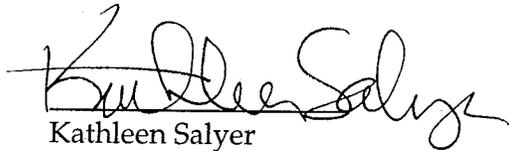


THIRD FIVE-YEAR REVIEW REPORT
FOR
ORDOT LANDFILL SUPERFUND SITE
TERRITORY OF GUAM

September 2007

Prepared for
Contract No. 68-W-98-225/WA NO. 272-FRFE-09A7
U.S. Environmental Protection Agency
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9/24/07

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Acronyms & Abbreviations

µg/L	micrograms per liter
ARARs	Applicable or Relevant and Appropriate Requirements
B&V	Black and Veatch
CCC	Criteria Chronic Concentration
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act as Amended
CSW	Contaminated Storm Water
CWA	Clean Water Act
D&A	Dueñas and Associates, Inc.
DOJ	Department of Justice
GTA	Greenleaf, Telesca and Ahn Consulting Company
Guam DPW	Guam Department of Public Works
Guam EPA	Guam Environmental Protection Agency
GWQS	Guam Water Quality Standards
mg/L	milligrams per liter
MOLO	Manager of Landfill Operations
mph	miles per hour
MSL	mean sea level
MSWLF	Municipal Solid Waste Landfill
NOV	Notice of Violation
NOVs	Notices of Violation
NPL	National Priorities List
O&M	operations and maintenance
Ordot	Ordot Landfill Superfund site
PCB	polychlorinated biphenyl
QA/QC	quality assurance/quality control

ROD	Record of Decision
RPM	Remedial Project Manager
SEP	Supplemental Environmental Project
SWPPP	Storm Water Pollution Prevention Plan
U.S.	United States
USC	United States Code
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOCs	volatile organic compounds
WERI	University of Guam, Water and Environmental Research Institute of the Western Pacific

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name : Ordot Landfill Superfund Site

EPA ID: GUD980637649 **CERCLIS ID :** 09A7

Region: 9 **State:** Territory of Guam **City/County:** Ordot/Chalan Pago

SITE STATUS

NPL status: Final Deleted Other (specify)

Remediation status (choose all that apply): Operating Complete

Multiple OUs? YES NO **Construction completion date:** 1988, "No Action ROD"

Has site been put into reuse? YES NO

REVIEW STATUS

Reviewing agency: EPA State Tribe Other Federal Agency _____

Author name: Pankaj Arora

Author title: Remedial Project Manager **Author affiliation:** EPA Region 9

Review period: October 2002 – August 2007

Date(s) of Site inspection: March 28-30, 2007

Type of review: Statutory
 Policy Post-SARA Pre-SARA NPL-Removal only
 Non-NPL Remedial Action Site NPL State/Tribe-lead
 Regional Discretion)

Review number: 1 (first) 2 (second) 3 (third) Other (specify)

Triggering action:

Actual RA Onsite Construction at OU #__

Actual RA at OU #__

Previous Five-Year Review Report

Construction Completion

Other (specify) _____

Triggering action date: September 30, 2002

Due date (five years after triggering action date): September 30, 2007

Issues and Recommendations

Issue

The compliance of the Government of Guam with the February 11, 2004 Clean Water Act (CWA) Consent Decree (CD) has not progressed as required by the terms defined in the CD. In a continuing effort to implement the CWA CD, the United States filed a motion on March 8, 2007 in the United States District Court for the Territory of Guam to enforce it. The major objectives of the CWA CD are:

- Close the Ordot Landfill in accordance with the Guam Solid Waste Regulations. The closure of the Ordot Landfill will lead to elimination of leachate discharge from the landfill to the Lonfit River; and
- Open a new municipal solid waste landfill in accordance with the Guam Solid Waste Regulations.

The Magistrate for the United States District Court for the Territory of Guam issued a Report with recommendations in response to the United States' Motion on July 6, 2007. EPA is, however, still awaiting a final ruling from the Guam District Judge.

Recommendation

It is recommended that, by September 2009, the USEPA Superfund Program should assess the progress of the implementation of actions pursuant to the enforcement of the CWA Consent Decree.

Protectiveness Statement

This review finds that the "no action" remedy under Superfund is expected to be protective of human health and the environment upon completion of all actions required under the Consent Decree between the United States and the Government of Guam that incorporates provisions of the Clean Water Act and requires closure of Ordot Landfill and construction of a new Municipal Solid Waste Landfill.

Executive Summary

The Ordot Landfill Superfund site (Ordot, or the site) is located near the villages of Ordot and Chalan Pago in the center of the Island of Guam, a United States (U.S.) territory. The site has been a dumping ground since the 1940s, serving as Guam's primary landfill for industrial and municipal waste. The site is currently operated by the Government of Guam through the Guam Department of Public Works (Guam DPW).

The site was listed on the National Priorities List (NPL) in September 1983 after it was designated by the Governor of Guam as Guam's highest priority site for Superfund cleanup. No imminent and substantial endangerment to human health or welfare or the environment were noted in the site characterization report published by the United States Environmental Protection Agency (USEPA) in 1987. In September 1988, USEPA issued a Record of Decision (ROD) that called for "no action" under the Superfund Program, deferring future actions under the Comprehensive Environmental Response, Compensation, and Liability Act as Amended (also known as CERCLA or Superfund) until completion of actions to be undertaken pursuant to USEPA's Clean Water Act (CWA) authorities. The CWA was deemed to be best suited to address the unpermitted discharge of pollutants from the Ordot Landfill to the waters of the United States (the Lonfit River). Under the CWA, an order was issued to the Government of Guam to eliminate unpermitted discharge from the landfill to the Lonfit River.

The first five-year review for Ordot was completed in September 1993 and the second in September 2002. The first five-year review did not indicate any apparent areas of non-compliance with regard to the no-action ROD. The results of the second five-year review indicated that the "no action" ROD was not functioning as intended and was not protective of human health and the environment. The finding was primarily based on the continual discharge of landfill leachate to the Lonfit River and poor operational practices at the site.

This report is the third five-year review that has been conducted for the Ordot site as mandated by statute under CERCLA. This five-year review was performed in accordance with the USEPA Guidance published in 2001 for conducting the five-year reviews at Superfund sites. The report is a compilation of information gathered by site-related document review, data review, site inspection, and interviews with key personnel familiar with the site.

The review finds that the "no action" remedy under Superfund is expected to be protective of human health and the environment upon completion of all actions required by the February 11, 2004 Consent Decree (CD) signed under the CWA. The CWA CD requires closure of Ordot and opening of a new landfill in accordance with the Guam Solid Waste Regulations. In the interim, improved operations should result in potentially unacceptable risks being controlled.

1.0 Introduction

The United States Environmental Protection Agency (USEPA) conducted a third five-year review of the “no action” Record of Decision (ROD) implemented at the Ordot Landfill Superfund site (Ordot), in the Territory of Guam (Figure 1-1). This review was conducted from January to August 2007 and covers the period since the previous five-year review, which was conducted in 2002. This report has been prepared by USEPA, with assistance from EPA’s support contractor CH2M HILL, in accordance with USEPA’s guidance document, *Comprehensive Five-Year Review Guidance* (USEPA 2001).

The purpose of the five-year review process is to evaluate whether the remedy for the site is protective of human health and the environment. The methods, findings, and conclusions of the review process are documented in five-year review reports. In addition, the five-year review report identifies deficiencies, if any, found during the review and provides recommendations for addressing them.

This review is required by statute. USEPA must implement five-year reviews consistent with CERCLA Section 121(c), as amended, which states: “If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented.” This responsibility is delegated to USEPA by the President.

In September 1988, USEPA issued a Final ROD (USEPA 1988) that selected a “no action” remedy under the Comprehensive Environmental Response, Compensation, and Liability Act as Amended (CERCLA, also known as Superfund) and deferred future actions at the site to the Clean Water Act (CWA) program. The determination was based on several facts:

1. USEPA data, although too limited for comprehensive conclusions, had not demonstrated any imminent and substantial endangerment to human health or welfare or the environment.
2. On March 26, 1986, USEPA issued an Administrative Order under the CWA, 33 United States Code (USC) Section 1251 et seq., that required the Guam Department of Public Works (Guam DPW), the site operator, to cease discharge of leachate from the site to the Lonfit River.
3. The site is an operating municipal landfill.
4. Any remedy for the inactive areas likely would have been affected by activities at the active waste disposal areas or continued leachate flows through the landfill.
5. All but approximately 4 to 7 acres of the site were downgradient of or immediately adjacent to active waste disposal areas.
6. The bulk of any environmental impacts from the landfill result from activities at the active waste disposal areas.

7. The landfill, by applying standard operating practices (daily cover, etc.) to control landfill leachate, would effectively reduce or eliminate the surface flow of leachate to receiving waters.

The first five-year review of the no-action ROD was conducted by USEPA and signed on September 30, 1993 (USEPA 1993). No apparent areas of noncompliance were noted with regard to the no-action ROD; however, the extent of compliance achieved by the Guam DPW in response to the CWA Administrative Order was not evaluated.

The second five-year review was completed by USEPA, with assistance provided by CH2M HILL, in September 2002. This review found the no-action ROD not to be functioning as intended, and not protective of human health and the environment. The finding was primarily based on the continual discharge of leachate from the landfill to the Lonfit River and also due to poor daily operational practices at the landfill.

This is the third five-year review report for Ordot. The triggering action for this review is the date of issuance of the second five-year review report, September 30, 2002.



Additional content added by CH2MHILL

FIGURE 1-1
SITE LOCATION MAP
 ORDOT LANDFILL
 TERRITORY OF GUAM
CH2MHILL

2.0 Site Chronology

Provided in Table 2-1 is the chronology of key events associated with the Ordot Landfill Superfund site.

TABLE 2-1
Chronology of Site Events
Third Five-Year Review Report for Ordot Landfill Superfund Site, Guam

Event	Date
Dumping ground used by Japanese and U.S Naval military forces	1940s
Transfer of site from U.S Navy to the Government of Guam	November 1, 1950
Remedial Investigation of Insular Territory Hazardous Waste Sites	November 8-12, 1982 (draft report May 20, 1983)
Site Placed on National Priorities List	September 8, 1983
USEPA Clean Water Act (CWA) Notice of Violation (NOV) and Order to Guam DPW to cease discharge of leachate to the Lonfit River	March 26, 1986
Initial Site Characterization Report	November 18, 1987
No Action Record of Decision (ROD)	September 1988
USEPA Clean Water Act Administrative Order to Guam DPW to develop an Operations Plan and design and construct a cover system designed to stop pollution of the Lonfit River	July 24, 1990
First Five-year Review Report	September 30, 1993
Superfund emergency response to Ordot tire fire	December, 1998
U.S. Department of Justice (DOJ) files complaint against Government of Guam for CWA violations	August 7, 2002
Ordot fire	October 2002
Second Five-Year Review Report	September 30, 2002
Impact of Ordot Dump on Water Quality of Lonfit River Basin in Central Guam report published by the United States Geological Survey	2004
Consent Decree between the United States of America with the U.S. Department of Justice, and the Government of Guam. (See list below of the activities related to the Consent Decree)	February 11, 2004
USEPA assessed stipulated penalties of \$7,250 against Government of Guam for its failure to identify a preferred site for the new landfill as required by the 2004 CWA Consent Decree	January 5, 2006
USEPA assessed stipulated penalties of \$7,500 against Government of Guam for its failure to submit 90% Draft Final Plan for the new landfill as required by the 2004 CWA Consent Decree	February 13, 2006
USEPA assessed stipulated penalties of \$7,500 against Government of Guam for its failure to submit 90% Draft Final Plan for the new landfill as required by the 2004 CWA Consent Decree	March 7, 2006

TABLE 2-1

Chronology of Site Events

Third Five-Year Review Report for Ordot Landfill Superfund Site, Guam

Event	Date
USEPA fines Guam DPW \$58,500 for failing to comply with the 2004 CWA Consent Decree deadlines, including: <ul style="list-style-type: none"> -Failure to submit Draft Wetland Mitigation Plan for Ordot Landfill -Failure to award a construction contract by April 20 for Closure of Ordot Landfill 	May 5, 2006
Guam Environmental Protection Agency (Guam EPA) publishes Fact Sheet on Integrated Solid Waste Management Plan Update for Guam	September 2006
Ordot fire, Public Advisory issued	November 26, 2006
U.S. files Motion to Enforce CWA Consent Decree. Guam also files Motion to Modify CWA Consent Decree.	January 31, 2007
U.S. District Court Magistrate holds hearing on the respective motions	March 8, 2007
Magistrate Judge issues "Report and Recommendation" concerning the Ordot Dump. The Report granted the U.S. Motion in part, denied Guam's Motion, and recommended that various conditions and interim milestones be imposed upon Guam. However, EPA is still awaiting a final ruling from the Guam District Judge.	July 6, 2007
February 11, 2004 CWA Consent Decree Related Activities	
Draft Closure Plan prepared for Guam DPW by Dueñas and Associates Project Team	December 2004
Final Draft Ordot Dump Ordot-Chalan Pago, Guam Environmental Data Summary Report prepared for Guam DPW by Dueñas and Associates Project Team	December 2004
Final Draft Environmental Baseline Study Ordot Dump Volume I prepared for Guam DPW by Dueñas and Associates Project Team	December 2004
Final Draft Ordot Dump Ordot-Chalan Pago, Guam Geotechnical Summary Report prepared for Guam DPW by Dueñas and Associates Project Team	December 2004
Final Draft Solid Waste Management Facility Application for Authorization of Continued Use prepared for Guam DPW by Dueñas and Associates Project Team	December 2004
Government of Guam selects the Dandan site as the location for the new municipal solid waste landfill	January 2005
Dandan site approved as the preferred site for development of the new landfill by the USEPA	March 2005
90% Draft Final Closure Plan prepared for Guam DPW by Dueñas and Associates Project Team	May 2005
Draft Final Post Closure Care Plan prepared for Guam DPW by Dueñas and Associates Project Team	May 2005
Final Closure Plan prepared for Guam DPW by Dueñas and Associates Project Team	July 2005
Continued use of Ordot as Guam's only municipal dump	Present

3.0 Site Background

The Ordot Landfill is located near the Village of Ordot on the Island of Guam. Figure 1-1 presents a regional map showing the location of the site. The Island of Guam is located in the western Pacific Ocean, approximately halfway between Japan and New Guinea. The island has an area of approximately 212 square miles, with a length of 30 miles and a width ranging between 4 and 11.5 miles.

3.1 Physical Characteristics

3.1.1 Site Description

The Ordot Landfill was established in a ravine which slopes steeply to the Lonfit River. The site has been a dumping ground since the 1940s, serving as Guam's primary landfill for industrial and municipal waste. Engineering controls typical of landfill operating procedures have not been fully applied at the Ordot Landfill. The landfill does not have a base liner system to prevent subsurface migration of infiltrating rain water. In general, minimal, if any, control systems have been applied in the form of management systems for landfill gas, leachate, surface water, and erosion of the landfill area. Additionally, few controls are in place for vectors, e.g., flies, wild pigs etc. (Dueñas & Associates [D&A] and URS 2005a).

The site is currently operated by the Government of Guam through the Guam DPW. Current landfill operations generally cover the entire traversable, available landfill area, with the exception of inaccessible areas along the toe and edges of the landfill. The landfill footprint is approximately 47 acres (D&A and URS 2005a). The depth of disposed waste at the time of the ROD was approximately 100 feet (USEPA 1988), and the current depth of waste could be over 200 feet, which is approximated based upon the number and thickness of lifts that have been placed since the ROD was issued. Precise waste limits, both vertical and horizontal, will be defined as part of closure construction (D&A and URS 2005c). There are several lifts of waste that were put in at varying thicknesses. However, most lifts appear to range between 8-10 feet in depth.

3.1.2 Climate

Guam's climate is tropical with an average annual temperature of 81° F. The maximum and minimum average monthly temperatures observed during the period 1945-1982 are 87° F in June, and 74.5° F in February, respectively (D&A and URS 2005a). The wet season in Guam, including the typhoon season, typically lasts from July through December. Average monthly rainfall during the wet season is approximately 14 inches. During the dry season in Guam, January through June, average precipitation ranges from 3 to 6 inches per month. Higher relative humidity values are generally observed during the wet season. Average monthly humidity ranges from 83 to 89 percent in the morning, and ranges from 66 to 77 percent in the afternoon. The prevailing wind direction is easterly for the majority of the

year, with an east northeasterly wind direction prevailing during the months of January through March (D&A and URS 2005a).

The island of Guam is subject to a range of sustained high wind weather events including tropical depressions (23-39 miles per hour (mph)), tropical storms (39-74 mph), typhoons (74 mph and greater), and super typhoons (147 mph and greater). While the majority of tropical storms and typhoons occur during the wet season, typhoons have been observed to occur in the dry season as well. Four super typhoons have passed over Guam since 1991, with the most recent super typhoon, Supertyphoon Pongsona, passing over Guam in December of 2002 (D&A and URS 2005a). The United States Geological Survey (USGS) reported this as the second severe typhoon event of the year. The USGS described Super Typhoon Pongsona as bringing “catastrophic levels of rainfall” and winds greater than 180 miles per hour (USGS 2002).

3.1.3 Topography and Surface Water Drainage

The site is located in a basin between two ridges in a volcanic upland region near the center of Guam at an elevation of 200 feet above mean sea level (MSL). North of the landfill the elevation increases with a 15 to 30 percent slope from a general elevation of 260 ft MSL. The land elevation to the south gradually decreases in the direction of the Lonfit River, from an elevation of 100 – 115 ft MSL to 30 ft MSL. To the east of the landfill is the eastern ridge of the basin, or ravine, which is observed by an abrupt land elevation increase and decrease (D&A and URS 2005a). The topography of the landfill can be described as a series of waste lifts with the top formation resembling a plateau with a general elevation of 308 ft MSL. While there were observed variations in the peaks of the waste lifts, the lowest and highest elevations of waste were recorded at 115 ft MSL and 318 ft MSL, respectively.

Three surface water streams are identified on and around the footprint of the landfill. All of these streams merge with the Lonfit River south of the landfill. One stream is positioned along the western side of the landfill, and collects surface water runoff from areas west and north of the landfill and from the landfill itself, including seepage. South of the landfill is another stream, originally a gully prior to the landfilling operations. The water supply to this stream comes predominately from the landfill runoff and landfill seepage. The third stream runs along the eastern side of the landfill and collects runoff and seepage from the eastern portion of the landfill (D&A and URS 2005a). Surface water ponding does occur in an area east of the active part of the landfill. Both surface water and leachate accumulate in this depressed area which has been observed to then drain into the Lonfit River (D&A and URS 2005a).

3.1.4 Geology

The Island of Guam is divided into two distinct geologic divisions by the east/west Adelup-Pago fault: a southern half comprising rugged volcanic upland of the Alutom Volcanic Series, and a northern half characterized by a limestone plateau of the Mariana Limestone, Agana Argillaceous Member. The site is situated in the center of the island, near the divide between the northern limestone and southern volcanic provinces (D&A and URS 2005a). The Environmental Baseline Study describes this divide as follows:

“The vertical displacement caused by the fault is about 400 feet, which results in a downthrow of the original volcanic surface from 200 feet above sea level to 200 feet below sea level just a thousand feet away from the Dump.” (D&A and URS 2005a)

The site rests upon the weathered surface of the Alutom formation. The southern surface drains south towards the Lonfit River, while the northern façade of the drainage divide slopes downwards towards the North Guam limestone plateau. It is this Northern Guam limestone plateau that provides the majority of island groundwater resources (D&A and URS 2005a).

The Alutom formation and residual surface products are comprised mainly of tuffaceous shale and sandstone interbedded with basaltic and andesitic lava flows, and beds of volcanic conglomerate and breccia (D&A and URS 2005a). The settlement of these rock layers resulted in general low permeability, although secondary fractures could allow for some hydraulic communication through the formation (D&A and URS 2005a). Despite the low permeability of the Alutom formation, these rocks are not considered impervious (D&A and URS 2005a).

3.1.5 Hydrogeology

The Alutom formation, beneath the landfill, is known to be a very poor medium for groundwater movement. This has been verified based on several pump tests in areas both in and outside of the Ordot Landfill area. One of the earlier studies in the Ordot area, conducted by Greenleaf, Telesca, and Ahn (GTA) Consulting Company in 1970, reported hydraulic conductivity values of between about 0.04 ft/day and 0.45 ft/day in shallow boreholes (10 to 15 feet below ground surface). These values are similar to hydraulic conductivity values determined from pumping tests in deep wells completed in 1982 in the same formation in other areas of Guam. In addition, Guam DPW's consultant recently estimated the velocity of the groundwater to be approximately at 0.14 ft/day (D&A et al. 2005). This velocity is much less in comparison to the groundwater velocity of greater than 10 ft/day that is characteristic to the limestone area of Northern Guam (D&A et al. 2005).

Because of the low permeability of the Alutom volcanic formation, a likely transport pathway for the leachate is described in the Environmental Data Summary Report as follows:

“Conceptually, the principal leachate flow infiltrates vertically to the refuse or saprolite interface with the rock, and then flows laterally along the interface between the saprolite and alluvium and the underlying volcanics.” (D&A et al. 2005)

Preferential flow paths might exist within the Alutom volcanic formation due to secondary fractures in the formation. The existing data are not sufficient to discern existence of these preferential flow paths (D&A et al. 2005).

3.2 Land and Resource Use

The Government of Guam maintains ownership of the Ordot Landfill Site and the landfill is operated by the Guam Department of Public Works. The landfill footprint is approximately 47 acres. The area adjacent to the site includes a mix of grassland, and tropical ravine with

dense brush. Additionally, areas of the landfill have encroached into wetlands. A wetland mitigation plan has been developed as part of the closure plans which shows three areas that meet the criteria per the U.S. Army Corps of Engineers Wetland Delineation Manual. Two areas are located on the south side (where the encroachment is occurring) toward the Lonfit River and one is to the west.

The land occupied by the landfill and its surrounding areas is zoned for agriculture, per the 1978 Department of Land Management Zoning Map (D&A and URS 2005a). Despite the zoning, there are approximately five residential properties within 1,500 feet of Ordot Landfill. At one of the residential structures positioned east of the landfill, evidence of subsistence agriculture was observed from aerial photographs taken September 2004 (D&A and URS 2005b). Less than one mile northeast of the Ordot Landfill is the Agueda Johnston Middle School (D&A et al. 2005). The Lonfit River bounds the site to the south, approximately 500 feet away from the toe. Guam's capital city of Hagatna is positioned approximately 2.5 miles north of the landfill site (D&A and URS 2005a).

3.3 History of Contamination

The site has been in operation beginning in the 1940s, serving as an industrial and municipal landfill for a variety of uncontrolled wastes, including spent industrial and commercial chemicals, polychlorinated biphenyl (PCB)-contaminated oils from transformers, and munitions. Historically, records documenting the nature and quantity of hazardous wastes disposed at the site were not maintained. Potentially responsible parties that could be identified as contributing to the contamination at the site include the United States Navy and the Government of Guam (USEPA 1988).

3.4 Initial Responses

At the request of the Governor of Guam, the Ordot Landfill was proposed for the Superfund National Priorities List (NPL) in 1982 and was placed on the NPL on September 8, 1983. In March 1987, the Superfund Division of USEPA published the initial site characterization report. The report indicated a slight degradation in groundwater quality due to the landfill but little potential for the landfill impacting the Northern Guam Water lens. This investigation report recommended instituting measures to control leachate, including a cover system, perimeter drainage collection system, and/or cutoff walls.

Also, the results of the remedial investigation for the Ordot Landfill Superfund site conducted by Black and Veatch (B&V) Consulting Company for the Insular Territories during 1982 indicated low levels of contamination detected in leachate, surface water, and sediment samples attributable to the landfill (B&V 1983). The investigation also indicated that the site poses little hazard to the Northern Guam Water lens; therefore, remedial actions under USEPA's Superfund Program were not recommended.

However, the investigation report noted that due to the uncontrolled discharge of leachate from the site, the potential existed for increased pollution of Lonfit and Pago Rivers and, subsequently, Pago Bay. The report also indicated that exposed hazardous materials at the landfill are a human health and ecological concern.

3.5 Basis for Taking Action

The site was listed on the Superfund Program's NPL in September 1983 at the request of the Governor of Guam. On March 26, 1986, USEPA issued an Administrative Order under the Clean Water Act, 33 USC Section 1251 et seq. that required the Guam DPW to cease discharge of leachate from the site to the Lonfit River. The September 1988 Ordot Landfill ROD under Superfund selected a "no action" remedy with deferral of any further Superfund actions at the site until the completion of actions under the USEPA's CWA program (USEPA 1988). As part of the "no action" remedy under Superfund Program, the ROD stated that EPA would collect additional data to determine if any contaminants from the landfill were migrating toward the sole source groundwater aquifer.

4.0 Remedial Actions

The September 1988 Ordot Landfill Superfund Site ROD selected a “no action” remedy with deferral of any further Superfund actions at the site until the completion of actions under the USEPA’s CWA program (USEPA 1988). As part of the "no action" remedy, the ROD stated that EPA would collect additional data to determine if any contaminants from the landfill were migrating toward the sole source groundwater aquifer.

From the time the ROD was issued in 1988 to 1993, Guam DPW made some operational improvements including installation of a diversion ditch upgradient of the landfill that diverted water from an artesian spring away from the landfill prism, increasing waste cover practices and stabilizing the toe of the landfill (USEPA 1993). These efforts resulted in some reduction of discharge of leachate from the site. However, during a 1997 CWA compliance inspection conducted by Guam Environmental Protection Agency (Guam EPA), leachate was observed running off-site.

In 1992, USEPA installed two post-ROD monitoring wells (MW-01 and MW-02) shown on Figure 6-1. Groundwater samples collected from these wells contained low concentrations of volatile organic compounds (VOCs) that could not be verified, due to the fact that VOCs were also detected in field blanks. Furthermore, some of the VOCs detected could have been associated with chlorination byproducts from the tap water used to develop the wells. In October 1992, USGS installed two monitoring wells (OMW-1 and OMW-2) approximately 500 feet north of the existing landfill boundary (Figure 6-1). Analysis of groundwater samples collected from these wells by the USGS did not detect contaminants.

Due to continued non-compliance with CWA, namely potential impact to adjacent water resources, the United States Department of Justice (DOJ), on behalf of USEPA, filed a complaint against the Government of Guam on August 7, 2002. The intent of the complaint was to achieve CWA compliance and closure of the Ordot Landfill. Subsequently, the United States and the Government of Guam entered into a CWA Consent Decree on February 11, 2004. The Consent Decree mandated the following major actions be performed by the Government of Guam:

- Closure of Ordot and cessation of discharge of pollutants from Ordot Landfill into waters of the United States by September 23, 2007
- Construction and operation of a new Municipal Solid Waste Landfill (MSWLF) on or before September 23, 2007
- Obtaining the financing for closure of Ordot (including operations and maintenance [O&M]) and construction/operation of a new MSWLF

Many of the administrative requirements such as preparation of design documents and drawings have been completed. These are discussed in more detail in Chapter 5.0 of this report. The financial procurement, however, has not been implemented. Therefore no construction activities have occurred to date to either close the Ordot Landfill or construct a new MSWLF.

5.0 Progress Since Last Five-Year Review

The results of the previous five-year review, published September 2002 (USEPA 2002), found the no action alternative selected in the 1988 ROD was not functioning as intended, and was not protective of human health and the environment. The finding was primarily based on the following major observations:

- General lack of proper operation of the Ordot Landfill by Guam DPW;
- Continual discharge of leachate from Ordot Landfill to Lonfit River, hence, non-compliance with the CWA order; and
- Failure of Government of Guam to properly close and contain the Ordot Landfill and open a new landfill that better protects public health and the environment.

The report recommended that after actions are completed, pursuant to CWA, a complete site characterization and risk assessment to evaluate current ecological and human health risks be conducted at the site. Also, it was recommended that future sampling efforts for collecting additional analytical data should be conducted with the appropriate field and laboratory quality assurance and quality control (QA/QC) measures to provide reliable data for ecological and human health risk evaluation purposes.

Since the last five-year review, there have been some noticeable improvements in the operation and maintenance of the Ordot Landfill. For example:

- Increased data acquisition and record-keeping of the landfill operations since 2005;
- More emphasis is placed on providing daily cover material; and
- Separate working areas for residential and commercial wastes and spotters are used to identify unacceptable waste materials such as motor oil and batteries in the residential working area.

With regard to stopping the discharge of landfill leachate to the Lonfit River, no concrete progress has been made by the Government of Guam. Leachate from the landfill continues to discharge to the Lonfit River. Therefore, the Government of Guam is not in full compliance with either of the CWA orders: one issued on March 26, 1986 for cessation of leachate discharge to the Lonfit River, or the other issued on July 24, 1990 which called for development of an operations plan and design and construction of a cover system that will stop pollution of the Lonfit River.

The Government of Guam entered into a Consent Decree under CWA with USEPA on February 11, 2004. The main objective of the CWA Consent Decree is to stop the discharge of leachate to the Lonfit River by closing the Ordot Landfill and opening a new landfill in accordance with the Guam Solid Waste Regulations. The CWA Consent Decree required specific actions and deadlines for their completion. The status of the major action items is as follows:

Submittal of permit application to Guam EPA for continued disposal of municipal waste at Ordot Landfill

To improve the operation of the Ordot Landfill and meet the regulatory requirements, a Final Draft Solid Waste Management Facility Application for Authorization of Continued Use was submitted by Guam DPW to Guam EPA on December 7, 2004. A waste management permit with conditions was issued to the Government of Guam – Department of Public Works, authorizing operation of “A solid waste disposal facility–Ordot Dump” on December 14, 2005. This permit will expire October 23, 2007.

Closure of the Ordot Landfill

In order to prepare for the closure of the Ordot Landfill, the following closure-based documents were prepared by Dueñas and Associates Project Team for Guam DPW. These documents have been submitted to both Guam EPA and USEPA:

- Technical Memorandum: Draft Preliminary Work Plan for the Geotechnical Investigation and Soil Sampling and Analysis-Closure of Ordot Dump, Guam. August 2004.
- Draft Report: Ordot Dump Storm Water Pollution Prevention Plan (SWPPP) Ordot Dump-Chalan Pago, Guam. November 2004.
- Draft Report: Ordot Dump Closure Plan. December 7, 2004.
- Pre-Final Submittal: Ordot Dump Ordot-Chalan Pago, Closure Plan. May 6, 2005.
- Pre-Final Submittal: Ordot Dump Ordot-Chalan Pago Operations Plan. May 6, 2005.
- Pre-Final Submittal: Ordot Dump Ordot-Chalan Pago Post-Closure Care and Maintenance Plan. May 6, 2005.
- 100% Submittal: Ordot Dump Ordot-Chalan Pago, Closure Plan. July 2005.
- 100% Submittal: Ordot Dump Closure Construction Quality Assurance Plan. July 2005.
- Final Estimation of Potential Landfill Gas Yields for the Ordot Dump. July 2005.
- Final Ordot Dump Ordot-Chalan Pago, Environmental Data Summary Report. July 2005.
- Final Ordot Dump Ordot-Chalan Pago, Environmental Baseline Study. July 2005.
- 100% Submittal: Ordot Dump Ordot-Chalan Pago, Guam Hazardous Waste Exclusion Program Plan. July 2005.
- 100% Submittal: Ordot Dump Ordot-Chalan Pago, Guam Procedures for Responding to Citizen Complaints. July 2005.
- 100% Submittal: Ordot Dump Ordot-Chalan Pago, Guam Emergency Contingency Plan. July 2005.
- 100% Submittal: Ordot Dump Ordot-Chalan Pago, Guam Safety Program. December 2005.
- Value Engineering Report: Ordot Dump Closure, Guam. December 2005.

Opening of a New Municipal Solid Waste Landfill (MSWLF)

The 2004 CWA Consent Decree required the following major deliverables associated with opening of the MSWLF:

- Identification of 3 potential sites for the new landfill;
- Completion of an Environmental Impact Statement;
- A 90% Draft Final Plan incorporating the design, construction, and operation of the MSWLF;
- A permit application to Guam EPA for the MSWLF; and
- A Draft Wetlands Mitigation Plan.

In March 2004, Guam EPA published the *Preliminary Landfill Site Suitability Report* (Guam EPA 2004). Three sites were selected as potential landfill locations, and were further screened as alternatives in the *Preliminary Site Selection Report* (D&A 2005a).

The Guam DPW published the *Final Site Selection Report: Environmental Impact Statement for the Siting of a Municipal Solid Waste Landfill Facility, Guam* in 2005 (D&A 2005b). On January 31, 2005, the Government of Guam selected the Dandan site as the location for the MSWLF. Subsequently, the Dandan site was approved as the preferred site for development of the new landfill by the USEPA on March 14, 2005. In May 2005, the *Draft Supplemental Environmental Impact Statement for the Siting of a Municipal Solid Waste Landfill Facility, Guam* was prepared for the Guam Department of Public Works (D&A Project Team 2005).

In April 2006, Guam EPA and USEPA received 90 percent completion level construction design documents and drawings of the proposed Dandan Municipal Sanitary Landfill.

During the period of January through May 2006, USEPA assessed penalties against the Guam DPW for failing to meet various CWA Consent Decree timelines. Details on the various deadlines missed by the Government of Guam are provided in Section 2, Site Chronology.

In a continuing effort to implement the terms of the CWA Consent Decree, on January 31, 2007, the United States filed a motion in the United States District Court for the Territory of Guam to enforce the CWA Consent Decree. On March 8, 2007, the Magistrate for the United States District Court for the Territory of Guam held a status conference with the USEPA and Government of Guam. The Magistrate Judge issued a "Report and Recommendation" concerning the Ordot Landfill on July 6, 2007. The report recommended that the court grant the U.S. Motion in part, deny Guam's Motion to modify the terms of the CWA Consent Decree, and recommended that various conditions and interim milestones be imposed upon the Government of Guam. Although the Magistrate Judge has issued a "Report and Recommendation", USEPA is still awaiting a final ruling from the Guam District Court Judge.

5.1 Summary of Status of Recommendations

Since the Ordot Landfill is not closed and a new MSWLF has not been constructed, the majority of recommendations developed in the Second Five-Year Review (USEPA 2002) have not been fully implemented.

Although the recommendations from the last five-year review have not been fully implemented, a subset of the required compliance and reporting elements stated in the CWA Consent Decree have been implemented. Outstanding activities that need to be completed for compliance with the CWA Consent Decree include opening of the new municipal solid waste landfill and closure of the Ordot Landfill.

6.0 Five-Year Review Process

6.1 Administrative Components of the Five-Year Review Process

This section presents the activities performed during the five-year review process and a summary of the findings. This third five-year review consisted of a review of relevant documents; interviews with community members; interviews with technical staff familiar with Ordot Landfill regulatory requirements and operations; a regulatory review; and a site inspection. Relevant documents reviewed included legal documents pertaining to enforcement of the Clean Water Act, and closure-related technical documents administered by the Guam DPW. One-on-one interviews and a community meeting were held with local residents of Ordot and Chalan Pago to learn what the community members' concerns are regarding the historical and current operations and maintenance practices at the Ordot Landfill. Technical staff from Guam EPA and Guam DPW were also interviewed regarding their knowledge of the technical and management aspects of operation and maintenance practices at the Ordot Landfill. A site inspection was performed by USEPA Region 9 Remedial Project Manager (RPM) and five-year review leader, Pankaj Arora, along with CH2M HILL technical staff, at the Ordot Landfill Superfund Site.

6.2 Community Notification and Involvement

As part of the five-year review process, USEPA published a notification in the Pacific Daily News on March 1, 2007 regarding the preparation of the current five-year review.

Additionally, an informal public outreach meeting was held on March 27, 2007 to give local community members a chance to ask USEPA questions and voice their concerns. The meeting was led by Pankaj Arora, the Superfund RPM for the Ordot Landfill Site.

6.3 Documents Reviewed

As part of the five-year review process, CH2M HILL conducted a review of documents related to activities associated with the Ordot Landfill. The documents reviewed included the second five-year review (USEPA 2002) and reports and investigations performed after the publication of the second five-year review. Appendix A provides a list of the documents reviewed as part of this five-year review.

6.4 Data Reviewed

There has not been any major sample or data collection activity by Guam DPW, Guam EPA, or USEPA, since the last five-year review. However, several studies by other entities have

been completed over the past five years assessing the impact of the contamination at Ordot Landfill on the Lonfit River and Pago Bay:

- **Leachate** - The existing analytical data indicated elevated concentrations of the following in leachate samples: total coliforms, indicator bacteria (*E. coli*, *Enterococci*), nutrients, cyanide, metals, phenolic compounds, p-dichlorobenzene, and selected organic solvents. The leachate samples were periodically collected from four sampling locations starting in the early 1980s, and as recently as 2002 (USGS 2003; see Table 6-1). The locations of these sampling locations are identified in Figure 6-1 (SW-5, SW-7, SW-9, and SW-10).
- **Groundwater** - There have been no new samples collected from the groundwater during the review period. However, groundwater samples will be collected and a groundwater monitoring program will be implemented as a part of the Ordot landfill closure to comply with the Guam Solid Waste Regulations. EPA's Superfund Program expects that the Ordot Landfill closure would be occurring in the next 1-2 years.
- **Surface Water** - Surface water samples were collected by USGS at monthly intervals in the Lonfit and Pago Rivers in 2002-2003 in a study to monitor the effect of the leachate at Ordot on the Lonfit River and Pago Bay. As noted above, leachate samples contained levels of aluminum, antimony, arsenic, chromium, copper, iron, lead, manganese, nickel, vanadium, zinc, and cyanide exceeding the Guam Water Quality Surface Water and/or Drinking Water Standards. However, samples collected in the Lonfit River at the confluence of the site run-off and the River, exceeded surface water quality standards for lead and copper. (Maximum copper concentration was 31 ppb and its corresponding surface water standard is 12 ppb; maximum lead concentration was 4 ppb and its standard is 3.2 ppb) Levels of these inorganic compounds decreased with increasing distance from the landfill and were below surface water quality standards at the next sample location 500 meters downstream.
- **Sediments** - A study was performed by the Water and Environmental Research Institute of the Western Pacific University of Guam in 2005 to assess the impact of the landfill on the sediments in Pago Bay. The results of this investigation determined that sediment transported from the Ordot Landfill is not accumulating over an extended period of time in the Pago Bay. The study concludes that contaminated sediment that is deposited in this area is flushed from the area by major storms, such as typhoons.

TABLE 6-1

Priority Pollutants Detected in Leachate, December 2002^a
Third Five-Year Review Report for Ordot Landfill Superfund Site, Guam

Pollutant	Units	Results	Guam Water Quality Standards (GWQS)	
			Surface Waters ^b	Drinking Water
<u>Bacteria:</u>				
Total Coliforms	MPN Index/100 ml	2,419,200	-	0
<i>E. coli</i>	MPN Index/100 ml	137,400	126	0
<i>Enterococci</i>	MPN Index/100 ml	298,100	33	0
<u>Nutrients:</u>				
NO _x	µg/L	604	100-500 ^c	10, 1 ^d

TABLE 6-1
 Priority Pollutants Detected in Leachate, December 2002^a
 Third Five-Year Review Report for Ordot Landfill Superfund Site, Guam

Pollutant	Units	Results	Guam Water Quality Standards (GWQS)	
			Surface Waters ^b	Drinking Water
NH ₄ -N	mg/L	503	3.08 ^e	-
Ortho-P	µg/L	166	25-100	-
Metals (total):				
Aluminum	µg/L	1,600-4,500	1000	50-200
Antimony	µg/L	9.7	-	6
Arsenic	mg/L	0.007-0.046	0.15	0.01
Barium	µg/L	85-240	-	2000
Boron	mg/L	1.6-5	-	-
Chromium	mg/L	0.017-0.210	0.210 ^{f,g}	0.1
Copper	mg/L	0.023-0.092	0.012 ^g	1.3
Iron	mg/L	0.68-2.9	3.00	0.3
Lead	µg/L	4.7-45	3.20	15
Manganese	µg/L	290-340	-	50
Nickel	mg/L	0.050-0.110	0.052 ^g	0.1
Vanadium	µg/L	26-62	-	-
Zinc	mg/L	0.083-21	0.11 ^g	5
Pesticides:				
p-dichlorobenzene	µg/L	3.4	-	75
Organic Solvents:				
Acetone	µg/L	17	-	-
Benzene	µg/L	3.1	-	5
Ethylbenzene	µg/L	7.3	-	700
Tetrahydrofuran	µg/L	10	-	-
Toluene	µg/L	18	-	100
Cis-1,2-Dichloroethane	µg/L	1.1	-	5
m,p-xylenes	µg/L	8	-	-
o-xylenes	µg/L	3.6	-	-
Others:				
Cyanide	mg/L	0.007-0.016	0.0052	0.2
Phenolic Compounds	mg/L	0.074-0.155	-	-

Notes:

MPN = most probable number; µg/L = micrograms per liter; mg/L = milligrams per liter
 Dashes indicate no standards currently available.

^a Source: *Impact of Ordot Dump on Water Quality of Lonfit River Basin in Central Guam*, USGS Project Synopsis Report, June 2003

^b GWQS for freshwaters only

^c As nitrate nitrogen

^d As nitrate nitrogen and nitrite nitrogen, respectively

^e Criteria Chronic Concentration (CCC) at pH 7.0

^f CCC for Cr³⁺ only

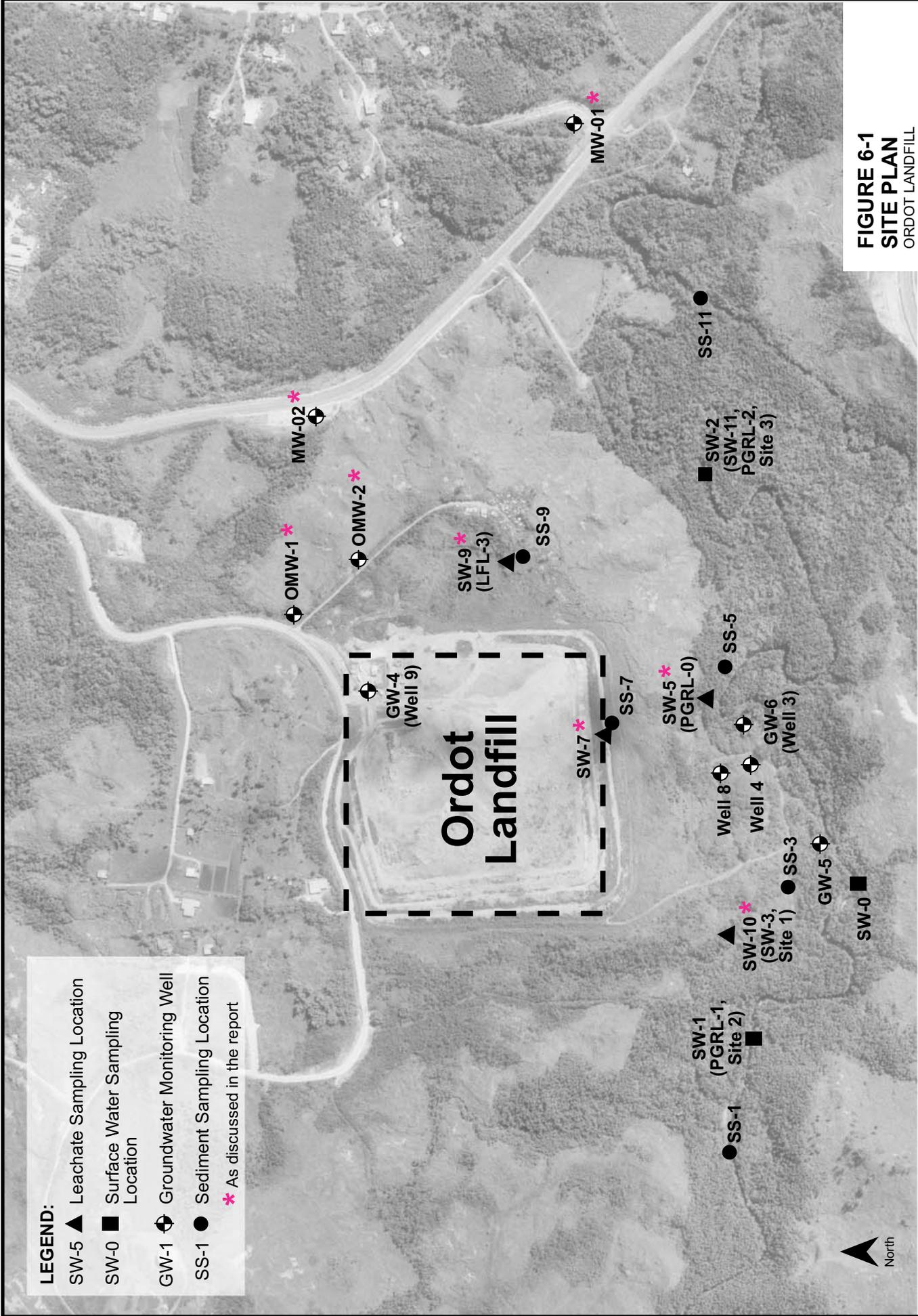
^g CCC estimated for hardness of 100 mg/L

LEGEND:

- SW-5 ▲ Leachate Sampling Location
- SW-0 ■ Surface Water Sampling Location
- GW-1 ◐ Groundwater Monitoring Well
- SS-1 ● Sediment Sampling Location
- * As discussed in the report



FIGURE 6-1
SITE PLAN
ORDOT LANDFILL
TERRITORY OF GUAM



6.5 Site Inspection

Representatives of USEPA, Guam DPW, and CH2M HILL took part in site inspections during March 28-30, 2007. The purpose of the inspections was to assess the operations at the site and evaluate conditions with respect to compliance with the CWA Administrative Order and the CWA Consent Decree. The site inspection checklist and photographs taken during the site inspection are provided in Appendices B and C, respectively.

Weather conditions during the inspection were partly cloudy to overcast with scattered showers, with temperatures of roughly 85 degrees Fahrenheit. The landfill currently rises above the adjacent natural topography on all sides. The recent permit documents including the approved operations plan were available at the site. A formal health and safety program is not currently implemented at the site. In addition, the facility does not have a current National Pollutant Discharge Elimination System permit for discharging leachate into the Lonfit River. The facility currently keeps logs documenting wastes brought to the landfill by commercial haulers, as well as documenting the volume of cover soils placed at the site daily.

Following are some of the key observations from the site visit:

- Leachate pools were observed on benches located along the outside face of the landfill. Leachate is allowed to pond or stream down the slopes. The discharge of leachate from the toe of the landfill and the presence of disease vectors (flies and feral hogs) continues to be a problem at the site.
- Typical single lift thicknesses observed were approximately 8 feet, and lifts were compacted using only the dozer tracks (trash compactor has not been in operation for several years).
- Residential waste areas were well delineated from the active commercial area. Spotters were observed within the residential area looking for unacceptable waste materials such as motor oil and batteries.
- Daily cover material stockpiles were observed being placed along the edges of the landfill, awaiting placement over the sideslopes. Additionally, daily cover material stockpiles were observed adjacent to the working face of the landfill. Daily cover was observed being placed over residential waste.
- There are still several "lifts" of waste (between perimeter benches) that have exposed sideslopes, with no cover soils over the waste. These areas are very steep, and may require rework prior to putting cover soils over the sideslopes.
- Wild pigs were observed wallowing in what appeared to be a leachate pool at the toe of the landfill.

6.6 Interviews

As part of the five-year review process, both community and technical interviews were conducted with people having knowledge of and/or concerns with the Ordot Landfill. Because the selected remedy for this site was “no action” under Superfund, the emphasis of the interviews was on the historical and current management and operational procedures of the landfill.

6.6.1 Community Interviews

On March 27, 2007, a community meeting was held at a residence, immediately adjacent to the landfill. Several community members were present, including the Mayor of Ordot, Pedro “Pete” Borja.

The overall messages communicated at the meeting and in the interviews were the feelings of frustration and helplessness in regard to the continued operation of the Ordot Landfill despite the numerous legal proceedings and regulatory efforts to force closure. Additional concerns and frustrations include: odor, visual nuisance, vectors including flies and wild pigs, landfill fires which force evacuations, and decreased property values.

6.6.2 Technical Interviews

The following individuals were interviewed regarding their knowledge of, or concerns about, technical aspects of the 1988 no-action ROD and about issues related to current operation and maintenance of the landfill:

- Mrs. Cynthia Jackson – Guam DPW Right of Way Supervisor in charge of the Solid Waste Division
- Mr. John Biedenbarn – Guam DPW Special Projects Coordinator, acting Landfill Manager
- Mr. Erwin Cruz – Guam DPW Special Projects Coordinator, project manager for CWA Consent Decree work
- Mr. Jesse T. Cruz, Guam EPA biologist with monitoring program
- Mr. Peter Q. Cruz – Guam EPA Air Program Director
- Mr. Betwin Alokoa – currently Environmental Health Supervisor with Guam EPA, former Inspector with Guam EPA, Air and Land Division
- Mr. Victor Wuerch III – Guam EPA, Territory Hydrogeologist

The following subsections summarize the key comments from the technical interviews.

Guam DPW

Guam DPW personnel generally feel that while much has been done to address the issues at the site, a general lack of funding continues to impact the site. In general, they feel that until the legislators elevate the priority of opening the new landfill and closing the Ordot Dump, they will continue to not meet the requirements of the permit or the CWA Consent Decree.

Guam DPW has increased their data acquisition and record-keeping of the landfill operations since 2005. Daily load counts of waste have been obtained, along with daily counts of daily cover materials delivered to the site. In addition, there are daily status reports, and increased inspection. With the hiring of a Manager of Landfill Operations (MOLO)-certified landfill manager, O&M has increased substantially at the site. However, Guam DPW does realize there is much more to do, which can only be accomplished with the required amount of funding for the site.

Guam EPA

Guam EPA staff generally feel that very little has been done by Guam DPW to comply with the CWA Consent Decree, other than meeting the paperwork demands, i.e., design and operations documentation. The staff recommends that additional surface water, groundwater, sediment, and air sampling along with a better hydrogeological investigation be performed at the site to evaluate environmental impacts from the landfill.

Guam EPA continues to perform quarterly site inspections. Numerous Notices of Violations (NOVs) have been issued by Guam EPA to Guam DPW, with little effect. NOVs were issued mainly for insufficient daily cover, little or no compaction, improper segregation of waste, standing leachate, and no vector (rats and flies) controls. Furthermore, Guam EPA has received numerous telephone calls reporting fires, illegal dumping at night, and dumping outside of the site gates.

The Guam EPA staff all feels that the site should be closed as soon as possible. Also, it was mentioned that the Guam DPW staff are not fully trained to operate the landfill appropriately, and that a private company should operate a new landfill.

Copies of the completed interview forms are provided in Appendix D.

7.0 Technical Assessment

7.1 Question A: Is the Remedy Functioning as Intended by the Decision Documents?

There has been no remedial action conducted at the site under CERCLA authority. Under Clean Water Act authority, Guam DPW has selected a new municipal solid waste landfill location and has issued the *Landfill Preliminary Site Selection Report* in January 2005 and the *Draft Supplemental Environmental Impact Statement for the Siting of a MSWLF* in May 2005. In addition, the Guam DPW has developed a complete closure plan for the Ordot Landfill to be implemented after the new MSWLF opens. The Draft Closure Plan was submitted by Guam DPW in December 2004 to meet the requirements of the CWA Consent Decree schedule. This document and other supporting documents were intended to meet the 40 percent design criteria. Subsequently, more complete closure design documents have been submitted including those listed in Chapter 5.0 of this report. The 90 percent construction design documents for the new MSWLF were submitted to Guam EPA and USEPA for review and comment in April 2006.

Ordot Landfill is fenced and access is restricted. A security guard hired to watch this site and other waste facilities around Guam drives by the site on a regular basis to check for any unauthorized activity.

Until the actions are complete under the CWA program, USEPA will continue to work with Guam EPA and Guam DPW to minimize the release of leachate and improve daily operations at the site.

7.2 Question B: Are the Assumptions Used at the Time of Remedy Selection Still Valid?

There have been no significant changes in the site conditions, exposure pathways or toxicity values since the last five-year review. The site is still an operating landfill and there has been an increase in the trash volume deposited at the site. The pathway of concern is uncontrolled leachate that may enter the Lonfit River via tributaries from the landfill. The uncontrolled releases, once in the Lonfit River, may then subsequently pollute the Pago River and the Pago Bay. There are no new pathways.

Samples collected from the leachate have found total coliforms, indicator bacteria (*E. coli*, *Enterrococci*), nutrients, cyanide, metals, phenolic compounds, p-dichlorobenzene, and selected organic solvents. Samples from the Lonfit River at the confluence of the site run-off and the River exceeded Guam Water Quality Standards for copper and lead. Levels of these inorganic compounds decreased with increasing distance from the landfill and were below surface water quality standards at the next sample location. None of the Lonfit River samples exceed Maximum Contaminant Level concentrations.

No “Applicable or Relevant and Appropriate Requirements (ARARs)” were established in the 1988 ROD, although the Clean Water Act was discussed as follows: *[US]EPA has issued an order under the Clean Water Act, 33 U. S. Code Section 1251 et seq., that requires the Guam Department of Public Works to cease discharge of leachate from Ordot Landfill to the Lonfit River.*

7.3 Question C: Has Any Other Information Come to Light that Could Call Into Question the Protectiveness of the Remedy?

Pedestrian surveys were performed July through November 2004. These surveys identified disturbed vegetation, wetlands, savanna and ravine forest as the plant communities at the Ordot Landfill. Also identified by pedestrian surveys in October 2004 was the Guam tree snails in the ravine forest positioned south of the landfill. The Guam tree snail is listed as endangered by the Guam Endangered Species Act. USEPA does not expect a complete exposure pathway to the snail due to its foraging behavior.

8.0 Issues and Recommendations

Issue

The compliance of the Government of Guam with the February 11, 2004 Clean Water Act (CWA) Consent Decree (CD) has not progressed as required by the terms defined in the CD. In a continuing effort to implement the CWA CD, the United States filed a motion on March 8, 2007 in the United States District Court for the Territory of Guam to enforce it. The major objectives of the CWA CD are:

- Close the Ordot Landfill in accordance with the Guam Solid Waste Regulations. The closure of the Ordot Landfill will lead to elimination of leachate discharge from the landfill to the Lonfit River; and
- Open a new municipal solid waste landfill in accordance with the Guam Solid Waste Regulations.

The Magistrate for the United States District Court for the Territory of Guam issued a Report with recommendations in response to the United States' Motion on July 6, 2007. EPA is, however, still awaiting a final ruling from the Guam District Judge.

Recommendation

It is recommended that, by 2009, the USEPA Superfund Program should assess the progress of the implementation of actions pursuant to the enforcement of the CWA Consent Decree.

The issues, recommendations, and follow-up actions are summarized in Table 8-1.

TABLE 8-1
 Issues, Recommendations, and Follow-Up Actions
Third Five-Year Review Report for Ordot Landfill Superfund Site, Guam

Issue	Recommendations and Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Compliance with the terms of the CWA Consent Decree	Assess the progress of compliance	USEPA	N/A	September 30, 2009	N	Y

9.0 Protectiveness Statement

This review finds that the “no action” remedy under Superfund is expected to be protective of human health and the environment upon completion of all actions required under the Consent Decree between the United States and the Government of Guam that incorporates provisions of the Clean Water Act and requires closure of Ordot Landfill and construction of a new Municipal Solid Waste Landfill.

10.0 Next Five-Year Review

The next five-year review for the Ordot Landfill Superfund Site will be completed in September 2012.

11.0 References

- Black and Veatch (B&V). 1983. *Remedial Investigation, Insular Territory Hazardous Waste Sites* (Draft report). Prepared for USEPA. May 20.
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Appendix A
Documents Reviewed

APPENDIX A

Documents Reviewed

- Black and Veatch (B&V). 1983. *Remedial Investigation, Insular Territory Hazardous Waste Sites* (Draft report). Prepared for USEPA. May 20.
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Appendix B
Site Inspection Checklist

Appendix B**Site Inspection Team Roster***Site Inspection- March 28-30, 2007, Ordot Landfill Superfund Site Five-Year Review*

Name	Title	Affiliation
Pankaj Arora	Remedial Project Manager	US Environmental Protection Agency
John Biedenham	Special Projects Coordinator, Acting Landfill Manager	Guam Department of Public Works
Barbara Torres	Solid Waste Management Program Manager	Guam Environmental Protection Agency
Shannon Wright	Project Engineer	CH2M HILL, Inc.

2. Health and Safety Plan Documents

- | | | | |
|-------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------|------------------------------|
| <input checked="" type="checkbox"/> Site-Specific Health and Safety Plan: | <input type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input checked="" type="checkbox"/> Contingency plan/emergency response plan: | <input checked="" type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |

Remarks: A general Safety Program has been prepared and is included in the Operations Plan included in the final permit. This permit is stored on-site. Additionally, the Operations Plan contains an Emergency Contingency Plan that requires revision based on the conditions of the permit. It has not, to date, been revised per the permit requirements.

3. Training Records

- | | | | |
|---------------------------------------------------------|--------------------------------------------|-------------------------------------|-----------------------------------------|
| <input type="checkbox"/> O&M and OSHA Training Records: | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> Other training records: | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |

Remarks: Updated training records were not available on-site, nor does it appear regularly scheduled training takes place for site personnel. Self Contained Breathing Apparatus (SCBA) safety equipment was located on-site, however it was not maintained, nor were the training records associated with the equipment updated. Some training records were available at the main DPW Solid Waste office, primarily with respect to classes taken through SWANA.

4. Permits and Service Agreements

- | | | | |
|-----------------------------------------------------------------------|--------------------------------------------|-------------------------------------|-----------------------------------------|
| <input type="checkbox"/> Air discharge permit: | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
| <input checked="" type="checkbox"/> Effluent discharge: (see remarks) | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input type="checkbox"/> N/A |
| <input type="checkbox"/> Waste disposal, POTW: | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
| <input checked="" type="checkbox"/> Other permits: | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |

Remarks: No NPDES permit currently exists for the site. Guam EPA has NPDES permit authority. An updated permit application has been provided to Guam EPA by DPW. DPW is currently awaiting response from Guam EPA regarding the NPDES permit.

A Solid Waste Disposal Facility Permit was issued on December 14, 2005 with conditions for updating/providing additional permit requirements. However, there are several documents which have not been provided to Guam EPA as part of the permit conditions. The permit expires on October 23, 2007.

5. Monitoring Records

- | | | | |
|----------------------------------------------------------|--------------------------------------------|-------------------------------------|-----------------------------------------|
| <input type="checkbox"/> Gas Generation Records: | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> Settlement Monument Records: | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
| <input type="checkbox"/> Groundwater Monitoring Records: | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |

Remarks: Some limited groundwater information is provided in the Environmental Baseline Survey (EBS) prepared for the CWA Consent Decree. However, there is not an official monitoring program established for the site, therefore gas and groundwater monitoring are not being performed. Settlement monuments should be installed as part of the closure of the landfill.

6. Leachate Extraction Records

- | | | | |
|-------------------------------------------------------|--------------------------------------------|-------------------------------------|-----------------------------------------|
| <input type="checkbox"/> Leachate Extraction Records: | <input type="checkbox"/> Readily available | <input type="checkbox"/> Up to date | <input checked="" type="checkbox"/> N/A |
|-------------------------------------------------------|--------------------------------------------|-------------------------------------|-----------------------------------------|

Remarks: There is no leachate collection and removal system located at the site. Therefore, there are no leachate extraction records. However, there is some leachate information available as provided in the EBS and subsequent studies performed by Water and Environmental Research Institute (WERI). At one time, leachate streams were regularly tested. However, the testing program was discontinued due to safety concerns.

7. Compliance Records

Discharge Compliance Records: Readily available Up to date N/A

Remarks: Compliance records are not available on-site. However, notices of violation for non-compliance issues, such as daily cover, are available at the DPW Solid Waste office as well as offices of Guam EPA.

8. Daily Access / Security Logs

Daily Access / Security Logs: Readily available Up to date N/A

Remarks: Daily logs are kept of all commercial and residential loads entering the site. Quantities are estimated based on the size of the vehicle entering the site. These are used for monthly summaries of quantities of waste entering the site provided by DPW to Guam EPA. Additionally, daily logs are kept and submitted by site personnel to the main DPW Solid Waste office daily.

IV. O&M Costs

Applicable N/A

O&M Organization

State in-house Contractor for State
 PRP in-house Contractor for PRP
 Other:

O&M Cost Records

Readily available Up to date Funding mechanism/agreement in place

Original O&M cost estimate: NA Breakdown attached

Total annual cost by year for review period if available

From (Date): To (Date): Total cost: Breakdown attached

Remarks: As of December 2006, DPW has been keeping a cost sheet titled "Estimating Cover Usage and Requirements." This helps them estimate their costs for the operations of the landfill, and is not directly applicable to the O&M of the remedy since the landfill is still in use.

Unanticipated or Unusually High O&M Costs During Review Period: <u>Describe costs and reasons:</u>	<input type="checkbox"/> N/A
V. ACCESS AND INSTITUTIONAL CONTROLS <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1. Fencing	
Fencing damaged <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Gates secured <input type="checkbox"/> N/A <u>Remarks:</u>	
2. Other Access Restrictions	
Signs and other security measures <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A <u>Remarks:</u>	
3. Institutional Controls	
Implementation and enforcement	
Site conditions imply ICs not properly implemented: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Site conditions imply ICs not being fully enforced: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Type of monitoring (e.g, self-reporting, drive by): Frequency: Responsible party/agency: Contact: Name: Title: Date: Phone Number:	
Reporting is up-to-date: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Reports are verified by the lead agency: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Specific requirements in deed or decision documents have been met: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Violations have been reported: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <u>Other problems or suggestions:</u> <input type="checkbox"/> Additional report attached (if additional space required).	
Adequacy <input type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A <u>Remarks:</u>	

4. General		
1. Vandalism/trespassing	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No vandalism evident
<u>Remarks:</u>		
2. Land use changes on-site		<input checked="" type="checkbox"/> N/A
<u>Remarks:</u>		
3. Land use changes off-site		<input checked="" type="checkbox"/> N/A
<u>Remarks:</u>		
VI. GENERAL SITE CONDITIONS		
1. Roads		
	<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
Roads damaged	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Roads adequate
		<input type="checkbox"/> N/A
<u>Remarks:</u> Roads appear adequate, both at the entrance to the landfill and within the landfill boundaries. However, the public roadway at the entrance to the site is very dirty, showing evidence of tracking soil onto the roadway, which can cause sediment contamination of adjacent waterways.		
2. Other Site Conditions		
<u>Remarks:</u> While cover material is being delivered and placed over waste daily, it would appear that the landfill operator, DPW, continues to get further behind on the waste covering. Based on discussions with DPW personnel and visual confirmation, there is more exposed waste than daily cover, with the lag continuing to grow. There are still many areas along the sideslopes that remain uncovered which could pose problems during closure of the dump.		
VII. LANDFILL COVERS		
	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Landfill Surface		
	<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Settlement (Low spots)	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Settlement not evident
Areal extent:	Depth:	
<u>Remarks:</u>		

<p>2. Cracks</p> <p>Lengths: Remarks:</p>	<p><input type="checkbox"/> Location shown on site map</p> <p>Widths: Depths:</p>	<p><input type="checkbox"/> Cracking not evident</p>
<p>3. Erosion</p> <p>Areal extent: Remarks:</p>	<p><input type="checkbox"/> Location shown on site map</p> <p>Depth:</p>	<p><input type="checkbox"/> Erosion not evident</p>
<p>4. Holes</p> <p>Areal extent: Remarks:</p>	<p><input type="checkbox"/> Location shown on site map</p> <p>Depth:</p>	<p><input type="checkbox"/> Holes not evident</p>
<p>5. Vegetative Cover</p> <p>Remarks:</p>	<p><input type="checkbox"/> Cover properly established</p> <p><input type="checkbox"/> No signs of stress</p>	<p><input type="checkbox"/> Grass <input type="checkbox"/> Trees/Shrubs</p>
<p>6. Alternative Cover (armored rock, concrete, etc.)</p> <p>Remarks:</p>	<p><input type="checkbox"/> N/A</p>	
<p>7. Bulges</p> <p>Areal extent: Remarks:</p>	<p><input type="checkbox"/> Location shown on site map</p> <p>Height:</p>	<p><input type="checkbox"/> Bulges not evident</p>
<p>8. Wet Areas/Water Damage</p> <p>Remarks:</p>	<p><input type="checkbox"/> Wet areas <input type="checkbox"/> Location shown on site map Areal extent:</p> <p><input type="checkbox"/> Ponding <input type="checkbox"/> Location shown on site map Areal extent:</p> <p><input type="checkbox"/> Seeps <input type="checkbox"/> Location shown on site map Areal extent:</p> <p><input type="checkbox"/> Soft subgrade <input type="checkbox"/> Location shown on site map Areal extent:</p>	

<p>9. Slope Instability <input type="checkbox"/> Slides <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of slope instability</p> <p>Areal extent: Remarks:</p>
<p>2. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A</p> <p>(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)</p>
<p>1. Flows Bypass Bench <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay</p> <p>Remarks:</p>
<p>2. Bench Breached <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay</p> <p>Remarks:</p>
<p>3. Bench Overtopped <input type="checkbox"/> Location shown on site map <input type="checkbox"/> N/A or okay</p> <p>Remarks:</p>
<p>3. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A</p> <p>(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)</p>
<p>1. Settlement <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of settlement</p> <p>Areal extent: Depth:</p> <p>Remarks:</p>
<p>2. Material Degradation <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No evidence of degradation</p> <p>Material type: Areal extent:</p> <p>Remarks:</p>

<p>3. Erosion</p> <p>Areal extent: Remarks:</p>	<p><input type="checkbox"/> Location shown on site map</p> <p>Depth:</p>	<p><input type="checkbox"/> No evidence of erosion</p>
<p>4. Undercutting</p> <p>Areal extent: Remarks:</p>	<p><input type="checkbox"/> Location shown on site map</p> <p>Depth:</p>	<p><input type="checkbox"/> No evidence of undercutting</p>
<p>5. Obstructions</p> <p>Type: Areal extent: Remarks:</p>	<p><input type="checkbox"/> Location shown on site map</p> <p>Height:</p>	<p><input type="checkbox"/> N/A</p>
<p>6. Excessive Vegetative Growth</p> <p><input type="checkbox"/> Evidence of excessive growth <input type="checkbox"/> Location shown on site map Remarks:</p>	<p><input type="checkbox"/> No evidence of excessive growth <input type="checkbox"/> Vegetation in channels but does not obstruct flow Areal extent:</p>	
<p>4. Cover Penetrations</p>		<p><input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A</p>
<p>1. Gas Vents</p> <p><input type="checkbox"/> Active <input type="checkbox"/> Passive <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs O&M Remarks:</p>		<p><input type="checkbox"/> N/A</p>
<p>2. Gas Monitoring Probes</p> <p><input type="checkbox"/> Routinely sampled <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs O&M Remarks:</p>		<p><input type="checkbox"/> N/A</p>

3. Monitoring Wells (within surface area of landfill) <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs O&M <u>Remarks:</u>	<input type="checkbox"/> N/A
4. Leachate Extraction Wells <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Good condition <input type="checkbox"/> Evidence of leakage at penetration <input type="checkbox"/> Needs O&M <u>Remarks:</u>	<input type="checkbox"/> N/A
5. Settlement Monuments <input type="checkbox"/> Located <input type="checkbox"/> Routinely surveyed <input type="checkbox"/> N/A <u>Remarks:</u>	
5. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A	
1. Gas Treatment Facilities <input type="checkbox"/> Flaring <input type="checkbox"/> Thermal destruction <input type="checkbox"/> Collection for reuse <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O & M <u>Remarks:</u>	<input type="checkbox"/> N/A
2. Gas Collection Wells, Manifolds and Piping <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O & M <u>Remarks:</u>	<input type="checkbox"/> N/A
3. Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings) <input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O & M <u>Remarks:</u>	

6. Cover Drainage Layer		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Outlet Pipes Inspected	<input type="checkbox"/> Functioning		<input type="checkbox"/> N/A
<u>Remarks:</u>			
2. Outlet Rock Inspected	<input type="checkbox"/> Functioning		<input type="checkbox"/> N/A
<u>Remarks:</u>			
7. Detention/Sedimentation Ponds		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Siltation	<input type="checkbox"/> Siltation evident		<input type="checkbox"/> N/A
Areal extent:	Depth:		
<u>Remarks:</u>			
2. Erosion	<input type="checkbox"/> Erosion evident		<input type="checkbox"/> N/A
Areal extent:	Depth:		
<u>Remarks:</u>			
3. Outlet Works	<input type="checkbox"/> Functioning		<input type="checkbox"/> N/A
<u>Remarks:</u>			
4. Dam	<input type="checkbox"/> Functioning		<input type="checkbox"/> N/A
<u>Remarks:</u>			

8. Retaining Walls		<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
1. Deformations	<input type="checkbox"/> Location shown on site map _____	<input type="checkbox"/> Deformation not evident
Horizontal displacement: Vertical displacement: Rotational displacement: <u>Remarks:</u>		
2. Degradation	<input type="checkbox"/> Location shown on site map _____	<input type="checkbox"/> Degradation not evident
<u>Remarks:</u>		
9. Perimeter Ditches/Off-site discharge		<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
1. Siltation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Siltation not evident
Areal extent: Depth: <u>Remarks:</u>		
2. Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Vegetation does not impede flow
Areal extent: Type: <u>Remarks:</u>		
3. Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident
Areal extent: Depth: <u>Remarks:</u>		
4. Discharge Structure	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A
<input type="checkbox"/> Functioning <input type="checkbox"/> Good Condition <u>Remarks:</u>		

VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Settlement	<input type="checkbox"/> Location shown on site map Areal extent: Depth: Remarks:	<input type="checkbox"/> Settlement not evident	
2. Performance Monitoring	<input type="checkbox"/> Performance not monitored <input type="checkbox"/> Performance monitored Frequency: <input type="checkbox"/> Evidence of breaching Head differential: Remarks:	<input type="checkbox"/> N/A	
IX. GROUNDWATER/SURFACE WATER REMEDIES		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Groundwater Extraction Wells, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Pumps, Wellhead Plumbing, and Electrical	<input type="checkbox"/> All required wells located <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M Remarks:	<input type="checkbox"/> N/A	
2. Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances	<input type="checkbox"/> System located <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M Remarks:	<input type="checkbox"/> N/A	
3. Spare Parts and Equipment	<input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires Upgrade <input type="checkbox"/> Needs to be provided Remarks:	<input type="checkbox"/> N/A	
2. Surface Water Collection Structures, Pumps, and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Collection Structures, Pumps, and Electrical	<input type="checkbox"/> Good condition <input type="checkbox"/> Needs O& M Remarks:	<input type="checkbox"/> N/A	

2. Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <u>Remarks:</u>	<input type="checkbox"/> N/A
3. Spare Parts and Equipment <input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires Upgrade <input type="checkbox"/> Needs to be provided <u>Remarks:</u>	<input type="checkbox"/> N/A
3. Treatment System	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
1. Treatment Train (Check components that apply) <input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation <input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers <input type="checkbox"/> Filters (list type): <input type="checkbox"/> Additive (list type, e.g., chelation agent, flocculent) <input type="checkbox"/> Others (list): <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <input type="checkbox"/> Sampling ports properly marked and functional <input type="checkbox"/> Sampling/maintenance log displayed and up to date <input type="checkbox"/> Equipment properly identified <input type="checkbox"/> Quantity of groundwater treated annually (list volume): <input type="checkbox"/> Quantity of surface water treated annually (list volume): <u>Remarks:</u>	
2. Electrical Enclosures and Panels (properly rated and functional) <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <u>Remarks:</u>	<input type="checkbox"/> N/A
3. Tanks, Vaults, Storage Vessels <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs O&M <u>Remarks:</u>	<input type="checkbox"/> N/A

4.	Discharge Structure and Appurtenances	<input type="checkbox"/> N/A
	<input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <u>Remarks:</u>	
5.	Treatment Building(s)	<input type="checkbox"/> N/A
	<input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs Repair <input type="checkbox"/> Chemicals and equipment properly stored <u>Remarks:</u>	
6.	Monitoring Wells (pump and treatment remedy)	<input type="checkbox"/> N/A
	<input type="checkbox"/> All required wells located <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <u>Remarks:</u>	
4.	Monitored Natural Attenuation/No Further Action	<input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
1.	Monitoring Wells	<input type="checkbox"/> N/A
	<input type="checkbox"/> All required wells located <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> Needs O&M <u>Remarks:</u>	
X. OTHER REMEDIES		<input checked="" type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.		

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.)

The Record of Decision selected a “no action” remedy under CERCLA for the site and deferred the cessation of leachate discharge from the landfill to the Lonfit river and improvement of landfill operations as enforcement actions under the Clean Water Act. Therefore, observations and impressions are based on the operational activities being performed at the site, and the effectiveness the activities have on reducing impacts to the adjacent water resources. To date, there would appear through observations, Notice of Violations, landfill fires, and discussions with the community, Guam EPA and DPW personnel, that the application of daily cover over the waste is not being performed at a compliant rate. Activities at the site appear to have changed for the better, with increased daily cover operations, but it is still not enough to cover the entire exposed waste area daily. While this waste remains exposed, the risk for fire, vectors, odor, and infiltration will continue. Another item of interest at the site is the apparent lack of storm water controls required to control runoff from the landfill (Contaminated Storm Water (CSW)). Since there are no storm water diversion ditches/berms or separate sedimentation basins, CSW will continue to run down slopes and into adjacent water resources. Additionally, since there is no leachate collection or removal system, leachate will continue to accumulate on benches or along the toe of the landfill, and will continue to flow into the adjacent Lonfit River.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

As of December 14, 2005, the site has been operating with an official Operations Plan in conformance with their permit. Many activities are being implemented to a certain extent as detailed within this Operations Plan. However, several operational items are not being implemented such as storm water controls, erosion and sedimentation controls, daily cover, filling methods, etc. Therefore, since these practices are not being fully and adequately implemented, DPW is unable to reduce the amount of leachate and CSW impacting the adjacent water resources. It does not appear that the current O&M procedures are adequate in meeting the requirements of the Clean Water Act for discharges off-site, and thus does not meet the intent of the ROD.

C. Early Indicators of Potential Remedy Failure

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

NA

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

NA

Appendix C
Site Inspection Photographs

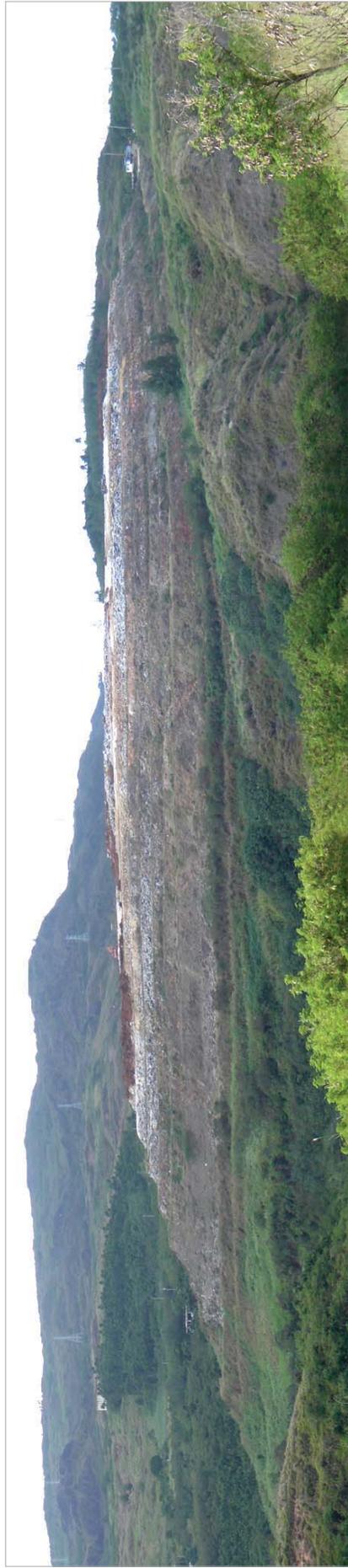


Photo 1: Panoramic view of Ordot Landfill.

Ordot Landfill
Territory of Guam

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Photo 2: Residential and employee entrance to the Ordot Landfill.



Photo 3: Trash compactor and backhoe awaiting repair. Note equipment has been inoperable for several years.

Ordot Landfill
Territory of Guam



Photo 4: Exposed waste located near commercial working area. Note disabled equipment in background.



Photo 5: Southern face of the landfill. Roughness and light color noted on the upper lifts is exposed waste.



Photo 6: Poned leachate located on bench along southeastern side of landfill.



Photo 7: Poned leachate located on bench along southern side of landfill.



Photo 8: Rubber tire stockpile awaiting removal from site.



Photo 9: White goods awaiting removal from site.

Appendix D
Interview Reports

Five-Year Review Interview Record Ordot Landfill Near the villages of Ordot and Chalan Pago, Guam		Interviewee: Mayor Pedro “Pete” Borja, Ordot and Chalan Pago (since 2004)			
Site Name		EPA ID No.		Date of Interview	Interview Method via
Ordot Landfill Superfund Site		EPA ID# GUD980637649		March 27, 2007	Phone <input type="checkbox"/> Fax/email <input type="checkbox"/> In person <input checked="" type="checkbox"/>
Interview Contacts	Organization	Phone	Email	Address	
Pankaj Arora	US EPA, Region 9	(415) 972-3040	arora.pankaj@epa.gov	75 Hawthorne Street San Francisco, CA 94105	
Shannon Wright	CH2M HILL/SFO, as rep of EPA	(916) 286-0417	swright@ch2m.com	2485 Natomas Park Drive, Suite 600, Sacramento, CA 95833	
Interview Questions (Please address period since previous five year review in 2002)					
1. What is your overall impression of the work conducted at the site? (general sentiment)					
Response: He understands that there has been a greater focus on providing daily cover material over the exposed waste. As such, he feels that with the increased focus, they, DPW, are doing better than they did over a year ago. In addition, he has been hearing about fewer equipment failures at the site, and is not hearing as many problems with the exception of the locals adjacent to the landfill and the odor.					
2. From your perspective, what effect have remedial operations at the site had on the surrounding community?					
Response: Because of the review of the Consent Decree and the recent request to extend the due dates, there has been more in the newspaper. He has observed greater management of the landfill along with placement of daily cover. In addition, he feels there is greater management of waste placement within the landfill. With the increased focus on recycling, he has noticed there are less flies than previously. He has noticed that the waste hauling business has expanded, with people being more organized on how the waste is being brought into the site. He has observed improvements at the site.					

3. Are you aware of any ongoing community concerns regarding the site or its administration?

Response: He feels that the citizens are generally fed up. Not necessarily from the landfill getting worse, but for its existence. While there have been improvements, he feels that the citizens just do not want the landfill there.

4. Are you aware of any complaints, violations, or other incidents related to the site? If so, please give details of the events and results of the responses.

Response: He has received complaints as to how the waste is being handled at the landfill. People that are turned away at the landfill end up at the Mayor's office (located at the bottom of the main access road). He feels that from a regulatory standpoint, the amount of combustible materials should be reduced, as well as separation of recyclables. Additionally, he is aware of complaints through what has been written in the newspaper.

5. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: He is aware of illegal dumping, and is able to get the material moved when necessary. He acknowledged that removal of abandoned vehicles is a big task, and that he is currently behind schedule.

6. Are there any local community expectations or concerns about future land use/redevelopment at the site?

Response: He feels that if the landfill cannot be mined, the final closure should incorporate athletic fields. The surrounding scenery is comfortable to people, being in the open, with athletes able to deal with the heat in the area due to the openness of the surrounding area.

7. Do you feel well-informed about the site's activities and status?

Response: He feels he gets good information about the site, primarily from the newspaper.

8. Do you have any comments, suggestions, or recommendations regarding the site?

Response: He feels that if they go through with the land exchange currently pending approval in legislature, it is the only way that they, Guam, can move the landfill.

Five-Year Review Interview Record Ordot Landfill Near the villages of Ordot and Chalan Pago, Guam		Interviewees: Mayor Pedro “Pete” Borja and some residents of Ordot			
Site Name		EPA ID No.		Date of Interview	Interview Method via
Ordot Landfill Superfund Site		EPA ID# GUD980637649		March 27 and 29, 2007	Phone <input type="checkbox"/> Fax/email <input type="checkbox"/> In person <input checked="" type="checkbox"/>
Interview Contacts	Organization	Phone	Email	Address	
Pankaj Arora	US EPA, Region 9	(415) 972-3040	arora.pankaj@epa.gov	75 Hawthorne Street San Francisco, CA 94105	
Shannon Wright	CH2M HILL/SFO, as rep of EPA	(916) 286-0417	swright@ch2m.com	2485 Natomas Park Drive, Suite 600, Sacramento, CA 95833	
Interview Questions (Please address period since previous five year review in 2002)					
<p>1. What is your overall impression of the work conducted at the site? (general sentiment)</p> <p>Response:</p> <ul style="list-style-type: none"> <input type="checkbox"/> That the Government of Guam/DPW has taken the least expensive route of handling solid waste. <input type="checkbox"/> That waste piles up for months until it catches fire. <input type="checkbox"/> In general, there are positive things being performed at the site, such as reducing the potential for fires and odor by covering more frequently, but there is more to be done, such as addressing site safety, accessibility, and increasing the placement of daily cover. <input type="checkbox"/> Some feel that not much has happened to operations at the landfill, and that everything is still the same. <input type="checkbox"/> Some feel that due to the lack of improvement, there is a lack of responsibility on the government’s part, and that there is no concern for the community or the environment. 					

2. From your perspective, what effect have remedial operations at the site had on the surrounding community?

Response:

- Some feel that the remedial operations have been minimal to non-existent.
- The stalling of the process has drawn out the emotional sentiment from local residents, particularly with the proposal to extend the closure of the landfill for another 4 years.
- In general, there has been greater management of the landfill, with some improvement noticed.
- Most feel that no remedial operations have taken place, and that DPW does not implement the requirements of the ROD, CD, or permit.

3. Are you aware of any ongoing community concerns regarding the site or its administration?

Response:

- All strongly feel that not much progress has occurred, and that the landfill should be closed.
- When trash is left uncovered or it rains, the stench and flies linger. Enjoying the outdoors near the dump is no longer an option.
- Some feel that certain initiatives are raised to sidetrack the closing of the landfill, such as the initiative to exchange property. This distracts the community from the main problem.

4. Are you aware of any complaints, violations, or other incidents related to the site? If so, please give details of the events and results of the responses.

Response:

- DPW drops off trash at night, which can be very noisy.
- Trash has been left uncovered for months (daily cover still not provided).
- Operations personnel are not inspecting trucks upon entry.
- Service road is unsafe because of potholes and reckless truck drivers.
- Illegal dumping occurs around the dump. Including garbage and abandoned vehicles. These may not be left around the landfill, but in the vegetation along the adjacent dirt road.
- Dust control is not provided around the site.
- Government of Guam's general non-compliance with their own laws.

5. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response:

- Aware that the landfill had caught fire, which required the fire department to respond to the dump, along with evacuating all local citizens.
- There has been some trespassing by vendor trucks.
- There has been a general lack of response by authorities to inform the adjacent community of health and safety concerns.
- Illegal dumping occurs around the landfill and adjacent roadways on a regular basis.

6. Are there any local community expectations or concerns about future land use/re-development at the site?

Response:

- They feel that the final use should be a low-impact on surrounding community such as a park.
- Some want a park with more residences in the area.
- Some wish to exchange residences.
- Others, taken primarily from media, wish for mining of the waste to make brick and obtain metals, as well as generate electricity.
- Some wish to have athletic fields.
- Some feel that after closure, the landfill will have the same effect as it has now.
- Some feel that the government must be held accountable for not taking action, and expect them to follow through with health care for the residents of Ordot.

7. Do you feel well-informed about the site's activities and status?

Response: Some feel they are well informed about the site, primarily through the internet or through other media. However, most feel they are not well-informed. They feel that 1) they must get their information second-hand through the community and 2) the right information is not being disseminated to the local population

8. Do you have any comments, suggestions, or recommendations regarding the site?

Response:

- The primary comment is to close the dump and open the new dump immediately.
- They suggest that the Government of Guam allot/allocate more funding to close the site and open the new landfill.
- Should increase recycling education to the general population to reduce the amount of waste that comes to the landfills.
- The main concerns regarding the site appear to be wild animals (primarily rats, pigs, and dogs), large amounts of commercial traffic traveling to the site, speeding along the main road, traffic control at the landfill (with respect to local residents), flat tires on local residents' vehicles due to trash dropping on the roadway, illegal dumping adjacent to the landfill and along the main road, and dirt roads being difficult to maintain due to erosion.
- They find that the frequency of covering the landfill is difficult for DPW to maintain.
- Another concern is that wild pigs that live around the landfill are being trapped and sold off, eventually to be eaten.
- In general, the Government of Guam must make changes to policy as it affects solid waste, particularly the Ordot Dump.
- Another general concern is the lack of data regarding the air, soil, surface water, and groundwater.
- A large concern is the reduction in property values. Several residents cannot sell their property, and as such, cannot afford to move away from the dump.

Five-Year Review Interview Record Ordot Landfill Near the villages of Ordot and Chalan Pago, Guam		Interviewee: Mrs. Cynthia Jackson, Guam DPW – Right of Way Supervisor acting in the capacity of Project Manager/Division Administrator, Solid Waste; has handled all DPW solid waste matters since 2005			
Site Name		EPA ID No.		Date of Interview	Interview Method via
Ordot Landfill Superfund Site		EPA ID# GUD980637649		March 26, 2007	Phone <input type="checkbox"/> Fax/email <input type="checkbox"/> In person <input checked="" type="checkbox"/>
Interview Contacts	Organization	Phone	Email	Address	
Pankaj Arora	US EPA, Region 9	(415) 972-3040	arora.pankaj@epa.gov	75 Hawthorne Street San Francisco, CA 94105	
Shannon Wright	CH2M HILL/SAC, as rep of EPA	(916) 286-0417	swright@ch2m.com	2485 Natomas Park Drive, Suite 600, Sacramento, CA 95833	
Interview Questions (Please address period since previous five year review in 2002)					
1. What is your overall impression of the work conducted at the site? (general sentiment)					
Response: She feels DPW is doing the best that they can with the resources they have available. She admits there is more that can be done, but lack of available funding continues to be a problem. Existing equipment is under constant maintenance, with funding being set aside to spend on outsourcing the actual closure of the landfill. From an operation point-of-view, there have been more inspections performed at the site since 2005, and with the addition of an acting landfill manager, there has been more attention to operations and maintenance. She feels that the Consent Decree is working, providing more dedication to funding, with fiscal planning and goals established. However, politically, there appears to be no change in the funding priorities.					
2. Is the remedy functioning as expected? How well is the remedy performing?					
Response: She feels that the remedy could function better if the landfill were given a greater priority by some lawmakers.					

3. What are the current landfill operation practices, and how do they differ from the ones that were in place at the time the ROD was issued?

Response: She entered the position of working with the solid waste department in 2004. Since then, she has looked at the previous data collection, and ascertained that it was relatively weak. She has since strengthened the quantity and type of information that has been collected. Along with improved data collection, they have hired John Biedenharn, who is the current acting landfill manager. He has brought in a greater emphasis on operations and maintenance at the site. She feels that since the issuance of the ROD, there were no significant improvements until 2004. When the operations plan was approved (Dec. 2005), DPW started looking at compliance, which included greater emphasis on Health and Safety, training, and accountability. Additionally, when the last fire occurred, it brought quite a bit of attention. Since that time, there was greater emphasis on a daily work plan, which included compilation of an equipment report at the end of the day.

4. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

Response: She knows that an Environmental Baseline Survey (EBS) was performed in 2004/2005. This survey did not indicate that contaminant levels are decreasing.

5. Have there been any new findings regarding the geologic situation of the site since the ROD? If yes, please describe.

Response: The EBS provided further analysis and recommendations. She suggests reviewing the EBS for further information.

6. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: She says that there has been a change in O&M and maintenance schedules within the last five years; however there have not been any significant changes to sampling routines.

7. Have any problems been encountered which required, or will require, changes to this ROD?

Response: She thinks that the only potential problem encountered could be with respect to funding.

8. Are you aware of any ongoing community concerns regarding the site or its administration?

Response: Yes. Other than the typical community concerns, such as odor and vectors, she is aware that the community has concerns regarding safety. These include traffic safety as well as fires at the landfill. She is aware there have been many community calls and letters concerning both the site and administration.

9. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: She is aware there has been some recorded vandalism at the site, as well as illegal dumping, although typically not at the gates, but along the local road adjacent to the landfill. Additionally, there has been emergency response to the site due to fire.

Notes: Security apparently does come by the site in the evenings during their typical rounds to other DPW facilities.

10. Do you feel well-informed about the site's activities and status?

Response: She does not feel as well-informed as she would like. She would like to see more data, including computerized data compilation as well as better reporting.

Notes: Her top 5 wishes for obtaining better information/data collection and operations would be 1) new scale to record loads; 2) computerization for data acquisition; 3) change in operational perspective – professional landfill operators; 4) knowledgeable, accountable workforce; and 5) greater funding.

11. Do you have any comments, suggestions, or recommendations regarding the site?

Response: Aside from a better trained staff, she would like to have a simpler system for procurement. Political interference in the operations of the landfill and solid waste management system needs to be eliminated. The landfill should not bear the burden of “special projects”, including accommodating the mayors’ waste free of charge. In general, the politics regarding solid waste needs to change. This could be accomplished through making solid waste management on the island a public corporation.

Five-Year Review Interview Record Ordod Landfill Near the villages of Ordod and Chalan Pago, Guam		Interviewee: Mr. John Biedenharn, Guam DPW – Special Projects Coordinator; acting Landfill Manager (MOLO Certified); began with DPW September 2006, manager December 2006			
Site Name		EPA ID No.		Date of Interview	Interview Method via
Ordod Landfill Superfund Site		EPA ID# GUD980637649		March 26, 2007	Phone <input type="checkbox"/> Fax/email <input type="checkbox"/> In person <input checked="" type="checkbox"/>
Interview Contacts	Organization	Phone	Email	Address	
Pankaj Arora	US EPA, Region 9	(415) 972-3040	arora.pankaj@epa.gov	75 Hawthorne Street San Francisco, CA 94105	
Shannon Wright	CH2M HILL/SAC, as rep of EPA	(916) 286-0417	swright@ch2m.com	2485 Natomas Park Drive, Suite 600, Sacramento, CA 95833	
Interview Questions (Please address period since previous five year review in 2002)					
1. What is your overall impression of the work conducted at the site? (general sentiment)					
Response: He is aware that there has been little to no monitoring at the site. He is hoping this will begin with closure, but the site is not closed as of yet, and monitoring is not planned. There have been substantial improvements to the operations of the landfill, but he acknowledges that it is still not adequate due to lack of cover material and periodic loss of heavy equipment. He feels that the procurement process is a bottleneck, seriously affecting operations at the site (purchase orders (POs) for daily cover as well as rental equipment).					
2. Is the remedy functioning as expected? How well is the remedy performing?					
Response: He feels that the remedy is functioning now, but is not achieving the anticipated results.					
3. What are the current landfill operation practices, and how do they differ from the ones that were in place at the time the ROD was issued?					
Response: NA.					

4. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

Response: NA.

5. Have there been any new findings regarding the geologic situation of the site since the ROD? If yes, please describe.

Response: NA.

6. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: There still is no regular maintenance, since all the equipment is rented (all DPW-owned equipment is out of service). It is very difficult to get new equipment and maintenance on existing equipment. He feels the current bureaucratic system has difficulty handling purchasing/maintenance.

Notes: He feels there is a real need for procedural/bureaucratic change, such as renewing POs long prior to projected lapses. In FY08, he says they hope to create a PO for the entire year. In addition, there are now "routine checkups", i.e. calling vendors daily. But, he acknowledges that the vendors only send dump trucks when they have no other work, so having an active PO doesn't necessarily guarantee trucks will be available.

7. Have any problems been encountered which required, or will require, changes to this ROD?

Response: No comment.

8. Are you aware of any ongoing community concerns regarding the site or its administration?

Response: He is aware of the public concerns, with concerns having been sent to the Director of DPW, the legislature, as well as the governor. He is also aware that the community understands that the problem is not with the site personnel, it lies with the politicians.

9. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: NA

10. Do you feel well-informed about the site's activities and status?

Response: He feels he gets up to approximately 90% of the information he needs. However, he does feel that the information he is not receiving is non-critical (does not affect daily operations). He feels there is a general communications problem with the gatehouse as well as the trucks that arrive. Past communications problems have been much reduced, however.

11. Do you have any comments, suggestions, or recommendations regarding the site?

Response: NA

Five-Year Review Interview Record Ordod Landfill Near the villages of Ordod and Chalan Pago, Guam		Interviewee: Mr. Erwin K. Cruz, Guam DPW – Special Projects Coordinator; generally a project manager for the Consent Decree project			
Site Name		EPA ID No.		Date of Interview	Interview Method via
Ordod Landfill Superfund Site		EPA ID# GUD980637649		March 26, 2007	Phone <input type="checkbox"/> Fax/email <input type="checkbox"/> In person <input checked="" type="checkbox"/>
Interview Contacts	Organization	Phone	Email	Address	
Pankaj Arora	US EPA, Region 9	(415) 972-3040	arora.pankaj@epa.gov	75 Hawthorne Street San Francisco, CA 94105	
Shannon Wright	CH2M HILL/SAC, as rep of EPA	(916) 286-0417	swright@ch2m.com	2485 Natomas Park Drive, Suite 600, Sacramento, CA 95833	
Interview Questions (Please address period since previous five year review in 2002)					
1. What is your overall impression of the work conducted at the site? (general sentiment)					
Response: He feels that over the last few months, work conducted at the site has improved. Greater attention has been given to final cover, record keeping, and traffic management, however he acknowledges that there is limited financing available, which can limit repair of equipment. He feels that due to the Consent Decree, work at the site is progressing (slowed, but is ramping back up).					
2. Is the remedy functioning as expected? How well is the remedy performing?					
Response: Feels that the remedy, i.e. closure, is currently not function or performing.					
3. What are the current landfill operation practices, and how do they differ from the ones that were in place at the time the ROD was issued?					
Response: He feels there were significant changes from 2004 to the present. There has been changes to record keeping, signage at the site, dust control, drainage (reduced ponding on landfill surface), and fire protection with the increase in placement of daily cover. However, equipment failure is still a problem, similar to past operations. In addition, there have been no safety equipment upgrades, better compaction (compactor has been down for several years) efforts, or					

monitoring improvements.

4. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

Response: There is no monitoring data.

5. Have there been any new findings regarding the geologic situation of the site since the ROD? If yes, please describe.

Response: There is no additional geologic information available.

6. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: There have been changes, including increased site signage, record keeping, and scheduling. In addition, the site closes earlier to allow operators more time and daylight for placement of daily cover over waste at the end of the day.

Notes: There is a scale currently located at the site. However, it needs to be repaired/replaced.

7. Have any problems been encountered which required, or will require, changes to this ROD?

Response: No comment.

8. Are you aware of any ongoing community concerns regarding the site or its administration?

Response: Yes. Knows that the nearby residents complain of odor, fire, traffic hazards, and pest control.

9. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: He is aware of illegal dumping along the road adjacent and up to the landfill, as well as reported vandalism (broken window at gatehouse).

10. Do you feel well-informed about the site's activities and status?

Response: He is updated daily on the site's activities by acting landfill manager John Biedenham.

11. Do you have any comments, suggestions, or recommendations regarding the site?

Response: Funding currently limits everything regarding the site, from administration to operations and maintenance. He feels that the following should be addressed at the site: that the scale should be repaired/replaced and operating; there should be a current survey of the site; they should begin preparation for closure (covering of exposed slopes); and a sampling program should be implemented.

He feels that the DPW along with the site operators should be held personally responsible for the work at the site. Also, the tipping fee should be removed from the general fund, and specifically allocated to the operations of the landfill. Even with the issuance of the permit, compliance has not been easy. At first issuance, site operators were reluctant to make the changes as required by the permit. However over the past few months, there have been **gradual** changes to the site, in compliance with the permit conditions, which overall has led to better management of the site.

Five-Year Review Interview Record Ordot Landfill Near the villages of Ordot and Chalan Pago, Guam		Interviewee: Mr. Jesse T. Cruz, Guam EPA – Biologist with monitoring program			
Site Name		EPA ID No.		Date of Interview	Interview Method via
Ordot Landfill Superfund Site		EPA ID# GUD980637649		March 27, 2007	Phone <input type="checkbox"/> Fax/email <input type="checkbox"/> In person <input checked="" type="checkbox"/>
Interview Contacts	Organization	Phone	Email	Address	
Pankaj Arora	US EPA, Region 9	(415) 972-3040	arora.pankaj@epa.gov	75 Hawthorne Street San Francisco, CA 94105	
Shannon Wright	CH2M HILL/SAC, as rep of EPA	(916) 286-0417	swright@ch2m.com	2485 Natomas Park Drive, Suite 600, Sacramento, CA 95833	
Interview Questions (Please address period since previous five year review in 2002)					
1. What is your overall impression of the work conducted at the site? (general sentiment)					
Response: He feels that that work progress is better now but there is still a substantial amount of work remaining. He is concerned that the landfill cover system is still being delayed. He feels that politics is playing a part in the general lack of progress at the site.					
2. Is the remedy functioning as expected? How well is the remedy performing?					
Response: He does not feel it is working. In accordance with the Clean Water Act, there has never been any follow-up on monitoring and testing requirements of surface waters.					

3. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

Response: He has not observed any data, and does not know if there is anyone else performing monitoring. They, Guam EPA, are trying to bring the monitoring program back up. They have the capabilities to do it, but other projects are taking precedence. In addition, access is limited around the site, making it hard to obtain samples.

4. Have there been any new findings regarding the geologic situation of the site since the ROD? If yes, please describe.

Response: Not applicable.

5. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: There have not been any changes with respect to sampling. They are doing a better job of assessing fees and placing daily cover over exposed waste. Maintenance appears to be better due to cover being applied. It is difficult to tell if stormwater flows are being diverted since no monitoring is taking place. They are doing a good job of cutting down on vectors and fires, but again, there is no data regarding leachate generation.

6. Have any problems been encountered which required, or will require, changes to this ROD?

Response: He feels that due to the fires at the landfill, the risk of contamination could open the ROD for potential changes. With the fires, new leachate is occurring in different areas with a different chemical make-up, potentially more hazardous.

7. Are you aware of any ongoing community concerns regarding the site or its administration?

Response: Besides the local community complaints, there is a resident that calls to claim there are fish kills and crab reduction in Pago Bay, where the waters from the Lonfit River ultimately flow. They, Guam EPA, have tested the local swimming hole, but are finding it difficult to link the organic contamination to the landfill.

8. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: Aware of illegal dumping typically following typhoons. The landfill is not designated for receiving green waste but following typhoons, people end up dumping it at the front gates. At one time there was a person that would trespass onto the site to dig through the trash. The primary incidents at the site are the landfill fires. The result of the fires is air monitoring, emergency response, and evacuation of local citizens.

9. Do you feel well-informed about the site's activities and status?

Response: For the most part, he feels that newspapers and residents are keeping people well informed. He does wish there was more monitoring being performed. That is the main area where he feels people are not very well informed.

10. Do you have any comments, suggestions, or recommendations regarding the site?

Response: The primary comment is that monitoring must be increased, or simply implemented. Decisions regarding closure and long-term monitoring and maintenance cannot be made without data. If the final solution is to cover the landfill and install leachate collection trenches along the toe, there must be monitoring information available to compare the effectiveness of the remedy with. The monitoring of the site hasn't been addressed since the late 1990s. Ideally, he would like to see the dump cleaned up. He feels that there could be other options available for dealing with the Ordot Dump, such as incineration where the landfill would be mined and the waste sent to the incinerator. He feels that to cover and leave in place is not a good, permanent solution. He feels that there really hasn't been an adequate characterization of the landfill and leachate, and that it must be revisited and assumptions verified.

Five-Year Review Interview Record Ordot Landfill Near the villages of Ordot and Chalan Pago, Guam		Interviewee: Mr. Peter Q. Cruz, Guam EPA – Air Program Director, performed inspections at the Ordot Site			
Site Name		EPA ID No.		Date of Interview	Interview Method via
Ordot Landfill Superfund Site		EPA ID# GUD980637649		March 27, 2007	Phone <input type="checkbox"/> Fax/email <input type="checkbox"/> In person <input checked="" type="checkbox"/>
Interview Contacts	Organization	Phone	Email	Address	
Pankaj Arora	US EPA, Region 9	(415) 972-3040	arora.pankaj@epa.gov	75 Hawthorne Street San Francisco, CA 94105	
Shannon Wright	CH2M HILL/SAC, as rep of EPA	(916) 286-0417	swright@ch2m.com	2485 Natomas Park Drive, Suite 600, Sacramento, CA 95833	
Interview Questions (Please address period since previous five year review in 2002)					
1. What is your overall impression of the work conducted at the site? (general sentiment)					
Response: He says there are many conflicts within government: <input type="checkbox"/> Efficiency is an ongoing concern since the inception of ROD. <input type="checkbox"/> Guam EPA cannot get DPW to comply so has enlisted the help of the USEPA. <input type="checkbox"/> Accountability and changes in leadership His impression is that work escalates on the landfill when it is brought to the forefront and then tapers off when scrutiny lessens.					
2. Is the remedy functioning as expected? How well is the remedy performing?					
Response: It has the appearance of working because progress is occurring. The question is, for how long will progress continue? He feels there will be status quo until ground actually breaks for the new landfill.					

3. What are the current landfill operation practices, and how do they differ from the ones that were in place at the time the ROD was issued?

Response: He has not noticed any difference in landfill practices, i.e., there are no true waste cells. As in the past, cover materials are always a problem. DPW soils from their Capital Projects are going to other projects and not to the landfill where it is needed most. Feels that diversion of waste through recycling will be part of the overall remedy.

4. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

Response: He did some air quality testing during the fires. Test method TO 14 was performed next to school, where nothing was found. However, the schools had to be evacuated due to the potential for exposure to toxic gasses due to the landfill fires. He is not sure if there has been any leachate sampling and testing.

5. Have there been any new findings regarding the geologic situation of the site since the ROD? If yes, please describe.

Response: N.A.

6. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: He has not noticed any significant changes to the O&M, schedules, or sampling routines. He feels that the primary reason is, they are not receiving the right amount of tipping fees to help offset operational costs. The trend remains the same as it ever has, O&M ramps up very high when there is a reason for priority, then it reverts back to the same lackadaisical operations. Significant changes would be providing adequate equipment and cover materials to operate the landfill appropriately.

7. Have any problems been encountered which required, or will require, changes to this ROD?

Response: Not really.

8. Are you aware of any ongoing community concerns regarding the site or its administration?

Response: He is aware of the exposure of potentially toxic gasses to homeowners, especially when fires occur. He knows that the primary community concerns are that they get timely meetings to let them know what is going on, as well as potential property damage.

9. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: He is aware that there have been fires at the landfill as well as illegal dumping along road/fence line as per community complaints.

10. Do you feel well-informed about the site's activities and status?

Response: Yes, sufficiently informed.

11. Do you have any comments, suggestions, or recommendations regarding the site?

Response: He feels there should be mandatory waste separation starting with the residents and commercial entities.

Five-Year Review Interview Record Ordot Landfill Near the villages of Ordot and Chalan Pago, Guam		Interviewee: Mr. Betwin C. Alokoa, Guam EPA – Environmental Health Supervisor, 1.5 years in role, used to inspect Ordot			
Site Name		EPA ID No.		Date of Interview	Interview Method via
Ordot Landfill Superfund Site		EPA ID# GUD980637649		March 30, 2007	Phone <input type="checkbox"/> Fax/email <input type="checkbox"/> In person <input checked="" type="checkbox"/>
Interview Contacts	Organization	Phone	Email	Address	
Pankaj Arora	US EPA, Region 9	(415) 972-3040	arora.pankaj@epa.gov	75 Hawthorne Street San Francisco, CA 94105	
Shannon Wright	CH2M HILL/SAC, as rep of EPA	(916) 286-0417	swright@ch2m.com	2485 Natomas Park Drive, Suite 600, Sacramento, CA 95833	
Interview Questions (Please address period since previous five year review in 2002)					
1. What is your overall impression of the work conducted at the site? (general sentiment)					
Response: First started inspecting such facilities in 1991, including Ordot. At that time, the site lacked placement of daily cover, compaction, vector control, leachate control, and proper training of personnel. He feels that things have not changed much: leachate is still flowing to the Lonfit River and the personnel are still poorly trained. They, DPW, still feel that one piece of paper is adequate for an operations plan. In 1997, they were cited to correct the above, and nothing occurred. However, there has likely been some improvement in the placement of daily cover. His primary impression is that the remedy is not working.					
2. Is the remedy functioning as expected? How well is the remedy performing?					
Response: No, he has not seen any improvement since 1988.					
3. What are the current landfill operation practices, and how do they differ from the ones that were in place at the time the ROD was issued?					
Response: Nothing appears to have improved or changed since the ROD was issued.					

4. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

Response: N.A.

5. Have there been any new findings regarding the geologic situation of the site since the ROD? If yes, please describe.

Response: Not that he is aware of.

6. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: He is aware that an O&M plan is due as part of the Consent Decree, but he is unaware of what they have done in the last five years.

7. Have any problems been encountered which required, or will require, changes to this ROD?

Response: He feels that due to the fact that leachate is not decreasing, but is likely increasing, this merits investigation. For many years, monitoring wells have been required. However, he is unaware of any that are being used to monitor the site.

8. Are you aware of any ongoing community concerns regarding the site or its administration?

Response: Yes, for many years, local residents have called him personally complaining about odors, leachate, vectors, and fires. He has attended community meetings. He feels that the landfill administration is the problem as operators are not getting what they need and their equipment is in constant need of repair. Additionally, the government changes landfill leadership frequently, views it as a dump instead of a landfill, and gives it a low priority (legislation enacted in 1994 to close the landfill, which never happened).

9. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: There are frequent occurrences of fires, illegal dumping, and trespassing along road/fence line outside the land fill. There have also been break-ins at the site. Emergency responses have occurred because of illegal pesticide dumping and a major tire fire in December of 1998. Responders have included the USEPA and the Civil Defense/Response Team.

10. Do you feel well-informed about the site's activities and status?

Response: When doing inspections, he feels he was well informed, but in matters relating to administration and planning, he feels he is kept in the dark. He gets most of the information he knows about those subjects from the media.

11. Do you have any comments, suggestions, or recommendations regarding the site?

Response: He feels that this landfill should be closed immediately due to the uncontrolled leachate streams impacting the environment. The landfill should be privatized since the DPW's personnel are not adequately trained, nor can the government run a landfill. Examples are, the operators are not getting the support they need (funding), nor are the tipping fees being adequately collected. There should be funding available from the tipping fees, but it is not. No matter which political group gets involved, they need to understand the urgency of closing the Dump. All politicians are aware of the problem; they now have to deal with it. They know it must be closed, but never provide the funding to get it done. He feels the only way this will be completed is to get a contractor to operate the new landfill and close the Ordot Dump. There have been problems with the assessment of tipping fees. Since it is based on the volume coming into the site, there has been at least one vendor that is compressing his waste in a standard trash truck (packer), and putting it into an open bed truck. It appears there is a loose load of waste within the bed of the truck, when in fact it has been packed.

Five-Year Review Interview Record Ordot Landfill Near the villages of Ordot and Chalan Pago, Guam		Interviewee: Mr. H. Victor Wuerch III, Guam EPA – Territory hydro-geologist			
Site Name		EPA ID No.		Date of Interview	Interview Method via
Ordot Landfill Superfund Site		EPA ID# GUD980637649		March 26, 2007	Phone <input type="checkbox"/> Fax/email <input type="checkbox"/> In person <input checked="" type="checkbox"/>
Interview Contacts	Organization	Phone	Email	Address	
Pankaj Arora	US EPA, Region 9	(415) 972-3040	arora.pankaj@epa.gov	75 Hawthorne Street San Francisco, CA 94105	
Shannon Wright	CH2M HILL/SAC, as rep of EPA	(916) 286-0417	swright@ch2m.com	2485 Natomas Park Drive, Suite 600, Sacramento, CA 95833	
Interview Questions (Please address period since previous five year review in 2002)					
1. What is your overall impression of the work conducted at the site? (general sentiment)					
Response: He feels that the CERCLA process is sporadic and was not conducted in an organized or sequential manner. With respect to his involvement, preliminary assessment performed for the ROD was very limited in characterizing the local groundwater. His observation is that there was not sufficient work performed to characterize the site, and that the site generally remains uncharacterized. For example, he helped USEPA install groundwater monitoring wells, but the data obtained was not usable. In addition, the consent decree provided for an environmental baseline survey (EBS) that recommended additional work that to date has not been performed. To date, there has not been any further characterization at the site other than the academic investigations by Dr. Gary Denton, WERI. He is not confident that the hydrology at the site has been adequately characterized.					
2. Is the remedy functioning as expected? How well is the remedy performing?					
Response: N.A.					

3. What are the current landfill operation practices, and how do they differ from the ones that were in place at the time the ROD was issued?

Response: N.A.

4. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?

Response: To date, there has been limited, if any, monitoring data. However, with respect to Dr. Denton's report, he agrees with the findings that the river system is generally self-cleansing of metals.

5. Have there been any new findings regarding the geologic situation of the site since the ROD? If yes, please describe.

Response: There have been some minor findings regarding geology. During investigation for closure of the landfill, there were some shallow borings and trenches that characterized the general characteristics of shallow soils around the landfill. While there were some wells installed in approximately 1992/1993, there was not enough water available to develop the wells.

6. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Response: N.A.

7. Have any problems been encountered which required, or will require, changes to this ROD?

Response: Yes, the original work performed for the ROD was sporadic and did not proceed as is typical for CERCLA sites. For example, there was not much hydrogeologic work performed to support the findings of the ROD, particularly knowing that the underlying geology is relatively complex. He would propose and expect that a Remedial Investigation and/or Human Health Risk Analysis be performed.

8. Are you aware of any ongoing community concerns regarding the site or its administration?

Response: Yes. It is reported in the news.

9. Are you aware of any events, incidents, or activities that have occurred at the site, such as dumping, vandalism, trespassing, or emergency response from local authorities?

Response: Not aware of any.

10. Do you feel well-informed about the site's activities and status?

Response: He feels that he was well-informed as to the characterization and design for closure of the landfill.

11. Do you have any comments, suggestions, or recommendations regarding the site?

Response: He believes that the site should be further characterized, a groundwater and surface water monitoring system should be installed, and the landfill should be closed properly.

