex sites.*

Q6: **Where can the ball get dropped from GPA's standpoint?**

A: *If there is a development that needs to be done at the site, then this needs to be addressed with environmental considerations, then coordination with PWC and GEPA. For the first "if," GPA needs to coordinate who is to be assigned any type of development. A GPA personnel is responsible to coordinate this. According to Mr. Tony Roberson, PWC, the Navy and GPA have established a CSA committee. They meet on a monthly basis to discuss all the CSA issues. That is where all the coordination takes place.*

Q7: **Mayor John Reyes inquires that he has seen through the IR program and through the RAB within the fence line or within active areas that are still controlled by the military or currently leased. What about the sites in community that are not owned by military that may be related to former military sites?**

A: *According to Mr. Tsutsui, basically DOD, has acknowledged that there has been in the past activities where there's military occupation, e.g. military bases, underground storage tanks for gas stations, and then through the years, the land was released back to the community through Government of Guam. There weren't any programs such as to fully address all the cleanups and environmental baseline surveys. Recognition through that program is a Formerly Used Defense Sites (FUDS). The DOD has assigned the Army Corps of Engineers to be in charge and to formulate that program. It is funded similarly to the type of funding for the active IR sites. Essentially, from Congress given to the Army Corps of Engineers to perform the same process e.g. preliminary assessment, sampling, testing,*

and removal action. If Mayor Reyes would like to facilitate any questions you may have, Mr. Tsutsui has contact with the Army Corps of Engineers.

7. According to Mr. Tsutsui, the next meeting will be on October 6, 1999. To help facilitate advance notification, we will contact the members of the next RAB meeting through email and fax two to three weeks in advance, then one week prior to the meeting, we will have a confirmation of the meeting date. The day before the meeting, we will put out a reminder about the meeting.

8. At previous RAB meetings, we have discussed the RAB tour. The day of our evening RAB, a public tour is always conducted so the public can actually see the sites that will be discussed that evening. During the last few RABs, the tour was held in the afternoon; participation was very low. We would like to know what is a good time to make the public tour. One of the participants responded, "The afternoon is fine." Mr. Gawel suggested when email is sent out to participants reminding them of the meeting to also include the tour, as well.

9. Lieutenant Prather thanked everyone for being at the meeting. The meeting adjourned at 8:26 p.m.

Approved by:

MIKE GAWEL
Community Co-Chairperson

CRAIG S. PRATHER,LT,CEC,USN, P.E.
Navy Co-Chairperson

LIST OF ATTENDEES
NAVY AREA-WIDE RESTORATION ADVISORY BOARD
MEETING, July 14, 1999

NAME	AGENCY/ADDRESS	CONTACT NO.	EMAIL
DeGuzman, Roland, LT, CEC, USN	PACIFIC DIVISION, Caretaker Site Office, Guam	475-5168/477-8937	Rdeguzman@pacdiv.guam.net
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Bordallo, Miguel	Duenas & Associates		
Andres, Alex	GPA/EMCE	[redacted]	
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ENCLOSURES (1)

LIST OF ATTENDEES
NAVY AREA-WIDE RESTORATION ADVISORY BOARD
MEETING, July 14, 1999

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Navy Installation Restoration (IR) Sites Quarterly Updates

Site Name	Description	Site Information	IR Document	Future Activities
Lower Sasa Fuel Burning Pond, COMNAVMAR (formerly FISC Guam)	The Lower Sasa Fuel Burning Pond was used from early 1959 to 1970 as a collection pond and burn pit for waste petroleum, oil and lubricants generated from various Navy activities. The pond received waste from an oil/water separator which developed mechanical problems allowing oily waste water to drain into the holding pond. Water at the bottom of the pond was drained into the adjacent wetlands via drainage channel and the remaining petroleum residue was then burned.	Surface water and groundwater, surface soil and subsurface soil, sediment and biological tissue samples were collected and analyzed to determine the extent of contamination. Total extractable petroleum hydrocarbons (such as gasoline, diesel, kerosene, and lubricant oil) as well as oil, grease, metals, polynuclear aromatic hydrocarbons (PAH) and pesticides were detected on this site. The contaminants were primarily detected in the sediment samples taken from the drainage channel and mouth of the channel. The results of the human health risk assessment concluded that the site does not pose a risk to humans. However, the ecological risk assessment identified significant risk to ecological receptors due to the PAHs and mercury found within and at the mouth of the drainage channel. Based on the comments from the regulators, the EE/CA recommended alternative 3 instead of alternative 4. As part of terminating the National Pollutant Discharge Elimination System (NPDES) permit, the evaporation pond was demolished in March 1999. Wastewater from the Fuel Farm oil/water separator is now discharged to the sewer system.	Final Engineering Evaluation/Cost Analysis (EE/CA) Report (Dec 1997) Final Action Memorandum (Aug 1998) Draft Removal Action Design (Aug 1998)	Conduct additional sediment sampling. An Action Memorandum will be signed to document the selected alternative. Finalize the Removal Action Design
Area Behind the Fenceline, COMNAVMAR (formerly SRF Guam)	The Area Behind the Fenceline site was used as a disposal area as early as 1954 when spent sandblast grit and harbor dredge spoils were deposited. Other potential sources of contamination include creosote logs, underground storage tanks (USTs) and scrap metal debris. Disposal activities ended after a fence was installed in 1973.	Surface water and groundwater, surface soil and subsurface soil, sediment and biological samples were collected and analyzed to determine the extent of contamination. Several metals including hexavalent chromium and organotin, total extractable petroleum hydrocarbons such as diesel and lubricant oils, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and chlorinated pesticides were detected in various surface/subsurface soil and sediment samples. Some metals were also detected in groundwater samples taken from the looped road disposal area. The results of the human health risk assessment concluded that the site does not pose a risk to humans. However, the ecological risk assessment identified a significant risk to ecological receptors at the sandblast grit peninsula and the loop road disposal area. These two areas also act as a source of contamination to the adjacent wetlands	Final Remedial Investigation (RI) Report (Aug 1995)	A Removal Site Evaluation (RSE) and EE/CA is scheduled for FY 2006

ENCLOSURES (1)

Site Name	Description	Site Information	IR Document	Future Activities
		via surface water migration which poses significant risks to ecological receptors in the wetlands.		
Building 3009, PWC Guam	Building 3009 was used as an electrical transformer repair shop from 1950 to 1977. Electrical transformers were overhauled there which involved the cleaning and repairing of parts and the recycling of transformer oils. Four storage tanks were located beside the building with two filtering systems; one for mineral oil and the other for PCB oil. In 1977, the PCB filter system and piping were removed due to leakage from the PCB storage tank.	Soil samples taken around the building and along a portion of the nearby drainage ditch identified significant polychlorinated biphenyls (PCB) contamination. A Removal Action was performed using the Base Catalyzed Decomposition Process (BCDP) due to the high levels of PCB detected at the site. A Remedial Investigation (RI) will be conducted to further characterize this site. Additional soil samples were taken in Nov 1998 to determine the extent of 2 hot spots.	Final Remedial Verification Report (Dec 1998).	A Remedial Investigation (RI) is scheduled for FY 2001
Carpentry Shop Dip Tank, PWC Guam	The Carpentry Shop Dip Tank Site was used continuously from 1953 to 1972 and sporadically until 1979 to preserve wood. Pentachlorophenol (PCP) and other preservatives including metal salt solutions (containing arsenic, chromium, copper, and zinc); aromatic-based oil and methylene chloride (possibly as a carrier for PCP) were the wood preservative used. The dip tank consisted of a below-grade vault made of steel reinforced concrete. Wood was dipped in a wood preservative solution and allowed to drip dry. Drippings landed on an adjacent concrete slab that drained to the dip tank or a large unpaved ditch via a concrete gutter. The dip tank vault was left in place and backfilled level with the ground surface, the drying rack and above ground storage tank were removed in 1979.	Groundwater, sediment and surface and subsurface soil samples were collected and analyzed to determine the extent of contamination. volatile organic compounds (VOCs), pentachlorophenol (PCP), polynuclear aromatic hydrocarbons (PAHs), dioxins, fuel hydrocarbons and elevated concentrations of arsenic, chromium, copper, and zinc were detected on this site. The contaminants were primarily detected in surface sediment, surface and subsurface soil and groundwater samples. The preliminary results of the human health risk and ecological risk assessments indicate that the site does not pose a significant risk to humans nor to the environment.	Draft Remedial Investigation (RI) Report (Jul 1995) Final Field Sampling Plan and Quality Assurance Project Plan Addenda (May 1999)	Based on comments on the RI Report from the regulators, additional groundwater sampling is required. Additional groundwater sampling is planned for July 1999.

Site Name	Description	Site Information	IR Document	Future Activities
South Finegayan CB Landfill, PWC Guam	The Construction Battalion (CB) Landfill site was used from 1944 to 1959 as a disposal area for wastes from the CB maintenance shop operated in the area. Scrap metal, waste oil, and solvents, lead-based paints, tires and equipment parts were disposed at the site. The wastes observed in the landfill include concrete and metallic construction debris, glass bottles, tires, and vehicle parts, pipes, domestic wastes, and burned liquid and solid wastes. Additionally, the pesticide DDT was heavily applied to the site.	Groundwater and surface and subsurface soil samples were collected and analyzed to determine the extent of contamination. DDT, polynuclear aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), fuel hydrocarbons, and volatile organic compounds (VOCs); as well as elevated concentrations of antimony, arsenic, lead, mercury, and zinc were detected in the soil samples. Ground water samples contained elevated concentrations of some metals and low levels of VOCs and semi-volatile organic compounds which are common laboratory contaminants. The results of the human health risk and ecological risk assessments determined that a significant risk exists to humans and the environment via contact with surface soil at the site. The installation of a geosynthetic landfill cap was completed in June 1998 and the baseline groundwater sampling was conducted in May 1999.	Final Design (Jan 1998) Draft Remedial Verification Report (RVR) (Jul 1998) Final General Site Work Plan for Groundwater Monitoring Program (Apr 1999)	Finalize RVR. Maintenance and groundwater monitoring will be performed to ensure cap integrity. Also, moisture monitoring will be performed in 1999 to monitor lateral flow of infiltration.
Dry Cleaning Shop (DCS) Site, COMNAVMAR (formerly NAVACTS)	The DCS Site was in operation from 1952 to 1975 and processed the laundry and dry cleaning for all Naval facilities. Eight underground storage tanks (USTs) were located onsite which contained stoddard solvents (dry cleaning solvents), fuel oils (for use in the cleaner boilers), and brine storage (possibly for water softening treatment). The investigation was initiated because solvents were believed to have leaked from USTs or dumped on the ground as sludge. The solvents may then move to the groundwater.	Soil, wetland sediment, and groundwater samples were collected and analyzed to determine the extent of contamination. Tissue samples from organisms present near the site were also collected. Fuel hydrocarbons, polynuclear aromatic hydrocarbons (PAHs), solvent related compounds, and some metals were found to be the contaminants detected onsite. A certain percentage of metals occur naturally in the soil. Compounds were primarily detected within the subsurface soil around the solvent USTs and the piping associated with the fuel USTs. A 6"-12" thick lens of solvent was detected above the brackish groundwater in the vadose zone (unsaturated soil layer above the groundwater). The result of the baseline human health risk assessment and preliminary ecological risk assessment showed that current contaminant levels at the site do not pose a significant risk to humans nor the environment.	Final Remedial Investigation (RI) Report (Feb 1996)	Based on the comments on the RI Report from the regulators in 1997, additional groundwater sampling is required. Additional groundwater sampling is planned for 2000.

Site Name	Description	Site Information	IR Document	Future Activities
Orote Landfill, COMNAVMAR (formerly NAVACTS)	The Orote Landfill occupies approximately 9.4 acres of land. It was used for the disposal of residential, industrial, and construction wastes from approximately 1944 to 1969. The face of the cliff that surrounds the landfill was reportedly the most active disposal area. Flammable material was burned, and the ashes were buried on the cliff above the nearby cove. Nonflammable materials were either buried behind the cliff or bulldozed over the cliff onto the beach. The beach currently contains a large amount of rusted metal and other debris.	Surface and subsurface soil samples, groundwater and seawater samples, and marine tissue samples were collected to determine the nature and extent of contamination at the Orote Landfill. Soil within the site boundaries have elevated concentrations of PCBs, pesticides, TFHs, PAHs, VOCs, and metals. Low levels of dioxins were detected in soil samples collected within the landfill, but concentrations do not appear to be significantly elevated above samples taken outside the landfill. The Human Health Risk Assessment (HHRA) concluded that site-related contamination does not appear to pose a significant carcinogenic risk to human health. However, site related contamination does present a non-carcinogenic hazard to human health. The modes of exposure are primarily through ingestion of soil, direct contact with soil and ingestion of organisms from the site. In addition, Screening Ecological Risk Assessment (SERA) was conducted under the Removal Site Evaluation (RSE). The RSE concluded that although the groundwater may be slightly impacted by the landfill, the risk to sea life from groundwater at the site is not significant based on a detailed risk assessment. Construction of the seawall started in March 1999.	Final Engineering Evaluation/ Cost Analysis (EE/CA) (Feb 1999) Final 100% Seawall Design (March 1999) Approved Action Memorandum (April 1999) Final Site Work Plan for Seawall Construction (April 1999) Final Revegetation Plan (April 1999) Draft Pilot Test Work Plan (May 1999)	In addition to the installation of a landfill cap, a seawall was designed to prevent erosion of landfill material into the ocean. Construction of the seawall started in March 1999 and is scheduled for completion in Jan 2000. A Revegetation Pilot Test is scheduled to start in Aug 1999.
USS Proteus Fire Fighting Training Area Site, COMNAVMAR (formerly NAVACTS)	The USS Proteus Site was the site of a former fire fighting training pit and two underground fuel tanks. Fire fighting training exercises were performed at USS Proteus from 1965 to 1969. In these exercises, 55-gallon drums or pontoons were cut in half, filled with diesel fuel and gasoline (supplied by the underground fuel tanks) and then ignited.	Soil, groundwater, marine sediment were collected and analyzed to determine the extent of contamination. Tissue samples from organisms present near the site and sediment bioassay were also conducted. Two primary areas had elevated levels of contamination: (1) the USTs area consisting of a gasoline and a diesel tank, the contents of which were pumped out in April 1994, and (2) a fire fighting training burn pit area consisting of wire mesh and charred soils. Although no evidence of fuel leakage from the USTs was detected, elevated PAHs were detected around the vent pipes above the USTs. The contamination above the USTs was thought to be the result of spillage or overfilling. The burn pit area had elevated levels of	Closure Report (July 1998) Draft Decision Document (June 1999)	Finalize the Decision Document for site closeout.

Site Name	Description	Site Information	IR Document	Future Activities
		TFHs and VOCs. No significant groundwater contamination was found at the Proteus Site. The two underground fuel tanks and the contaminated soil in the burn pit were excavated and removed in October 1997. Samples were taken to ensure that the cleanup goals are met. The excavation pits were backfilled with clean materials and the site was restored to the original grade. The contaminated soil was treated by bioremediation in February 1998. No further cleanup action is planned for this site.		
NEX Garage Septic Tank Site, COMNAVMAR (formerly NAVACTS)	The septic tank is a subsurface structure, made of concrete. The septic tank was connected to a waste oil underground storage tank (UST) via an underground pipeline. The waste oil UST was removed in 1987. Another pipeline connected to this septic tank ran out to Agat Bay. From 1955 to 1975, waste oils, automotive fluids, and cleaning solvents which were generated at the NEX Garage Septic Tank Site were disposed of in the waste oil UST.	Soil, groundwater, pipeline sediment, septic tank, marine sediment and biological tissues were collected and analyzed to determine the extent of contamination. Soil and sediment bioassay were also conducted. Low levels of TFHs and PCBs were found in the former waste oil tank area. Low levels of TFHs, PAHs, and some pesticides were found within the pipeline through a manhole access, but no significant levels were found outside the sewer pipeline. Petroleum sludge was found within the concrete septic tank, no significant releases were found to have occurred outside the septic tank. The study concluded that there was no existing threat to human health and environment. The Engineering Evaluation/Cost Analysis (EE/CA) recommended the removal of the septic tank and the oily sludge in the septic tank, cleaning and removing the pipeline between Route 2 and the NEX Garage, and cleaning, capping and closing in place the pipeline between Route 2 and Agat Bay.	Final Engineering Evaluation/Cost Analysis (EE/CA) (Mar 1998) Draft Action Memorandum (Mar 1998) Draft Field Sampling Plan for Post-Removal Confirmation Sampling (June 1998)	After the Action Memorandum is finalized to document the selected alternative, a Work Plan will be prepared for the actual cleanup. The cleanup is planned to start in 2000.

SEAWALL CONSTRUCTION and LANDFILL PILOT TEST
Orote Landfill Site COMNAVMARIANAS, Guam

Fact Sheet No. 5 July 1999

This Fact Sheet describes the ongoing cleanup of contamination at U.S. Naval Forces Marianas (COMNAVMARIANAS) Guam under the Installation Restoration (IR) Program. This is one in a series of informational flyers that will be issued periodically throughout the cleanup process.

INTRODUCTION

This fact sheet provides updated information regarding the construction activities at the Orote Landfill Site, COMNAVMARIANAS Guam. Construction began in March 1999 and will continue until January 2000. In addition, a pilot test to investigate the effectiveness of the revegetation plan will commence in July/August 1999. The previous fact sheet dated February 1999 discussed the 100% design for the seawall.

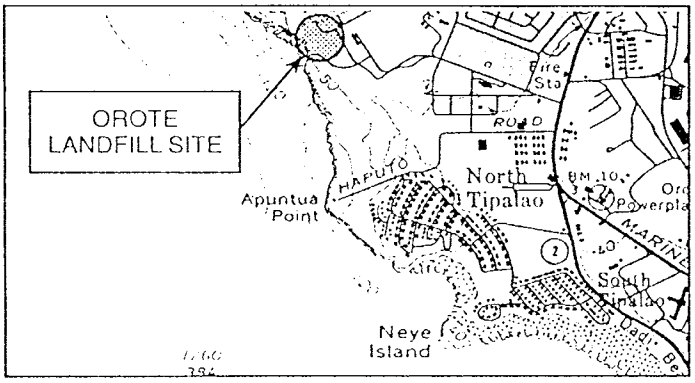

Figure 1. Location Map

BACKGROUND

The Orote Landfill Site occupies approximately 9.4 acres of land within COMNAVMARIANAS on the southern portion of the Orote Peninsula (Figures 1 and 2). The Orote Landfill was used for disposal of residential, industrial, and construction wastes from approximately 1944 to 1969. The face of the cliff that surrounds the landfill was reportedly the most active disposal area. Flammable material was burned, and the ashes were buried on the cliff above the nearby cove. Nonflammable material were either buried behind the cliff or bulldozed over the cliff onto the beach. The beach contained a large amount of rusted metal and other debris. Erosion of the landfill cliff had been observed as a source of the debris on the beach.

SEAWALL

The unprotected cliff at the Orote Landfill site was observed to be retreating due to erosion by the sea. It was recognized that as the cliff has eroded, landfill material that is exposed may be transported to the Philippine Sea. Additionally, the cliff must be stabilized before a landfill cap can be applied over the site. A seawall was therefore included in the Orote Landfill project to stabilize the existing cliff.

The purpose of the seawall is to protect the site from further erosion, enable a landfill cap to be placed on the landfill, and to cap the landfill material currently exposed on the cliff. Further erosion will be prevented since waves will impact the seawall rather than the cliff. A liner is included as part of the design to prevent the waves from coming into contact with the landfill materials. The seawall has been designed by engineers specializing in coastal engineering to withstand the 100-year nearshore wave height of 40 feet such as those that might be generated by large typhoons (Figure 3).

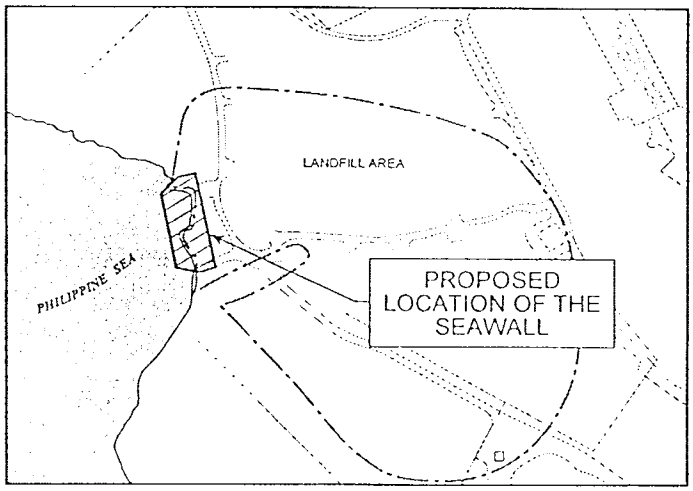

Figure 2. Map of site showing the approximate boundary of the landfill and location of seawall

CONSTRUCTION ACTIVITIES

Construction activities on the seawall began in March 1999. Currently the seawall is approximately 40% completed. Activities completed to date include casting the 24-ton concrete cubes and 75% of the 9-ton concrete cubes, excavating the toe wall trench key, and casting 70% of the toe wall itself (Figures 4 and 5). Future activities include installation of rock anchors, installation of a liner, placement of rock layers, placement of cubes on the slope, and restoring the site. The construction is expected to be completed in January 2000.

PILOT TEST

While construction activities are ongoing for the seawall, a pilot test to assess the effectiveness of the landfill cap will be implemented. This test will include the planting of mature trees over a small segment of landfill cap (built to the proposed design). After a specified period, the trees and root systems will be investigated to check if they might damage the landfill liner. The pilot test will commence in the July/August 1999 time frame.

ENCLOSURES (3)

COMMUNITY INVOLVEMENT

This fact sheet is part of the Community Relations Program for the RI, RSE, and clean-up activities at Orote Landfill Site. This effort is intended to keep you informed of planned or ongoing activities at each site.

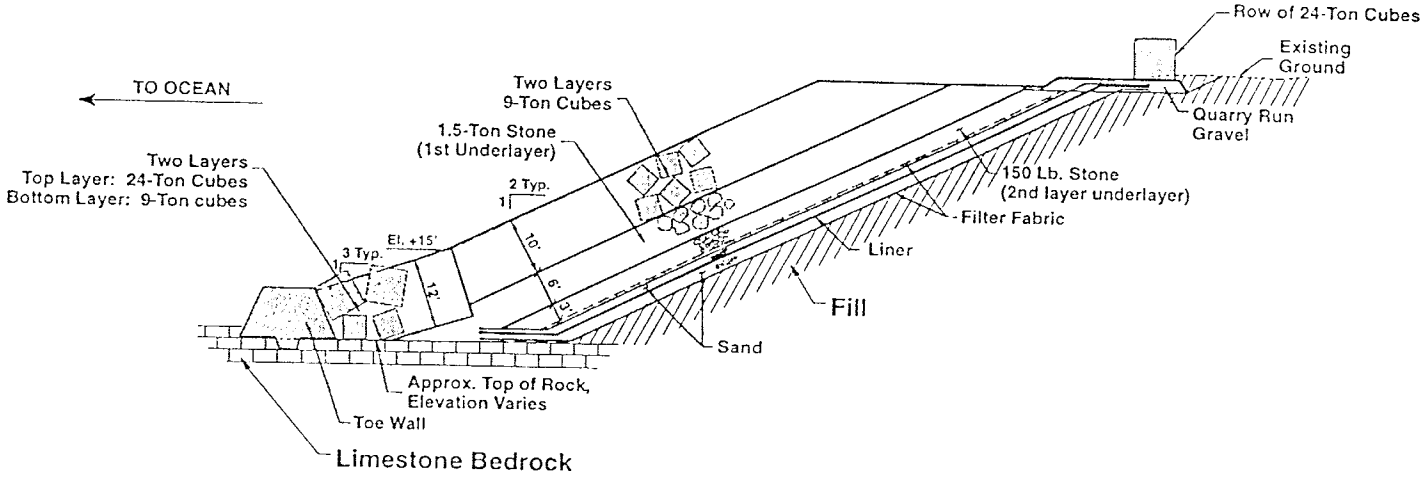

Figure 3. Schematic cross-section of the seawall design

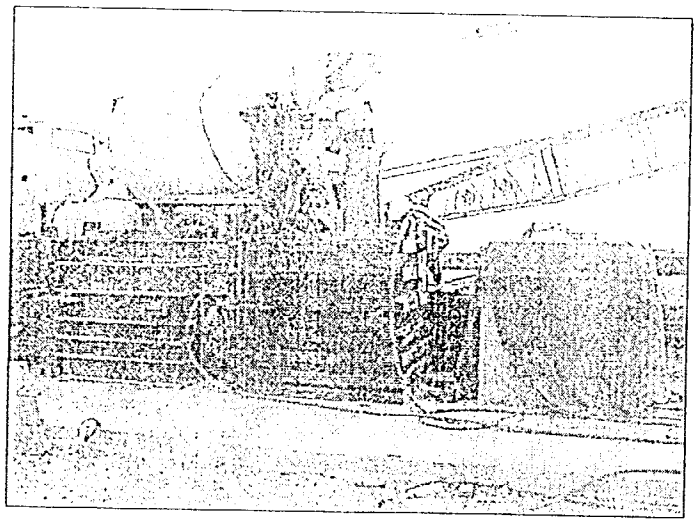

Figure 4. Pouring concrete into 9-ton cube forms

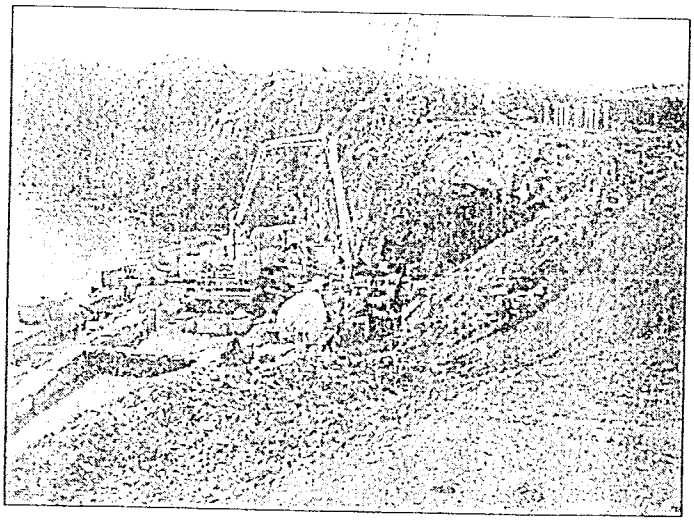

Figure 5. Casting a segment of the toe wall

FOR MORE INFORMATION

For any questions, please contact the U.S. Naval Forces Marianas (COMNAVMARIANAS) at (671) 339-5027. The complete 100% Seawall Design and draft pilot study are currently available for review at the information repository located at Nieves M. Flores Memorial Library at Hagatna.

CLEANUP AT THE SOUTH FINEGAYAN CONSTRUCTION BATTALION LANDFILL U.S. NAVY PUBLIC WORKS CENTER, GUAM

This Fact Sheet describes the ongoing cleanup of contamination at U.S. Public Works Center (PWC) Guam under the Installation Restoration (IR) Program. This is one in a series of informational flyers that will be issued periodically throughout the cleanup process.

Background

The CB Landfill is located within a portion of the former NCTAMS Finegayan (operated by PWC) near the South Finegayan Housing Unit, approximately 1,100 feet west of the intersection of Park Road and Coral Tree Drive (Figure 1). The disposal area is located within a sinkhole and covers an area of approximately 2.6 acres. The site was used from 1944 until 1957 as a disposal area for wastes from the CB maintenance shop operated in the area.

Previous Environmental Investigations

A Site Investigation (SI) was conducted in 1991. The SI included a wetland survey, a soil gas survey, and the collection of groundwater samples. The SI recommended that the site move into the Remedial Investigation (RI) phase to assess the nature and extent of environmental contamination and to provide a preliminary screening of potential risks to human health and the environment.

The RI was completed in 1995 and concluded that surface soils at the landfill presents a potentially unacceptable risk to human and ecological receptors and recommended the presumptive remedy of landfill containment through capping. Based on the RI findings and recommendations, a non-time-critical Removal Action (RA) was conducted at the landfill.

As part of the RA, an Engineering Evaluation/Cost Analysis (EE/CA) was prepared to evaluate and recommend the cleanup alternatives. The recommended alternative was developed to minimize the infiltration of rainwater through landfill materials and to ensure that the landfill does not impact groundwater. The recommended cleanup alternative consists of an impermeable cap with flexible membrane liner, a surface water control system, and a landfill gas collection system which meets both federal and Guam the Environmental Protection Agency (EPA) requirements for landfill containment.

Removal Action

Construction of the impermeable cap for the landfill was completed in June 1998. A post maintenance plan was developed in April 1999 to ensure that the landfill containment system would be properly maintained. Maintenance activities will consist of regular inspection of the landfill cap and trench, as well as monitoring for possible landfill gas. The post maintenance plan includes monitoring for possible lateral flow of infiltration from the perimeter swale towards the landfill.

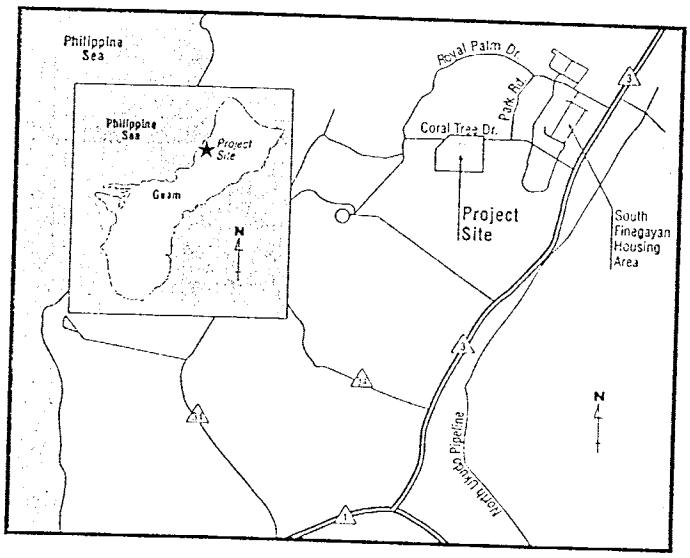

Figure 1. Site Location

Groundwater Monitoring Program

A groundwater monitoring work plan was also developed in April 1999 to ensure the landfill containment system is effective in minimizing impact to groundwater below the landfill. The groundwater monitoring work plan proposes to conduct a baseline groundwater sampling and analysis, a dye tracer study and a groundwater monitoring program.

The baseline groundwater sampling was conducted in May 1999 which established water quality parameters from seven groundwater discharge points, six springs and Lost Pond, located on the coastline (Figure 2) and seven monitoring wells on the site (Figure 3). The baseline results for concentrations of the metal contaminants were lower than EPA's maximum contaminant levels (MCLs) and action levels for drinking water.

ENCLOSURES (1)

Future Activities

A limited dye tracer study is scheduled for July 1999 which will evaluate the suitability of the sampling locations for long term groundwater monitoring. Based on the results of the dye tracer study, a groundwater monitoring program will be initiated that will periodically sample selected wells and groundwater discharge points. The data obtained from the monitoring will be used to verify effectiveness of the cleanup alternative. If the data supports that cleanup objectives were met, a Decision Document will be developed, with input from GEPA, to recommend that further action is not necessary. If the data indicates that the site still poses a significant risk, additional remedial action will be initiated to eliminate or minimize the risk.

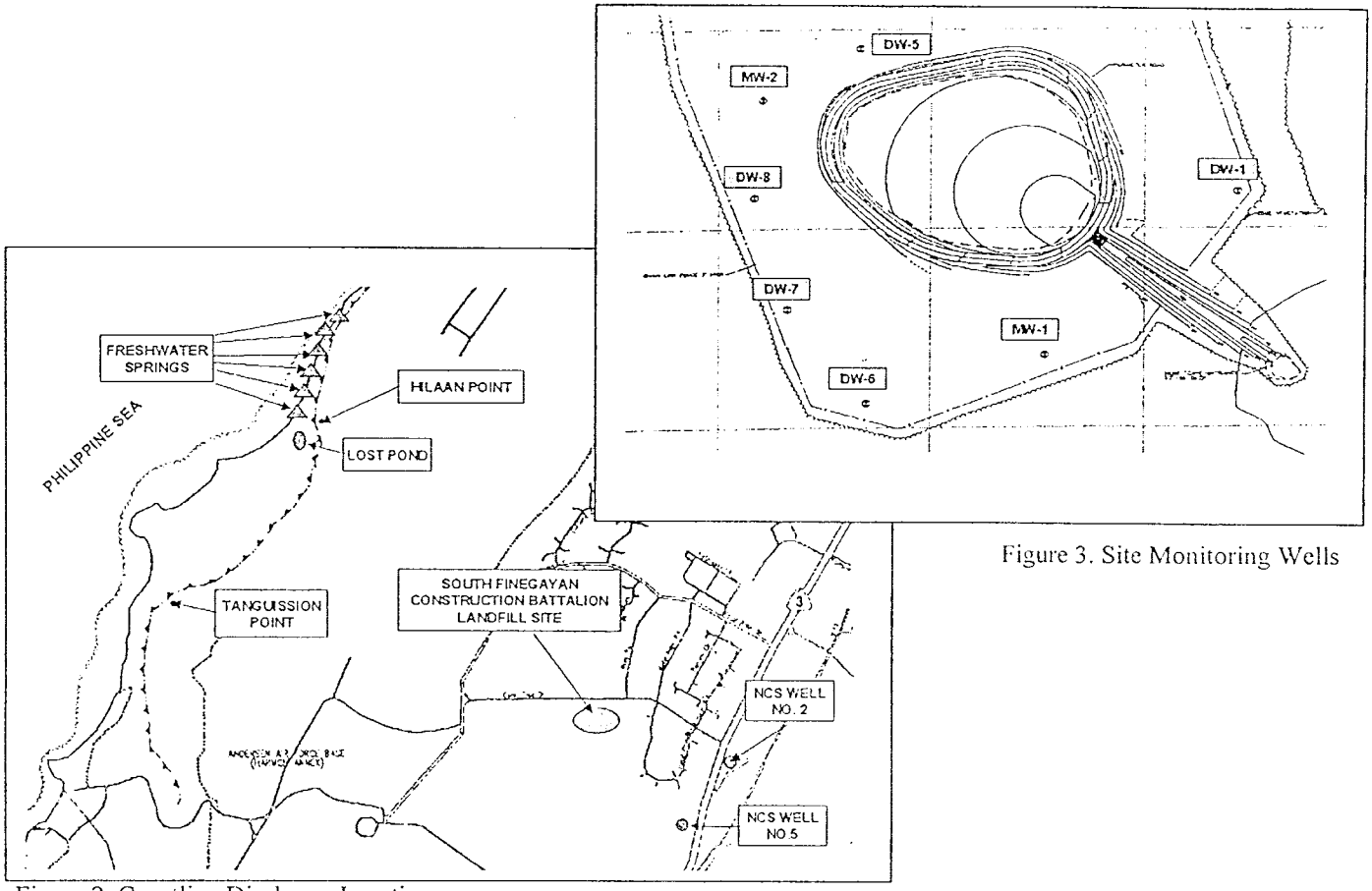

Figure 3. Site Monitoring Wells

Figure 2. Coastline Discharge Locations

FOR MORE INFORMATION

If you have any questions, please contact U.S. Naval Forces Marianas (COMNAVMARIANAS) at (671) 339-5207. The Final RI Report, Final EE/CA, Final Design and Draft GW Monitoring WP are available for review at the Nieves M. Flores Memorial Library in Hagatna, Guam.