

# REMEDIAL INVESTIGATION OF THE OROTE WASTE BURNING/DISPOSAL AREA SITE NAVSTA, Guam

Fact Sheet No. 2  
December 1994

This Fact Sheet describes the ongoing investigation of potential contamination at Naval Station (NAVSTA) Guam under the Installation Restoration (IR) Program. This is one in a series of informational flyers that will be issued quarterly throughout the investigative process.

## INTRODUCTION

The purpose of this fact sheet is to provide updated information regarding remedial investigation (RI) activities at the Orote Waste Burning/Disposal Area Site (Orote Site), NAVSTA, Guam. The purpose of an RI is to characterize contamination at the site and evaluate the threat posed by identified contamination. This fact sheet will discuss the activity that has taken place at the site and the status of the project.

## SITE BACKGROUND

The Orote Site is located on 5 acres of land within NAVSTA Guam, on the western edge of Orote Point, shown in Figure 1. The area extends from a cove and beach, to the cliff above the beach, and then inland to about 200 feet west of the NAVSTA Bachelor Officer Quarters (BOQ). Figure 2 shows an aerial photograph taken of the site.

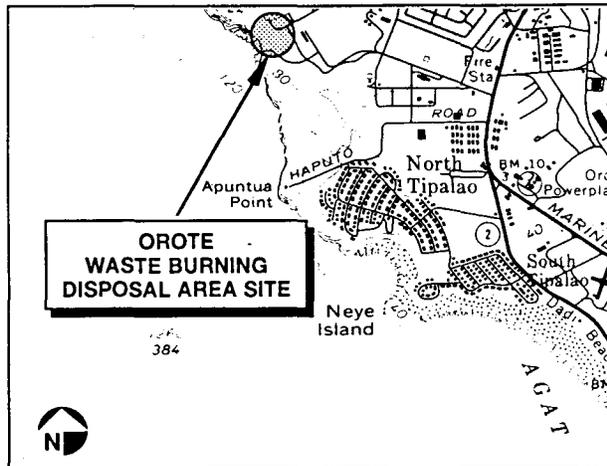


Figure 1. Location Map

The Orote Site was used for disposal of residential, industrial, and construction wastes (including asbestos containing material) from roughly 1944 to 1969. Flammable material was burned, and the ashes were buried on the cliff or bulldozed over the cliff onto the beach. Large amounts of rusted metal are on the beach.

A Site Investigation (SI) was completed in 1990. The purpose was to verify the presence of chemical contamination at the site. A more thorough (RI) was performed in 1993 to gather the data necessary to determine the nature and extent of contamination at the site and to determine any public health and environmental

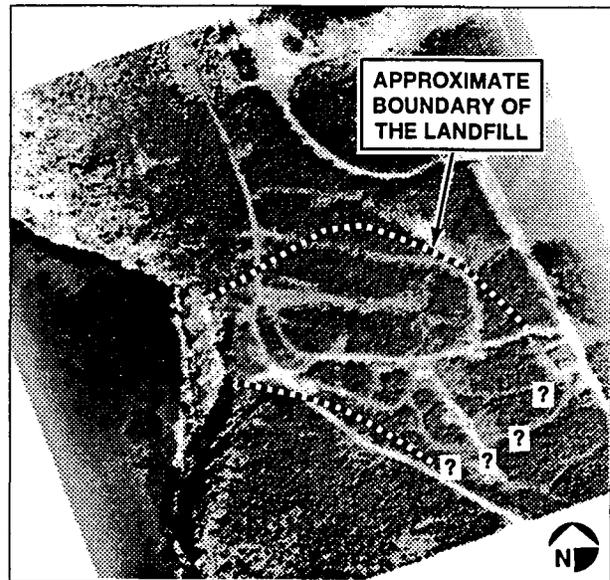


Figure 2. Aerial photograph of site showing the approximate boundaries of the landfill. The line contains question marks where the boundary is not known.

problems; to establish criteria for cleaning up the site; and to identify alternatives for clean up of the site. The final results of the investigation will be discussed in the upcoming Draft RI Report. Preliminary results are discussed below.

## SITE CHARACTERIZATION

Soil, marine sediment, surface-water and ground-water samples were collected and analyzed to determine the extent of contamination. Tissue samples from organisms present on the site were also collected. Contaminants at the site include metals, solvents, fuel hydrocarbons, polychlorinated biphenyls (PCBs), pesticides, asbestos (from construction materials), and low levels of dioxin. Nearly all of these contaminants were found within the landfill soil. Low levels of some pesticides were found in the ground water.

Additional data was collected during a tracer study. The tracer study involved a team of marine and environmental scientists and divers who injected fluorescent dye into the ground water via the monitor wells within the landfill. The divers then identified the discharge location of freshwater springs that receive the ground water from under the landfill. The flow rate, direction of the ground water, and effectiveness of the monitoring well

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network was evaluated by measuring the amount of time that it took the dye, after injection, to reach downgradient monitoring wells and the offshore freshwater springs.

Data obtained from the analysis of samples and the tracer studies was used to conduct a baseline human health risk assessment and a preliminary ecological risk assessment. The risk assessments assist in the determination of which areas should be cleaned up and the level of contaminant concentrations that would not pose a risk for human or ecological health.

The health risk assessment identified the chemicals of potential concern (COPC) at the site based on the chemical concentration in the various media (i.e. soil or water), the exposure pathway (the course a chemical or physical agent takes from a source to an exposed organism), and the toxicity of the chemical (the degree of danger posed by a substance by a living organism). PAHs, PCBs, pesticides, metals, and dioxins and furans were identified as COPCs. The toxicity values and chemical concentrations were used in a statistical model that evaluated the risk to humans. The results of this model showed that the current contaminant levels at the site present a noncarcinogenic risk to humans via soil ingestion, dermal (skin) contact, and ingestion of terrestrial organisms.

Sediment and tissue samples collected from the site contained several chemical compounds. The results of the ecological risk assessment showed that current contaminant levels at the site have the potential for adverse biological effects to the ecology.

### **FUTURE ACTIVITIES**

The Draft RI Report will be issued in December 1994, and will detail all aspects of the contamination, risks posed by the site, and the recommended clean up action. In order to reach a point of closure, it is possible that limited clean up measures will be employed. Options include capping the landfill surface with an impermeable material (such as clay) to prevent rainwater infiltration, fencing of the site to control access, and stabilization of the cliff to prevent erosion.

In addition, evaluation of the data obtained during the RI indicates that contamination may extend further south and/or east than the present study area. Further sampling is recommended to delineate this area. To expedite site clean up, these options have been proposed as a non-time critical removal action in accordance with the National Contingency Plan (NCP). The clean up is expected to occur in 1996.

### **COMMUNITY INVOLVEMENT**

This fact sheet is part of a Community Relations Program for the RI and clean up activities at the Orote Site. This effort is intended to provide information about planned or ongoing activities at the site.

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### **FOR MORE INFORMATION**

For any questions, please contact the Public Affairs Officer, U.S. Naval Forces Marianas at (671) 349-5207.

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