

DUGWAY PERMIT

MODULE VII

ATTACHMENT 39

**SWMU 177
POST-CLOSURE PLAN**

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LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

ABP	agent breakdown product
bgs	below ground surface
CFR	Code of Federal Regulations
COPC	Chemical of Potential Concern
DPG	Dugway Proving Ground
DSHW	Division of Solid and Hazardous Waste
ft	feet
GMA	Groundwater Management Area
HWMU	Hazardous Waste Management Unit
NFA	No Further Action
PCE	Tetrachloroethylene
PCP	Post-closure Plan
RFI	Resource Conservation and Recovery Act Facility Investigation
SWMU	Solid Waste Management Unit
SVOC	Semi-volatile Organic Compound
TCE	Trichloroethylene
UAC	Utah Administrative Code
VOC	Volatile Organic Compound

1.0 INTRODUCTION

The objectives of this Post-Closure Plan (PCP) are to 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 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) 177. Post-closure requirements will continue for a minimum of 30 years after closure of SWMU 201. The post-closure care period may be extended or shortened, as deemed necessary (40 CFR §265.117(a)(2)).

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-177, 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 specific locations in this Post-Closure Plan where the specific information is presented.

Table 1: Summary of DPG-177 Post-Closure Information Requirements Under 40 CFR §270.14, UAC R315-3-2.19, 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 Module VII, Form A
40 CFR §270.14(b)(6) UAC R315-3-2.5(b)(6)	Preparedness and Prevention	Section 4.0

Table 1 (Continued): Summary of DPG-177 Post-Closure Information Requirements Under 40 CFR 270.14, UAC R315-3-2.19, and UAC R315-3-2.5

Regulation Citation	Requirement Description	Location Requirement is Addressed
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	Section 4.3.1
40 CFR §270.14(b)(11) (iii-v) UAC R315-3-2.5(b)(11) (iii-v)	Facility Location Information 100-year Floodplain	Section 4.3.2
40 CFR §270.14(b)(13) UAC R315-3-2.5(b)(13)	Copy of the Closure Plan	The Final Phase II RCRA Facility Investigation (RFI) Report was issued in November 2008 and approved on August 25, 2009. 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	Section 4.3.2; DPG-177 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-177 is within a military base. There are no nearby operations in the vicinity of DPG-177.
40 CFR §270.14(b)(19) UAC R315-3-2.5(b)(19) (v)	Topographic Map Wind Rose (i.e., prevailing windspeed and direction)	There are no residential populations abutting DPG-177. The closest residential area is English Village (approximately 10 miles away). A wind rose is not deemed necessary for DPG-177.
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. The site is not surrounded by a fence.
40 CFR §270.14(b)(19)	Topographic Map	Figure 2.

Table 1 (Continued): Summary of DPG-177 Post-Closure Information Requirements Under 40 CFR 270.14, UAC R315-3-2.19, and UAC R315-3-2.5

Regulation Citation	Requirement Description	Location Requirement is Addressed
UAC R315-3-2.5(b)(19) (ix)	Injection and Withdrawal Wells	
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-201.
40 CFR §270.14(c) UAC R315-3-2.5(c)(1)	Groundwater Monitoring Information Summary of Groundwater Data	Post-closure groundwater monitoring at DPG-177 will be managed under Ditto Groundwater Management Area (GMA).
40 CFR §270.14(c) UAC R315-3-2.5(c)(2)	Groundwater Monitoring Information Identification of Uppermost Aquifer	Post-closure groundwater monitoring at DPG-177 will be managed under Ditto GMA.
40 CFR §270.14(c) UAC R315-3-2.5(c)(3)	Groundwater Monitoring Information Delineation of The Waste Management Area	Post-closure groundwater monitoring at DPG-177 will be managed under Ditto GMA.
40 CFR §270.14(c) UAC R315-3-2.5(c)(4)	Groundwater Monitoring Information Extent of Plume	Post-closure groundwater monitoring at DPG-177 will be managed under Ditto GMA.
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-177 will be managed under Ditto GMA.
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-177 will be managed under Ditto GMA.
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-177 will be managed under Ditto GMA.
40 CFR §270.14(c) UAC R315-3-2.5(c)(6)(iii)	Groundwater Monitoring Information Background Values	Post-closure groundwater monitoring at DPG-177 will be managed under Ditto GMA.
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-177 will be managed under Ditto GMA.

2.0 FACILITY DESCRIPTION

The following provides a general description of DPG-177, as required by UAC R315-3-2.5(b)(1) (Figures 1 and 2).

2.1 DPG-177 LOCATION AND HISTORY

DPG-177, originally defined as the Technical Laundry Building (Building 4229), is located at the southeast end of the Ditto Facility. Building 4229 is used to clean protective clothing worn during field and laboratory tests. Operation of the laundry is believed to have started in the early 1950's and has continued until present. Prior to 1984, a dry-cleaning unit discharged potentially hazardous constituents into the Ditto sewer system. The original dry-cleaning unit has been subsequently removed, and a new closed-system unit is now in place.

Following the Phase I investigation, DPG-177 was expanded to include the Ditto and Very sewer lines, due to the possibility of a release from the sewer system which had received discharged from Building 4229. The Ditto/Avery sewer system services an area of approximately 225 acres.

As site impacts were determined to be from underground sewer lines, surface soil samples were not collected. Inorganics, select volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), one agent breakdown product (ABP), and total petroleum hydrocarbons were detected in subsurface soil. Arsenic and tetrachloroethylene (PCE) were the only compounds detected above risk-based screening levels. Four VOCs were detected in shallow groundwater samples: benzene, cis 1,2-dichloroethylene, trichloroethylene (TCE) and PCE.

2.2 PAST OPERATIONS

DPG-177 has been in use since the early 1050's and continues to be used as a dry-cleaning facility.

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-177 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-177 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, 2000. <i>Final Phase II Facility Investigation Technical Memorandum for Groundwater Assessment</i> . June.	06/00	
Parsons, 2008. <i>Final Phase II RCRA Facility Investigation Report, SWMU-177 Addendum</i> . November.	11/08	

2.4 CLOSURE ACTIVITIES

Documentation in the approved RFI Report indicates that conditions at DPG-177 meet the closure performance standards under UAC R315-7-14 (by reference 40 CFR Part 265, Subpart G, §265.111). Risks and hazards associated with potential exposure to soil, soil vapor, and groundwater at DPG-177, while not qualifying for no further action (NFA), are less than industrial screening levels. Land use controls are required to prevent residential use of the site.

The major closure activities completed at DPG-075 included:

- Evaluating whether potential risks to on-site worker via the vapor intrusion pathway were within acceptable. Sub-slab samples were collected from beneath the concrete floor and combined with screening soil-gas data to verify risks were below industrial levels;
- Confirm that soil-to-groundwater analysis does not indicate any potential for future impacts to groundwater from constituents of concern (COPCs) in soil; and
- Prevention of residential use of the site will be achieved through land use restrictions. An inspection checklist designed to insure that this objective is maintained is presented in Module VII, Form A.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

Results of the human health and ecological risk assessments performed per UAC R315-101 (DSHW, 2001) indicate: 1) that adverse health effects to industrial workers associated with potential exposures to soil at DPG-177 are not expected; and 2) exposure to soil is expected to pose unacceptable hazards to ecological receptors. Therefore, corrective measures are not required for soils under continued industrial land use. The appropriate closure method for DPG-177 is to restrict future property use to industrial use only.

2.6 SURFACE WATER AND GROUNDWATER

There are no defined surface water features within or near DPG-177. DPG-177 lies within the central part of the Government Creek Basin. Regional groundwater flow in the Government Creek Basin is predominately to the northwest, while due to the presence of a shallow groundwater mound, the flow direction of the shallow groundwater in Ditto is radial outward. Underlying (approximately 80 feet below ground surface, bgs) the shallow water-bearing zone (classified as Class III to Class IV) is a confining clay layer that separates the shallow-water bearing zone from the deep, confined, potable aquifer.

The nearest sources of potable groundwater wells WW3, WW28, and WW31 located in Ditto are approximately 191 feet (ft), 1360 ft, and 900ft, respectively from Building 4229.

Mappable plumes of PCE and TCE are present in the shallow-groundwater. Groundwater monitoring will be conducted under the Ditto GMA Plan.

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 condition is applicable to DPG-177:

DPG-177 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-177 has been closed under a continued industrial use scenario, which prohibits residential use in the area formerly (and currently) occupied by the site. The site has been closed under the DPG Part B Permit requirements. To ensure that the area is not reused or developed and to ensure the Dugway Dig Permit Process (Module VII.F.4) has been followed, 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-177 site shall be conducted annually by November 1st to ensure that the former site remains under industrial use. 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 for industrial use sites 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-177, and lists the items to be inspected. Inspection personnel shall note any problems found and shall inform appropriate Dugway representatives.

Table 3: DPG- 177 Post-Closure Inspection Schedule

Inspection/ Monitoring Item	Method of Documentation	Frequency of Inspection
Land Use	Industrial Use Inspection Checklist (Form A of Module VII)	Annual, by November 1 st
Soil Disturbance	Industrial Use Inspection Checklist (Form A of Module VII)	Annual, 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-177 (Parsons, 2008), post-closure inspection is required. Groundwater monitoring for DPG-177 will be conducted in accordance with the Ditto GMA Plan.

5.1 NON-COMPLIANCE REPORTING

The conditions at DPG-177 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(l)(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-177 shall be due no later than March 1, 2010. Specifically for DPG-177, 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-177 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 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. 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), 2008. *Final Phase II RCRA Facility Investigation Report, SWMU-177 Addendum*. November.

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