

DUGWAY PERMIT

MODULE VII

ATTACHMENT 45

**SWMU 114
POST-CLOSURE PLAN**

TABLE OF CONTENTS

	Page No.
LIST OF TABLES	ii
LIST OF FIGURES	ii
LIST OF APPENDICES	ii
LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS	iii
1.0 INTRODUCTION	1
2.0 FACILITY DESCRIPTION	4
2.1 DPG-114 LOCATION AND HISTORY	4
2.2 PAST OPERATIONS	4
2.3 PREVIOUS INVESTIGATIONS DOCUMENTATION	4
2.4 CLOSURE ACTIVITIES	5
2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT	5
2.6 SURFACE WATER AND GROUNDWATER	5
2.7 CLOSURE NOTIFICATIONS	6
3.0 SECURITY REQUIREMENTS	6
4.0 POST-CLOSURE OPERATIONS AND INSPECTIONS	6
4.1 INTRODUCTION	6
4.2 ROUTINE SITE INSPECTIONS	6
4.3 INSPECTION FOLLOW-UP	7
5.0 SUBMITTALS/REPORTING	7
5.1 NON-COMPLIANCE REPORTING	8
5.2 BIENNIAL POST-CLOSURE REPORT	8
5.3 REQUIRED SUBMITTALS	8
6.0 POST-CLOSURE CERTIFICATION	9
7.0 REFERENCES	10

LIST OF TABLES

		Page No.
Table 1	Summary of DPG-114 Post-Closure Information Requirements Under 40 CFR §270.14 and UAC R315-3-2.5	2
Table 2	DSHW Library Documents Detailing DPG-114 Investigations	5
Table 3	DPG-114 Post-Closure Inspection Schedule	8
Table 4	Summary Table of Required Submittals	9

LIST OF FIGURES

Figure 1	DPG-114 Location Map
Figure 2	DPG-114 Site Map

LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

ACM	Asbestos-containing Material
APG	All Purpose Grid
bgs	below ground surface
BWA	Biological Warfare Agent
CFR	Code of Federal Regulations
COPC	Constituent of Potential Concern
DPG	Dugway Proving Ground
DSHW	Divisions of Solid and Hazardous Waste
ft	feet
GPI	Granite Peak Installation
HWMU	Hazardous Waste Management Unit
mg/L	milligrams per liter
NFA	No Further Action
PAH	Polycyclic Aromatic Hydrocarbon
PCP	Post Closure Plan
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SWMU	Solid Waste Management Unit
TDS	Total Dissolved Solid
UAC	Utah Administrative Code
UDEQ	Utah Department of Environmental Quality

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 and 2) to document tracking and inspections to ensure industrial site use. To meet these objectives, this PCP provides detailed information regarding the location, regulatory criteria, and post-closure inspections at Solid Waste Management Unit (SWMU) 114 (herein referred to as DPG-114). Post-closure requirements will continue for a minimum of 30 years after closure of SWMU 114. The post-closure care period may be extended or shortened, as deemed necessary (40 CFR §265.117(a)(2)).

Based on the approved Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), there are no uncontrolled sources of contamination (Utah Administrative Code (UAC) R315-101-2 and 3) present at DPG-114. The nature and extent of potential contamination has been characterized in soil in accordance with UAC R315-101-4 and the site risks have been assessed in accordance with UAC R315-101-5. Soil does not qualify for no further action (NFA) based upon a hypothetical residential land use, but soil does meet industrial use risk levels. Soil-to-groundwater analysis indicates that potential future impacts to groundwater from soil are not expected at DPG-114.

In accordance with 40 CFR §270.28 and UAC R315-3-2.19, the Post-Closure Plan is required to include specific information for a closed facility. As applicable to DPG-114, 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 Post-Closure Plan where the specific information is presented.

Table 1: Summary of DPG-114 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 and Form A of Module VII

**Table 1: Summary of DPG-114 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)(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-114.
40 CFR §270.14(b)(11) (iii-v) UAC R315-3-2.5(b)(11) (iii-v)	Facility Location Information 100-year floodplain	DPG-114 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 Phase II RFI Report was issued in September 2009 and approved on April 28, 2010. No public comments were received.
40 CFR §270.14(b)(14) UAC R315-3-2.5(b)(14)	Closure Certification and Notification	Section 2.7.
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-114 is not located within a verified 100-year floodplain area.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (iv)	Topographic Map Surrounding land uses	DPG-114 is within a military base. There are no nearby operations in the vicinity of DPG-114.
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-114. The closest residential area is English Village. A wind rose is not deemed necessary for DPG-114.
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)	Topographic Map	Figure 2. There are no barriers

**Table 1: Summary of DPG-114 Post-Closure Information Requirements
Under 40 CFR §270.14, and UAC R315-3-2.5**

Regulation Citation	Requirement Description	Location Requirement is Addressed
UAC R315-3-2.5(b)(19) (xi)	Barriers for drainage or flood control	to drainage or flood control in the vicinity of DPG-114.
40 CFR §270.14(c) UAC R315-3-2.5(c)(1)	Groundwater Monitoring Information Summary of Groundwater Data	Final Phase II RFI Report, Section 2.2
40 CFR §270.14(c) UAC R315-3-2.5(c)(2)	Groundwater Monitoring Information Identification of uppermost aquifer	Final Phase II RFI Report, Section 2.2
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 Phase II RFI Report, Section 2.2.
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-114 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-114 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(ii)	Groundwater Monitoring Information Proposed Groundwater Monitoring System	Post-closure groundwater monitoring at DPG-114 is not required.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(iii)	Groundwater Monitoring Information Background Values	Post-closure groundwater monitoring at DPG-114 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-114 is not required.

2.0 FACILITY DESCRIPTION

The following provides a general description of DPG-114 from the Final RFI (Parsons 2009), as required by UAC R315-3-2.5(b)(1) (Figures 1 and 2).

2.1 DPG-114 LOCATION AND HISTORY

SWMU-114 is located in the Dugway Valley in the All Purpose Grid (APG) Investigative Area, off the northeast part of V-Grid on Falconer Road (Figure 1.1). DPG-114 was the site of the former Granite Peak Installation (GPI)-3 facility, which was associated with GPI-1 and GPI-2. GPI-1 was investigated as SWMU-180, and served as the headquarters of the GPIs; GPI-2 is being investigated as SWMU-4.

Analysis of DPG historical building lists indicates that GPI-3 consisted of an animal house, meteorology building, post mortem building, an enlisted men's and officer's quarters, water tank, decontamination building, pump house, boiler and generator house, comminutor house with tank supports, and other buildings. No map of GPI-3 showing building locations has been found. Upon initiation of the RFI and prior to a voluntary interim removal action conducted in June-July 2009, the site consisted of building foundations (including a foundation with tank supports), pits, debris piles/mounds, a sewer line, manholes, and septic tank, and large steel tank pieces. A water-filled pit sits across Falconer Road from the main part of the site. The affected area of the site (the portion of the SWMU where soil has been potentially disturbed or otherwise affected by site activities) encompasses approximately 3.9 acres (Figure 1.2).

SWMU-202, located approximately 500 ft to the southwest of SWMU-114, was combined with SWMU-114 investigation due to the proximity of the two sites. The former SWMU-202 section of SWMU-114 consisted of two waste piles containing miscellaneous wood, metal scrap, and asbestos tile.

2.2 PAST OPERATIONS

It is believed that GPI-3 served as the primary test site for pathogenic organisms and was the operational facility for outdoor testing of biological warfare agent (BWA) on the Triangle Grid. A series of safari test operations run by Fort Detrick personnel are known to have been conducted on the Triangle Grid in 1950. However, it is not known if the GPI-3 facility were used during these tests.

The foundation with tank supports formerly present at SWMU-114 was similar to a foundation located at GPI-2 (SWMU-4), which is known to have housed pressure vessels for decontaminating infectious waste. Therefore, it is likely the tanks formerly present at SWMU-114 were used to treat aqueous waste under pressure at elevated temperatures. It appears that these may have drained into the sewer system.

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-114 in the Division of Solid and Hazardous Waste (DSHW) public documents listed below in Table 2 (UAC R315-3-2.5(b)(13)).

Table 2: DSHW Library Documents Detailing DPG-114 Investigations

Document Title	Received Date	DSHW Library No.
Parsons, 1999. <i>Final Phase I RCRA Facility Investigation, Investigation Report, Revision 1</i> . September.	09/99	DPG00007
Parsons, 2009. <i>Final Phase II RCRA Facility Investigation Report, SWMU-114 Addendum</i> . September.	09/09	

2.4 CLOSURE ACTIVITIES

Documentation in the approved RFI Report indicates that conditions at DPG-114 meet the closure performance standards under UAC R315-7-14 (by reference 40 CFR Part 265, Subpart G, §265.111). Exposure to risks and hazards associated with potential exposure to soil qualifies for industrial use. Land use controls are required to prevent residential use of the site and to ensure the Dugway Dig Permit process is followed.

A voluntary interim removal action was conducted at DPG-114 to remove the building foundations, pits, debris piles, sewer line and septic tank, large steel tank pieces and associated impacted soils, and asbestos-containing material (ACM). The voluntary removal action was conducted in June-July 2009 and involved the removal of the building foundations, pits, debris piles, sewer line and septic tank, steel tank pieces and associated polycyclic aromatic hydrocarbon (PAH)-impacted soils, and ACM. Backfilling and re-grading occurred in July 2009 following collection of additional surface soil samples.

A total of 2012 tons of non-hazardous waste including approximately 450 ft of sewer line, associated manholes and the septic tank, concrete from former building foundations including the tank supports, firebrick, cinderblocks, PAH-impacted soil, and miscellaneous debris were removed from SWMU-114 and hauled to the DPG Landfill. A total of 16.9 tons of scrap metal, including the steel tank pieces and piping, were removed and hauled to a metal recycler. An asbestos abatement was also conducted and consisted of removal of approximately 8.2 tons of ACM by a certified asbestos contractor. All ACM removed from the site was also disposed at the DPG-approved asbestos disposal portion of the DPG landfill in accordance with applicable regulations.

Backfilling consisted of transporting clean soil from the mounds adjacent to the water-filled pit to excavations left in the area of former building foundations. The site was then re-graded and leveled using a bulldozer and trackhoe.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

Human health and ecological risk assessments were conducted for DPG-114. The results of the human health risk assessment indicated that SWMU-114 site soils do not qualify for NFA under UAC R315-101 (DSHW, 2001) since the estimated cumulative residential risk estimate was above the NFA target level due to widespread low levels of PAHs; however, levels were within industrial risk and hazard levels. Soil-to-groundwater analysis indicates that future impacts to groundwater from constituents of potential concern (COPCs) in soil also are not expected. There were no COPCs identified as potential hazards for populations of ecological receptors.

2.6 SURFACE WATER AND GROUNDWATER

There is no surface water at this site. Groundwater in the APG area is part of the Dugway Basin system, a broad, low-lying region in northwestern DPG that marks the physical merger of the Dugway Valley, Old River Bed, and Government Creek drainages that enter the basin from the south. Data from municipal and monitoring wells in the Baker and APG areas indicate that groundwater in this region is largely unconfined, of low quality, and present at depths of approximately 5 to 20 ft bgs. Groundwater enters the APG area largely through subsurface inflow from the three basins to the south. The direction of groundwater flow at SWMU-114 is unknown; however, regional groundwater flow is generally northwest toward the Great Salt Lake Desert where it is discharged as subsurface outflow.

The depth to groundwater at SWMU-114 is expected to be around 10 ft bgs. Shallow groundwater at the site is presumed to be Class IV (saline) based on water-quality determinations from other APG sites and on total dissolved solids (TDS) field measurements of 177,000 parts per million (ppm) in water in the water-filled pit analyzed during the Phase I investigation (Parsons, 1999). The quality of deeper groundwater at the site is unknown. A source removal occurred and the risk assessment indicated no potential for COPCs to migrate to groundwater, groundwater monitoring is not required.

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-114:

DPG-114 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 phone and a First Aid kit available during inspections.

4.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

4.1 INTRODUCTION

DPG-114 has been closed under a continued industrial use scenario, which prohibits residential use in the area formerly occupied by the site. The site has been closed under the DPG RCRA part B Permit requirements. 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-114 site shall be conducted annually by November 1st to ensure that the former site remains under industrial use and to ensure the Dugway Dig Permit Process (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 visual inspection of the site. A general site inspection checklist is included in Module VII (Form A). 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; and
2. There is no evidence of soil disturbance.

Table 3 summarizes the Post-Closure Inspection Schedule for DPG-114, and lists the items to be inspected and potential problems. Inspection personnel shall note any problems found and shall inform appropriate Dugway representatives.

Table 3: DPG- 114 Post-Closure Inspection Schedule

Inspection/ Monitoring Item	Method of Documentation	Frequency of Inspection
Land Use	Industrial Use Inspection Checklist (Form A of Module VII)	Annually, by November 1st
Soil Disturbance	Industrial Use Inspection Checklist (Form A of Module VII)	Annually, by November 1 st

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 RFI for DPG-114 (Parsons, 2009), post-closure inspection is required. Groundwater monitoring for DPG-114 is not needed.

5.1 NON-COMPLIANCE REPORTING

The conditions at DPG-114 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 Hazardous Waste Management Units (HWMUs) and SWMUs undergoing post-closure care by March 1, of the reporting year. The first Post-Closure report for DPG-114 shall be due no later than March 1, 2012. Specifically for DPG-114, 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-114 and reporting for 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 2012, 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. 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.	30 days advance notice of any change which may result in noncompliance Orally within 24 hours of discovery 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

DSHW (Division of Solid and Hazardous Waste), 2001. *Administrative Rules for Cleanup Action and Risk-Based Closure Standards*. Utah Department of Environmental Quality. R315-101, Utah Administrative Code.

Division of Water Quality (DWQ), 2002. *Division of Water Quality Administrative Rules for Groundwater Quality Protection R317-6 Utah Administrative Code*.

Parsons Environmental Science, Inc. (Parsons), 2009. *Final Phase II RCRA Facility Investigation Report, SWMU-114 Addendum*. September.

Parsons, 1999. *Final Phase I RCRA Facility Investigation, Investigation Report, Revision 1*. September.

FIGURES