

DUGWAY PERMIT

MODULE VII

ATTACHMENT 28

**HWMU 48
POST-CLOSURE PLAN**

TABLE OF CONTENTS

	Page No.
LIST OF TABLES	ii
LIST OF FIGURES	ii
LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS	iii
1.0 INTRODUCTION	4
2.0 FACILITY DESCRIPTION	7
2.1 DPG-048 LOCATION AND HISTORY	7
2.2 PAST OPERATIONS	7
2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION	8
2.4 CLOSURE ACTIVITIES	8
2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT	9
2.6 SURFACE WATER AND GROUNDWATER	9
2.7 CLOSURE NOTIFICATIONS	9
3.0 SECURITY REQUIREMENTS	9
4.0 POST-CLOSURE OPERATIONS AND INSPECTIONS	9
4.1 INTRODUCTION	9
4.2 ROUTINE SITE INSPECTIONS	9
4.3 INSPECTION FOLLOW-UP	10
5.0 SUBMITTALS/REPORTING	11
5.1 NON-COMPLIANCE REPORTING	11
5.2 BIENNIAL POST-CLOSURE REPORT	11
5.3 REQUIRED SUBMITTALS	11
6.0 POST-CLOSURE CERTIFICATION	12
7.0 REFERENCES	12

LIST OF TABLES

		Page No.
Table 1	Summary of DPG-048 Post-Closure Information Requirements Under 40 CFR §270.14, and UAC R315-3-2.5	2
Table 2	DSHW Library Documents Detailing DPG-048 Investigations	5
Table 3	DPG-048 Post-Closure Inspection Schedule	7
Table 4	Summary Table of Required Submittals	9

LIST OF FIGURES

Figure 1	DPG-048 Location Map
Figure 2	DPG-048 Regional Topography
Figure 3	DPG-048 Site Map

APPENDICIES

Appendix A	Closure Certification
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LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

ATG	Allied Technology Group, Inc
bgs	below ground surface
CFR	Code of Federal Regulations
COPC	Contaminant of Potential Concern
DPG	Dugway Proving Ground
DSHW	Divisions of Solid and Hazardous Waste
ft	feet
HWMU	Hazardous Waste Management Unit
MCL	Maximum Contaminant Level
mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MPA	Methyl Phosphoric Acid
MWH	Montgomery Watson Harza
PCB	Polychlorinated Biphenyl
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
SWMU	Solid Waste Management Unit
TCB	Trichlorobenzene
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TSCA	Toxic Substances Control Act
UAC	Utah Administrative Code
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

The objectives of this Post-Closure Plan (PCP) are to 1) ensure that Dugway Proving Ground (DPG or Dugway) complies with the Post-Closure Permit issued by the State of Utah in accordance with Title 40 Code of Federal Regulations (CFR) §265.117, with respect to post-closure inspection requirements, 2) complies with tracking and inspections to ensure industrial site use, and 3) ensure that the Toxic Substance and Control Act (TSCA) low-occupancy use criteria is followed. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at Hazardous Waste Management Unit (HWMU) 48. Post-closure requirements will continue for a minimum of 30 years after closure of HWMU 48. The post-closure care period may be extended or shortened, as deemed necessary (40 CFR §265.117(a)(2)).

Based on the approved Remedial Action Closure Report for HWMU 48 (Montgomery Watson Harza [MWH], 2002), all soil with contaminant concentrations exceeding the cleanup goals were removed from the site. The source removal actions are considered to be protective of human health and environment since residual soil Polychlorinated Biphenyl (PCB) contamination could not impact groundwater according to the 10,000-year model prepared by the U.S. Army Corps of Engineers (USACE). A detailed discussion of the modeling and results is contained in the *Final Remedial Action Plan* (IT, 2000). The remediation activities documented in the closure report satisfy the requirements for the Self-Implementing Rule for PCB Cleanup (40 CFR §761.61), the Resource Conservation and Recovery Act (RCRA) closure plan for HWMU 48, and the Toxic Substances Control Act (TSCA) PCB cleanup regulations for low occupancy areas. A low occupancy area is defined as any area where PCB remediation waste has been disposed of on-site and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: less than 840 hours (an average of 16.8 hours per week) for non-porous surfaces and less than 335 hours (an average of 6.7 hours per week) for bulk PCB remediation waste. Post-closure maintenance of the fenced enclosure around DPG-048 is required as well as soil management and land use management within the fenced area.

In accordance with Title 40 CFR §270.28 and Utah Administrative Code (UAC) R315-3-2.19, the Post-Closure Plan is required to include specific information for a closed facility. As applicable to DPG-048, the information requirements include:

- General description of the facility,
- Description of security procedures,
- General inspection schedule,
- Preparedness and Prevention Plan,
- Facility location information (including seismic and flood plain considerations),
- Closure Plan or Closure Proposal,
- Certificate of Closure,
- Topographic map, with specific scale,
- Summary of groundwater monitoring data, and
- Identification of uppermost aquifer and interconnected aquifers.

Table 1 provides the regulatory citations for the general information requirements and the locations in this PCP where the specific information is presented.

**Table 1: Summary of DPG-048 Post-Closure Information Requirements
Under 40 CFR §270.14, and UAC R315-3-2.5**

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(b)(1) UAC R315-3-2.5(b)(1)	General Description of the Facility	Section 2.0.
40 CFR § 270.14(b)(4) UAC R315-3-2.5(b)(4)	Description of Security Procedures	Section 3.0.
40 CFR §270.14(b)(5) UAC R315-3-2.5(b)(5)	General Inspection Schedule	Section 4.0, Module VII Table VII-3, and Module VII Form A.
40 CFR §270.14(b)(6) UAC R315-3-2.5(b)(6)	Preparedness and Prevention	Section 3.0.
40 CFR §270.14(b)(11)(i-ii, v) UAC R315-3-2.5(b)(11) (i-ii, v)	Facility Location Information Applicable seismic standard	There are no active faults in the vicinity of DPG-048.
40 CFR §270.14(b)(11) (iii-v) UAC R315-3-2.5(b)(11) (iii-v)	Facility Location Information 100-year floodplain	DPG-048 is not located within a verified 100-year floodplain area
40CFR §270.14(b)(13) UAC R315-3-2.5(b)(13)	Copy of the Closure Proposal	The Final Closure Report was issued in March, 2004 and final certification was awarded on 02/03/2005.
40 CFR §270.14(b)(14) UAC R315-3-2.5(b)(14)	Closure Certification and Notification	Section 2.7 and Appendix A.
40 CFR §270.14(b)(16) UAC R315-3-2.5(b)(16)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement.
40 CFR §270.14(b)(18) UAC R315-3-2.5(b)(18)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (i)	Topographic Map Map Scale and Date	Figure 2 (1 inch = 1000 feet (ft)).
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (ii)	Topographic Map 100-year floodplain area	DPG-048 is not located within a verified 100-year floodplain area.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (iii)	Topographic Map Surface waters including intermittent streams	Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (iv)	Topographic Map Surrounding land uses	DPG-048 is within a military base. There are no nearby operations in the vicinity of DPG-048.

**Table 1 (Continued): Summary of DPG-048 Post-Closure Information Requirements
Under 40 CFR 270.14 and UAC R315-3-2.5**

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (v)	Topographic Map A wind rose (i.e., prevailing windspeed and direction)	There are no residential populations abutting DPG-048. The closest residential area is English Village (approximately 1 mile away). A wind rose is not deemed necessary for DPG-048.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (vi)	Topographic Map Orientation of Map, North Arrow	Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (vii)	Topographic Map Legal boundaries of the hazardous waste management facility	Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (viii)	Topographic Map Access control, fence, gates	Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (ix)	Topographic Map Injection and withdrawal wells	Figure 2.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (xi)	Topographic Map Barriers for drainage or flood control	Figure 2. There are no barriers to drainage or flood control in the vicinity of DPG-048.
40 CFR §270.14(c) UAC R315-3-2.5(c)(1)	Groundwater Monitoring Information Summary of Groundwater Data	Final Remedial Action Plan (IT, 2000) Section 1.1.4.
40 CFR §270.14(c) UAC R315-3-2.5(c)(2)	Groundwater Monitoring Information Identification of uppermost aquifer	Final Remedial Action Plan (IT, 2000) Section 1.1.4.
40 CFR §270.14(c) UAC R315-3-2.5(c)(3)	Groundwater Monitoring Information Delineation of the Waste Management Area	Figure 3.
40 CFR §270.14(c) UAC R315-3-2.5(c)(4)	Groundwater Monitoring Information Extent of Plume	Final Remedial Action Plan (IT, 2000) Section 1.1.4.
40 CFR §270.14(c) UAC R315-3-2.5(c)(5)	Groundwater Monitoring Information Detailed Plans/Engineering Report for Proposed Groundwater Program	Post-closure groundwater monitoring at DPG-048 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(i)	Groundwater Monitoring Information Proposed List of Parameters	Post-closure groundwater monitoring at DPG-048 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(ii)	Groundwater Monitoring Information Proposed Groundwater	Post-closure groundwater monitoring at DPG-048 is not required.

Table 1 (Continued): Summary of DPG-048 Post-Closure Information Requirements Under 40 CFR 270.14 and UAC R315-3-2.5

Regulation Citation	Requirement Description	Location Requirement is Addressed
	Monitoring System	
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(iii)	Groundwater Monitoring Information Background Values	Post-closure groundwater monitoring at DPG-048 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(iv)	Groundwater Monitoring Information A description of the Proposed Sampling	Post-closure groundwater monitoring at DPG-048 is not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of DPG-048, as required by UAC R315-3-2.5(b)(1) (Figures 1 and 2).

2.1 DPG-048 LOCATION AND HISTORY

DPG-048, also known as Fries Park 3X Metal Storage Area, is located approximately four miles west of the DPG main gate and north of Stark Road. DPG-048 is located in the northern portion of the fenced storage yard at Fries Park, between a former trailer park to the West, the former Supply Division Warehouse area to the East, and the Communications Operations Building 6048 to the South. The majority of DPG-048 is surrounded by a chain link fence and occupies an area of approximately 800 ft by 600 ft or approximately 11 acres. The topography of the site is relatively flat with a slight rise in elevation on the north end of the site. The ground surface consists of packed sand and gravel fill with sparse vegetation.

There were formerly 12 buildings at DPG-048, three of which remained prior to PCB remediation activities at the site. Of the three remaining buildings, 6040 and 6042 were demolished during the PCB remediation activities at DPG-048. Building 6048 remains to date and is being used by DPG communication operations. Building 6048 formerly used a fenced portion of DPG-048 as an equipment and material storage yard.

The soils at DPG-048 were impacted by organic compounds, primarily PCB Arochlor 1260; Trichlorobenzene (TCB); methyl phosphoric acid (MPA); and Chlordane, an organochlorine pesticide. The soil was remediated by excavation and off-site disposal, and disposed at the Grassy Mountain Facility in Clive, Utah.

The source of the PCB soil contamination was reported to be from the storage of electrical transformers. The source of MPA may be from the documented storage of 3X materials at DPG-048. MPA was detected in 7 of the 63 soil samples collected by Foster Wheeler in 1995 at a maximum concentration of 14 milligrams per kilogram (mg/kg). However it was not detected in any of the 29 samples collected from a depth of one foot below ground surface (bgs) by Allied Technology Group, Inc. (ATG) in a subsequent 1997 investigation.

2.2 PAST OPERATIONS

Until 1995, DPG-048 was used to store a variety of material and equipment for logistical activities. Material and equipment included DS-2 decontamination solution, unused agent samplers, waste petroleum products, lubricants and solvents, glycol, paints, transformers, nickel-cadmium batteries, asbestos-contaminated materials, and chemical agent containers. These materials and equipment were stored either directly on the ground, in portable containers, on a transformer pad, or on pallets.

2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION

The detailed results of previous soil and groundwater sampling and closure information including the risk assessment are available for DPG-048 in the Division of Solid and Hazardous Waste (DSHW) public document listed below in Table 2 (UAC R315-3-2.5(b)(13)).

Table 2: DSHW Library Documents Detailing DPG-048 Investigations

Document Title	Received Date	DSHW Library No.
IT Corporation (IT), 2000. <i>Final Remedial Action Plan for HWMU 48 Fries Park 3X Metal Storage Area, Dugway Proving Ground, Dugway, Utah.</i> December.	12/00	
Montgomery Watson Harza (MWH), 2002. <i>Final Remedial Action Closure Report for HWMU 48, Dugway Proving Ground, Dugway, Utah.</i> March.	03/04	

2.4 CLOSURE ACTIVITIES

Documentation in the approved Closure Report (MWH, 2002) indicates that conditions at DPG-048 meet the closure performance standards under UAC R315-7-14 (by reference 40 CFR 265, Subpart G, §265.111). Land use controls are required to prevent residential use of the site.

The Certification of Closure (Appendix A) certifies that HWMU 48 meets the closure performance standards under UAC R315-7-14 and R315-101 and 40 CFR §265.111 (subpart G) adopted by reference, as follows: (1) minimizes the need for further maintenance, (2) controls, minimizes or eliminates, to extent necessary to protect human health and environment, post closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere, and (3) complies with closure requirements of this subpart and other applicable requirements.

The major closure activities completed at DPG-048 included:

- Removal of waste in the presumed source area; and
- Demonstrating that further degradation of groundwater was unlikely based on the VLEACH modeling analysis.

These measures indicate that no waste is present, thus preventing human contact with waste. Groundwater monitoring at DPG-048 is not required. An inspection checklist designed to ensure that these objectives are maintained is presented in Module VII, Form A.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

A Baseline Human Health Risk Assessment was completed for DPG-048 (Foster Wheeler, 1997). The cancer risk under both residential and industrial land use scenarios exceeded the state of Utah criteria for corrective action indicating that corrective action was required for the removal of PCB soil contamination. Additional human health and ecological risk assessments were conducted and indicated that the remaining residual soil contamination does not pose an unacceptable risk as defined in UAC R315-101. Since the waste has been removed, there is not any potential for escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, surface waters, or to the atmosphere. The cancer risk is less than 1E-04 and the Hazard Index is less than 1.0. However, PCBs remain in soil and the criteria for control as a low activity site under TSCA applies.

2.6 SURFACE WATER AND GROUNDWATER

There are no surface water features present at DPG-048. Surface water drainage in the vicinity of the site flows to the north.

No groundwater monitoring wells have been installed at DPG-048. Results from VLEACH modeling indicate that it is highly unlikely that groundwater has been impacted or will be impacted by the residual levels of the chemical of concern at DPG-048. Additional detailed analyses (refer to the RFI) demonstrate that long-term groundwater monitoring under a post-closure permit is unnecessary.

2.7 CLOSURE NOTIFICATIONS

Federal facilities are exempt from submitting notifications to the local zoning authority as required by 40 CFR §264.116 and §264.119, which are incorporated by reference in UAC R315-8-7.

3.0 SECURITY REQUIREMENTS

The following security conditions are applicable to DPG-048:

1. DPG-048 is located within a federal, military installation (DPG). As such, the installation is restricted for the common population.

The Dugway Emergency Response and Contingency Plan (Part B Permit), where applicable to this site, shall be used to announce and respond to emergency conditions. At a minimum, the site inspector should have a radio or cell phone and a First Aid kit available during inspections.

4.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

4.1 INTRODUCTION

DPG-048 has been closed under a continued industrial use scenario, which prohibits residential use in the area formerly occupied by the site. To ensure that the area is not reused or developed, annual site inspections and a biennial post-closure report shall be required.

4.2 ROUTINE SITE INSPECTIONS

During its Post-Closure period, general inspections of the former DPG-048 site shall be conducted annually to 1) ensure that the former site remains under industrial use, 2) low activity requirements

defined under TSCA are met, and 3) to verify the Dugway Dig Permit process as described in Module VII.I has been followed. The frequency of inspections can be modified in accordance with amendments submitted in the form of proposed permit modifications.

Site inspections will consist of a complete walk through and visual inspection of the site. A general site inspection checklist is included in Module VII, Form A of the permit. Completed inspection forms shall be filed with the Dugway Environmental Office.

At a minimum the site shall be visually inspected to ensure the following conditions are maintained at the site:

1. There is no evidence of land use other than for industrial purposes within the former site boundary;
2. The fence is maintained; and
3. There is no evidence of soil disturbance.

Table 3 summarizes the Post-Closure Inspection Schedule for DPG-048, and lists the items to be inspected. Inspection personnel shall note any problems found and shall inform appropriate Dugway representatives.

Table 3: DPG-048 Post-Closure Inspection Schedule

Inspection/ Monitoring Item	Method of Documentation	Frequency of Inspection
Land Use	General Post-Closure Site Inspection Checklist for Industrial Use Sites (Module VII, Form A)	Annual inspections shall be conducted no later than November 1st, of each year.
Soil Disturbance	General Post-Closure Site Inspection Checklist for Industrial Use Sites (Module VII, Form A)	Annual inspections shall be conducted no later than November 1st, of each year.

4.3 INSPECTION FOLLOW-UP

Copies of completed site inspection checklists (Module VII, Form A) shall be forwarded to the Dugway Environmental Office. The Point-of-Contact for the Dugway Environmental Office is as follows:

Environmental Programs Compliance Representative
 Dugway Proving Ground Environmental Program Office
 Dugway Proving Ground, UT 84022
 Telephone: (435) 831-3560

The Dugway Environmental Office shall notify the appropriate personnel to implement corrective action as needed.

Corrective action shall be initiated as soon as practical after identifying the problem, or as directed by Dugway. If the corrective action requires substantial effort, a technical plan shall be prepared to summarize the problem, the potential impacts, the proposed plan for action, and the time-frame in which corrective action will be implemented as required under this Permit. This plan shall be approved by the Executive Secretary prior to implementing corrective action.

5.0 SUBMITTALS/REPORTING

Based on the evaluation presented in the Closure Report for DPG-048 (MWH, 2002), post-closure inspection is required. Groundwater monitoring for DPG-048 is not required.

5.1 NON-COMPLIANCE REPORTING

The conditions at DPG-048 are such that the impact to human health and the environment is very unlikely. Hazardous wastes are no longer managed at the site. Nonetheless, if there is any type of non-compliance with any condition of this Permit, notifications shall be submitted per permit condition VII.C.5.

5.2 BIENNIAL POST-CLOSURE REPORT

In accordance with UAC R315-3-3.1(1)(9), a Biennial Post-Closure Report shall be prepared for all Dugway closed HWMUs and Solid Waste Management Units (SWMUs) undergoing post-closure care by March 1, of the reporting year. The first Post-Closure report for DPG-048 shall be due no later than March 1, 2010. Specifically for DPG-048, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions; and
- Inspection records.

5.3 REQUIRED SUBMITTALS

Table 4 summarizes the requirements for the Biennial Post-Closure Report for DPG-048 and reporting of any non-compliance.

Table 4: Summary Table of Required Submittals

Required Submittals	Frequency and Submittal Date
<u>Biennial Post-Closure Report</u>	Post-Closure Reports shall be submitted to the Division of Solid and Hazardous Waste no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2010, for the duration of the Post-Closure Monitoring Period.
<u>Non-Compliance Reporting</u> Anticipated Non-Compliance 24-hour Notification for information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment.	30 days advance notice of any change which may result in noncompliance. Orally within 24 hours of discovery.
Five-day written notification for information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment including evidence of groundwater contamination, significant data quality issues, or a request for reduced monitoring frequency. The Executive Secretary may waive the 5-day notice, in favor of a 15-day notice. Written notification for information concerning the non-compliance, which does not endanger human health or the environment.	Within 5 days of discovery. Submitted when the Biennial Post Closure Reports are submitted.

6.0 POST-CLOSURE CERTIFICATION

No later than 60 days after post-closure activities are completed and approved by the Executive Secretary, Dugway representatives shall submit a certification to the Board, signed by Dugway and an independent professional engineer registered in the State of Utah, stating why post-closure care is no longer needed.

7.0 REFERENCES

Foster Wheeler, 1997. *Final Closure Plan, Module 3, Solid Waste Management Unit (SWMU) 48 Accelerated Version.*

IT Corporation (IT), 2000. *Final Remedial Action Plan for HWMU 48 Fries Park 3X Metal Storage Area, Dugway Proving Ground, Dugway, Utah.* December.

Montgomery Watson Harza (MWH), 2002. *Final Remedial Action Closure Report for HWMU 48, Dugway Proving Ground, Dugway, Utah.* March.