DUGWAY PERMIT

MODULE VII

ATTACHMENT 38

SOLID WASTE MANAGEMENT UBNIT
SWMU 79
POST-CLOSURE PLAN

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1.0 INTRODUCTION

The two objectives of this Post-Closure Plan are: 1) ensure that Dugway Proving Ground (DPG or Dugway) complies with the Post-Closure Permit issued by the State of Utah in accordance with Utah Administrative Code (Utah Admin. Code) R315-265 - Title 40 Code of Federal Regulations (CFR) §264.117 incorporated by reference, with respect to post-closure inspection requirements; 2) outline the requirements needed to prevent exposure or contact with waste left in place at this landfill site. To meet these objectives, this Post-Closure Plan provides detailed information regarding the location, regulatory criteria, and post-closure inspections at Solid Waste Management Unit (SWMU) 79, herein referred to as DPG-079. Post-closure requirements will continue for a minimum of 30 years after closure of DPG-079. The post-closure care period may be extended or shortened, as deemed necessary Utah Admin. Code R315-265 (40 CFR §264.117(a)(2) incorporated by reference).

In accordance with 40 CFR §270.28 and Utah Admin. Code R315-270-28, the Post-Closure Plan is required to include specific information for a closed facility. As applicable to DPG-079, 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-079 Post-Closure Information Requirements Under 40 CFR §270.14 and Utah Admin. Code R315-270-28 and R315-270-14

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(b)(1) Utah Admin. Code R315-270-14(b)(1)	General Description of the Facility	Section 2.0
40 CFR §270.14(b)(4) Utah Admin. Code R315-270-14(b)(4)	Description of Security Procedures	Section 3.0
40 CFR §270.14(b)(5) Utah Admin, Code R315-270-14(b)(5)	General Inspection Schedule	Section 4.2 and Module VII Form B
40 CFR §270.14(b)(6) Utah Admin. Code R315-270-14(b)(6)	Preparedness and Prevention	Section 3.0

Table 1 (Continued): Summary of DPG-079 Post-Closure Information Requirements Under 40 CFR §270.14 and Utah Admin. Code R315-270-28 and R315-270-14

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §§270.14(b)(11)(i-ii, v) Utah Admin. Code R315-270-14(b)(11)(i-ii, v)	Facility Location Information Applicable seismic standard	Section 4.3.1
40 CFR §§270.14(b)(11) (iii-v) Utah Admin. Code R315-270-14(b)(11)(iii-v)	Facility Location Information 100-year floodplain	Section 4.3.2
40 CFR §270.14(b)(14) Utah Admin. Code R315-270-14(b)(14)	Copy of the Closure Proposal	Phase II RCRA Facility Investigation (RFI) was approved on June 8, 2006. No public comments were received.
40 CFR §270.14(b)(16) Utah Admin. Code R315-270-14(b)(16)	Closure Certification and Notification	Section 2.7 and Appendix A.
40 CFR §270.14(b)(18) Utah Admin. Code R315-270-14(b)(18)	Post-Closure Cost Estimate	Federal Facilities are exempt from this requirement.
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(i)	Proof of Financial Coverage	Federal Facilities are exempt from this requirement.
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(ii)	Topographic Map Map Scale and Date	Figure 2 (1 inch = 1000 feet (ft)).
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(iii)	Topographic Map 100-year floodplain area	Section 4.0; DPG-079 is not located within a verified 100-year floodplain area.
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(iv)	Topographic Map Surface waters including intermittent streams	Figure 2
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(v)	Topographic Map Surrounding land uses	DPG-079 is within a military base. There are no nearby operations in the vicinity of DPG-079.
40 CFR §§270.14(b)(11)(i-ii, v) Utah Admin. Code R315-270-14(b)(11)(i-ii, v)	Topographic Map A wind rose (i.e., prevailing windspeed and direction)	There are no residential populations abutting DPG-079. The closest residential area is English Village (approximately 6 miles away). A wind rose is not deemed necessary for DPG-079.
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(vi)	Topographic Map Orientation of Map, North Arrow	Figure 2
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(vii)	Topographic Map Legal boundaries of the hazardous waste management facility	Figure 2
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(viii)	Topographic Map Access control, fence, gates	Figure 2. The site is not enclosed by a fence.
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(ix)	Topographic Map Injection and withdrawal wells	Figure 2

Table 1 (Continued): Summary of DPG-079 Post-Closure Information Requirements Under 40 CFR §270.14 and Utah Admin. Code R315-270-28 and R315-270-14

Regulation Citation	Requirement Description	Location Requirement is Addressed
40 CFR §270.14(b)(19) Utah Admin. Code R315-270-14(b)(19)(xi)	Topographic Map Barriers for drainage or flood control	Figure 2. DPG-079 is graded to drain surface water away from the engineered covers. There are no barriers to drainage or flood control.
40 CFR §270.14(c) Utah Admin. Code R315-270-14(c)(1)	Groundwater Monitoring Information Summary of Groundwater Data	Final Phase II RFI Report, Section 2.2.4
40 CFR §270.14(c) Utah Admin Code R315-270-14(c)(2)	Groundwater Monitoring Information Identification of uppermost aquifer	Final Phase II RFI Report, Section 2.2.1
40 CFR §270.14(c) Utah Admin. Code R315-270-14(c)(3)	Groundwater Monitoring Information Delineation of the Waste Management Area	Figure 3
40 CFR §270.14(c) Utah Admin. Code R315-270- 14(c)(4)	Groundwater Monitoring Information Extent of Plume	Final Phase II RFI Report, Section 2.2.4.2 and Figure 2.6.
40 CFR §270.14(c) Utah Admin. Code R315-270-14(c)(5)	Groundwater Monitoring Information Detailed Plans/Engineering Report for Proposed Groundwater Program	Post-closure groundwater monitoring at DPG-079 will be in accordance with the Carr Groundwater Management Area (GMA) Plan.
40 CFR §270.14(c) Utah Admin. Code R315-270-14(c)(6)(i)	Groundwater Monitoring Information Proposed List of Parameters	Post-closure groundwater monitoring at DPG-079 will be in accordance with the Carr GMA Plan.
40 CFR §270.14(c) Utah Admin. Code R315-270-14(c)(6)(ii)	Groundwater Monitoring Information Proposed Groundwater Monitoring System	Post-closure groundwater monitoring at DPG-079 will be in accordance with the Carr GMA Plan.
40 CFR §270.14(c) Utah Admin. Code R315-270-14(c)(6)(iii)	Groundwater Monitoring Information Background Values	Post-closure groundwater monitoring at DPG-079 will be in accordance with the Carr GMA Plan.
40 CFR §270.14(c) Utah Admin. Code R315-270-14(c)(6)(iv)	Groundwater Monitoring Information A description of the Proposed Sampling	Post-closure groundwater monitoring at DPG-079 will be in accordance with the Carr GMA Plan.

2.0 FACILITY DESCRIPTION

The following provides a general description of DPG-079, as required by Utah Admin. Code R315-270-14(b)(1) (Figures 1 and 2).

2.1 DPG-079 LOCATION AND HISTORY

DPG-079, also known as the Old Lincoln Highway Landfill, occupies approximately 20 acres southwest of Little Granite Mountain, and is located approximately 2.5 miles east of the Carr Facility along the Old Lincoln Highway (Figures 1 and 2). The topography at the site slopes gently downward toward the west, ranging in elevation from 4395 feet (ft) to 4425 ft above mean sea level (MSL). A large sand ridge (10-15 ft high), stabilized by vegetation, crosses the site near the western edge.

The site was described in the RFI as consisting of the following features:

- 11 trenches (TR-1 through TR-11),
- 10 soil mounds (MD-1 through MD-10),
- Three debris piles (DP-1 through DP-3),
- Two detonation craters (DC-1 and DC-2),
- Two areas of stained soil (ST-1 and ST-2), and
- One depressed area (DA-1).

2.2 PAST OPERATIONS

Many of the site features related to burial of waste were visible in aerial photographs, dating at least as far back as 1953 (EPIC, 1986). The disposal area was also known to be in an inactive chemical agent mortar impact area (Parsons, 1999). Burned debris and munitions debris observed on the surface and in the subsurface of burial features indicated that burning/disposal of waste, possibly related to demilitarization of chemical munitions, occurred at this SWMU. Partially-buried wastes were visible in backfilled disposal trenches due in some instances to settling of backfilled material. The nature of the buried waste and dates of disposal are unknown; however, general Carr area waste disposal information and interviews with long-time employees indicated that the site was probably used during the mid- to late 1940s, and that waste disposal in certain areas may have continued into the 1970s (EDE, 1986).

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-079 in the Utah Division of Waste Management and Radiation Control (UDWMRC), FORMERLY Division of Solid and Hazardous Waste (DSHW), public documents listed below in Table 2 (Utah Admin. Code R315-270-14(b)(13)).

Table 2: UDWMRC Library Documents Detailing DPG-079 Investigations

Document Title	Received Date	UDWMRC Library No.
Parsons, 1999. *Final Phase I RCRA Facility Investigation, Investigation Report, Revision 1*. September.	09/99	DPG00007
Parsons, 2005. *Final Phase II RCRA Facility Investigation Report, SWMU-079 Addendum*. March.	03/05	
Shaw Environmental, 2006a. *Final Corrective Measures Study Report, Firm Fixed-Price Remediation at Landfill Sites, Dugway Proving Ground, Dugway, Utah.* July.	07/06	DPG00528

Table 2: UDWMRC Library Documents Detailing DPG-079 Investigations

Document Title	Received Date	UDWMRC Library No.
Shaw Environmental, 2006b. *Final Corrective Measures Implementation Plan, Firm Fixed-Price Remediation at Landfill Sites, Dugway Proving Ground, Dugway, Utah.* November.	11/06	DPG00521
Shaw Environmental, Inc., 2008. *Corrective Measures Implementation Report For DPG-079.*	01/08	

2.4 CLOSURE ACTIVITIES

In accordance with Utah Admin. Code R315-265; 40 CFR §265.111 incorporated by reference and the Corrective Measures Implementation (CMI) Plan (Shaw, 2006b), closure at DPG-079 has been completed with the construction of an engineered cover system consisting of a geomembrane-supported geosynthetic clay liner (GCL) placed over the identified waste trenches. The closure activities are described in the CMI Report (Shaw, 2008). Appendix A includes a copy of the DPG-079 Closure Certification signed and stamped by a Utah-licensed Professional Engineer.

The final cover system as designed and constructed satisfies the requirements of Utah Admin. Code R315-265 (by reference 40 CFR §265, Subpart N, §265.310) for the closure and post-closure of DPG-079, namely:

- Provide long-term minimization of migration of liquids through the closed landfill;
- Function with minimum maintenance;
- Promote drainage and minimize erosion or abrasion of the cover;
- Accommodate settling and subsidence so that the integrity of the cover is maintained; and
- Achieve a permeability less than or equal to the permeability of any bottom liner system or natural subsoil present.

In meeting the above performance standards, the major closure activities completed at DPG-079 included:

- Installation of the final engineered cover system; and
- Final grading of the site, including enhancement of drainage features, to help control erosion and minimize long-term maintenance requirements.

These measures will prevent human contact with the waste and provide for protection of groundwater. A general inspection checklist for landfill sites designed to insure that these objectives are maintained is provided in Module VII as Form B.

2.5 HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENT

In accordance with Utah Admin. Code R315-101, a risk assessment was conducted during the RFI (Parsons, 2005) to determine if the site-related chemicals detected in soil and groundwater at DPG-079 potentially posed unacceptable risks to human health. The risk assessments were also used to define the boundary of the proposed remediation. In accordance with the risk assessment guidance presented in the DPG Risk Assumptions Document (Parsons, 2002), a quantitative human health risk assessment (HHRA)

was conducted to determine if the site met requirements for risk-based closure under Utah Admin. Code R315-101. While useful in assessing potential risks during future use of the subject site, the risk assessment only addressed environmental media (e.g., soil and groundwater) and not buried waste or surface debris.

An ecological risk assessment was also performed on the soil data from DPG-079. Lowest-observed-adverse-effect-level based hazard quotients calculated in the Tier 2 assessment showed that none of the contaminants were of ecological concern. There were hazard quotients above 1.0, but when the HQ and HI were considered with other lines of evidence they were interpreted to not be an ecological threat. The evaluation of uncertainties associated with these hazard quotients provide additional support to this conclusion since the predicted exposures likely overestimate actual exposure due to conservative assumptions of factors such as bioavailability and exposure point concentrations. The potential for ecological risk at this site is therefore considered to be minimal.

The final RFI (Parsons, 2005) includes the full results of both the human health and ecological risk assessments for DPG-079.

2.6 SURFACE WATER AND GROUNDWATER

There are no defined surface water features within or near DPG-079. The general direction of surface water drainage in the area surrounding this unit is to the southwest, toward the main portion of the Dugway Valley.

Owing to the ground surface relief and the relatively flat water table at the site, depth to groundwater encountered during drilling varied between 57-72 ft bgs, with an average groundwater depth of 64 ft bgs. Groundwater data from the vicinity indicates that the saturated interval present below approximately 49 ft bgs within the silty sand and underlying clayrich gravel unit is unconfined.

Average water quality at DPG-079 is Class II (drinking water) per Utah Admin. Code R317-6-3 (DWQ, 2002). Eastward, the uppermost saturated unit is Class II to Class III limited use quality groundwater per Utah Admin. Code R317-6-3 [DWQ, 2002]). Groundwater in the vicinity is not currently used for drinking water, irrigation, or other purposes. The nearest potable groundwater is at WW5 located approximately 2.5 miles southwest of DPG-079, inside the Carr Facility. WW5 is screened in a deep aquifer under confined conditions at a depth of 325-355 ft bgs. No contamination has been identified in groundwater sampled from WW5. The coarse-grained stratigraphy, low TDS groundwater, and downward-directed vertical hydraulic gradient support the conclusion that DPG-079 is located over an area of recharge to the deep potable aquifer beneath Government Creek basin. Therefore, groundwater will be monitoring in accordance with the Carr GMA.

2.7 CLOSURE NOTIFICATIONS

The Certification of Closure (Appendix A) was received and verified by the Executive Secretary of the Utah Solid and Hazardous Waste Control Board on October 8, 2008.

Federal facilities are exempt from submitting notifications to the local zoning authority as required by Utah Admin. Code R315-264-116 and R315-264-119.

3.0 SECURITY REQUIREMENTS

The following security conditions are applicable to DPG-079:

1. DPG-079 is located within a federal, military installation (DPG). As such, the installation is restricted for the common population.

2. At DPG-079, signs are present warning against unauthorized entry.

3. Security facilities are to be maintained and inspected throughout the post-closure care period. The security facilities (i.e., posted signs) will be inspected and the frequency of inspection is stated in Table 3. Dugway shall report to the UDWMRC any decrease of Dugway's Base Security, which could affect the security conditions as applicable to DPG-079.

4. Damaged or missing security facilities shall be noted in the inspection checklist. Repairs shall be completed as soon as practicable after the problem is discovered, in compliance with R3l5-264-15(c).

4.0 POST-CLOSURE OPERATIONS AND INSPECTIONS

4.1 INTRODUCTION

DPG-079 has been closed under the DPG RCRA part B Permit requirements and specifications of the CMI Plan for Landfill Sites (Shaw, 2006). Disturbance of the waste will not be allowed. To ensure that the area is not reused or developed, periodic site inspections and a biennial post-closure report shall be required. Removal and reuse of soil from this site will not be allowed unless under an excavation permit approved by the Dugway Environmental Program Office (EPO). Soil excavation at this site must be coordinated through the Dugway EPO.

4.2 ROUTINE SITE INSPECTIONS

During its Post-Closure period general inspections of the former DPG-079 site shall be conducted annually by November 1st to ensure that the integrity of the engineered caps is maintained and to verify the Dugway Dig Permit process (Module VII.F.4) has been followed. Any modifications to the frequency of inspections will be in accordance with amendments submitted in the form of proposed permit modifications.

Site inspections will consist of a complete walkthrough and visual inspection of the covered areas as well as surface water drainage features. A general site inspection checklist for landfill sites is included in Module VII as Form B. Completed inspection forms shall be filed with the Dugway EPO.

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

- No noticeable sliding (slope failure);
- No noticeable damage to the soil covering from burrowing animals;
- No noticeable depressions or ponding water are present;
- No excessive soil erosion is evident on the cap surface or at the cap edges;
- No weeds or trees (with deep tap roots) are present that may penetrate the caps;
- Signs are in good condition;
- Drainage patterns and roads are functioning as planned with no significant erosion or ponding; and
- Survey monuments are undamaged and there is no significant subsidence of the landfill cap.

Table 3 summarizes the Post-Closure Inspection Schedule for DPG-079, and lists the items to be inspected. Inspection personnel shall note any problems found and shall inform appropriate Dugway representatives.

Table 3: DPG-079 Post-Closure Inspection Schedule

Inspection/ Monitoring Item	Method of Documentation	Frequency of Inspection
Landfill Caps	Inspection Checklist (Form B in Module VII)	Annual, by November 1st
Survey Monuments	Inspection Checklist (Form B in Module VII)	Annual, by November 1st / 5 year intervals
Signs	Inspection Checklist (Form B in Module VII)	Annual, by November 1st
Drainage	Inspection Checklist (Form B in Module VII)	Annual, by November 1st

4.2.1 Protective Soil Layer Inspections

Maintenance of the protective soil layer is an essential step in ensuring that the integrity of the final cover system is preserved. During each site visit, observations will be made to ensure that the protective soil layer is functioning as designed (i.e., protecting the underlying GCL). Repairs to the protective soil layer may include removal of vegetation species having tap roots greater than 12 inches, regrading through the placement of fill in areas where a potential for ponding water on the cover exists due to settlement, or repair and stabilization of areas that have been eroded.

If signs of soil erosion are excessive (for example, cracks or rills greater than two-inches wide) or continual (recurring in the same area), corrective action may be necessary. Significant cracks or rills that have the potential to impact the functionality of the cover system will be documented on the inspection forms. Corrective action may include filling in the eroded or cracked area, regrading slopes, establishing vegetation (if soil salinity is favorable) or adding mulch to the soil surface. Soil samples may be collected in accordance with Field Work Variance 119350-02-006 (August 6, 2007) and analyzed for salinity as a contingency in case erosion control is necessary in the future.

For most routine repairs, corrective action should be initiated as soon as possible after identifying the problem or as directed by DPG. If the corrective action requires substantial effort and/or a technical plan, a brief plan will be prepared to summarize the problem, the potential impacts, and the time-frame in which corrective action will be implemented and the planning involved.

4.2.2 Survey Monument Inspections

During each visit, the survey monuments installed during closure (Figure 4) will be inspected to determine if any damage has made its use questionable as a reference point. If missing or badly damaged, it will be replaced as soon as possible after discovery of the problem.

As part of the routine inspection, survey monument location and elevation will be surveyed at least once per year for the first two years after construction. Once a settlement of 0.1 ft or less has been measured for two consecutive years, surveys can be scaled back to once every five years. The baseline northing, easting, and elevation of the DPG-079 survey monuments have been summarized in Table 4. In addition, the survey coordinates for locations around the perimeter of the cover system, shown on Figure 4, are presented for future reference.

Table 4: DPG-079 Survey Coordinates

Description / Pt. Location	Northing (ft)	Easting (ft)	Elevation[a] (ft above msl)
Survey Monument (079SM01)	7,234,189.6	1,264,643.68	4,407.7
Survey Monument (079SM02)	7,234,596.23	1,264,020.77	4,403.9
6004	7,235,169	1,264,495	4,416
6005	7,235,203	1,264,498	4,416
6009	7,235,110	1,264,499	4,415
6010	7,235,063	1,264,483	4,414
6011	7,235,029	1,264,483	4,414
6013	7,235,029	1,264,419	4,413
6015	7,234,939	1,264,477	4,412
6016	7,234,894	1,264,472	4,411
6020	7,234,736	1,265,049	4,419
6044	7,234,097	1,264,474	4,403
6049	7,234,312	1,264,796	4,409
6050	7,234,618	1,264,409	4,408
6058	7,234,519	1,4,031	4,401
6064	7,234,679	1,264,004	4,401
6065	7,234,656	1,263,960	4,400
6067	7,235,211	1,264,419	4,414
6068	7,235,178	1,264,416	4,415
6069	7,235,145	1,264,419	4,414
6070	7,235,110	1,264,420	4,413
6071	7,234,977	1,264,416	4,411

Description / Pt. Location	Northing (ft)	Easting (ft)	Elevation[a] (ft above msl)
6072	7,235,063	1,264,418	4,412
6073	7,234,972	1,264,479	4,413
6075	7,234,944	1,264,414	4,411
6076	7,234,895	1,264,415	4,410
6077	7,234,858	1,264,413	4,410
6078	7,234,861	1,264,472	4,411
6079	7,234,581	1,264,405	4,408
6080	7,234,617	1,264,266	4,406
6081	7,234,073	1,264,485	4,403
6083	7,234,830	1,265,019	4,419
6084	7,234,790	1,264,892	4,419
6085	7,234,716	1,264,914	4,418
6086	7,235,144	1,264,499	4,416
6092	7,234,583	1,264,266	4,406
6093	7,234,277	1,264,818	4,409
6094	7,234,542	1,264,075	4,402

[a] The initial coordinates for points 6004 to 6094 were obtained using a Global Positioning System. The location and elevation of the survey monuments (079SM01 and 079SM02) were surveyed in February, 2008 and results are provided in the 2008 biennial report.

4.3 CONTINGENCY INSPECTIONS

This section provides information about emergency response inspection procedures to be implemented in the event of any natural disaster in the DPG area that may affect the final cover system at DPG-079. Module VII contains an inspection checklist for landfill sites (Form B).

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.

4.3.1 Earthquakes

Dugway Proving Ground is located in Seismic Zone 2 with a maximum acceleration of 0.2 gravity force (Hunt, 1984). DPG-079 is not located within 200 ft of any active faults. Although Utah is tectonically active, most of the earthquake activity occurs about 65 miles to the east along the Wasatch Range Foothills.

A geologic map completed in a 1988 study by the U.S. Geological Survey (USGS) (Barnhard and Dodge, 1988), was used to determine the distribution, relative age, and amount and extent of surface rupture on Quaternary fault scarps, in the area of DPG-079.

The USGS study (Barnhard and Dodge, 1988) concluded that morphologic and geologic data collected along the fault scarps in the area indicate that all were formed during the later Pleistocene era and there is not any clear evidence of Holocene surface rupture. Several faults inferred on geophysical evidence are located at DPG; however, there is no evidence of displacement during Holocene time.

In the event of a 6.5 magnitude or higher earthquake centered within 50 miles of the site, qualified personnel will visually inspect the landfill caps for signs of damage as soon as it is safe and practical to do so. Any damage to a landfill cap will be repaired to ensure the integrity of the cap. If a landfill cap has sustained extensive damage, Dugway will implement corrective actions to ensure that contaminants are contained and human health is protected. Post-earthquake site inspection records will be submitted to the Dugway Environmental Department.

Following an earthquake, the landfill and landfill caps will also be inspected for lateral shifting of debris. Survey monuments will be resurveyed to determine any horizontal or vertical movement of the caps.

4.3.2 Floods or Major Storms

DPG-079 is not located within a 100-year verified floodplain. The National Flood Insurance Rate Map, identifying the boundary of the 100-year flood, does not include DPG. There are no permanent streams or other surface water bodies on DPG.

During the capping of DPG-079, the site was graded so that surface water from precipitation flows away from the capped areas and to the southwest in the direction of the natural drainage flow. Most of the surface water evaporates without infiltrating into the ground. Like other arid regions, DPG is subject to flash flooding following high-precipitation events. Flash floods have occurred only four times in the history of the installation, in 1944, 1952, 1973, and 1983. The major area affected during flash floods has been the Government Creek drainage channel, which has overflowed and caused minor inundation of roads at the Ditto Technical Center.

In the event of a flood or major storm, Dugway will inspect the landfill caps to ensure its integrity within 72 business hours of the event. A checklist is included in Module VII (Form B). A major storm is defined in this plan as a storm with 1 inch of precipitation or more over a 24-hour period. Any damage to the landfill cap will be repaired as soon as possible to ensure the integrity of the caps.

4.3.3 Fires

In the event of a surface fire near a landfill cap, the Dugway fire department will be notified and the Dugway integrated contingency plan will be implemented. In the event of a landfill fire, if a cap is observed to have been breached, firefighting methods such as using foam or smothering with soil will be considered and used, as appropriate. Following the incident, Dugway will perform a thorough inspection of the landfill caps using the checklist included in Module VII (Form B), to ensure that the integrity of the soil cover has not been compromised and waste has not been exposed. If there is fire damage, DPG will implement corrective actions to ensure that contaminants are contained and human health is protected.

4.4 INSPECTION FOLLOW-UP

Copies of completed site inspection checklists (Form B of Module VII) 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 EPO shall notify the appropriate personnel to implement corrective action as needed.

Corrective action shall be initiated as soon as practical but no longer than 30 days of discovery. If the corrective action will require more than 30 days, a schedule of the correction will be provided to the Director for approval. If the corrective action requires substantial effort, a technical plan shall be prepared to summarize the problem, illustrate potential impacts, and clarify the proposed plan for action. Routine corrective actions will be recorded on the site inspection form in the comments with the date of the correction. This will ensure proper tracking of the resolution.

5.0 SUBMITTALS/REPORTING

Based on the evaluation presented in the CMIR for DPG-079 (Shaw, 2008), post-closure inspection is required. Groundwater monitoring for DPG-079 will be managed under Carr GMA Plan.

5.1 NON-COMPLIANCE REPORTING

The conditions at DPG-079 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 Utah Admin. Code R315-270-30(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 that included DPG-079 was submitted on February 26, 2008. Specifically for DPG-079, the Biennial Post-Closure Report shall include, at a minimum, the following:

- General site description and conditions,
- Areas of cap repair, and
- Inspection records.

5.3 REQUIRED SUBMITTALS

Table 5 summarizes the requirements for the Biennial Post-Closure Report for DPG-079 and reporting for any non-compliance.

Table 5: Summary Table of Required Submittals

Required Submittals	Frequency and Submittal Date
Biennial Post-Closure Report	Post-Closure Reports shall be submitted to the Division Waste Management and Radiation Control no later than March, of the year the report is due. Reporting years are even numbered years beginning with March 2008, for the duration of the Post-Closure Monitoring Period.
Non-Compliance Reporting	
Anticipated Non-Compliance	30 days advance notice of any change which may result in noncompliance
24-hour Notification for information concerning the non-compliance, which may endanger public drinking water supplies or human health or the environment.	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 Director may waive the 5-day notice, in favor of a 15-day notice.	Within 5 days of discovery
Written notification for information concerning the non-compliance, which does not endanger human health or the environment.	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 Director, 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

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APPENDIX A

COPY OF
CERTIFICATION OF CLOSURE

CERTIFICATION OF CLOSURE

The Closure Certification Report for DPG-079 at Dugway Proving Ground, Utah has been prepared by Shaw Environmental in accordance with the closure requirements specified under the DPG RCRA Part B Permit and the CMI Plan. The requirements of UAC R315-101 form the basis for the risk-based criteria in the closure of DPG-079. The site has been managed in accordance with the specifications in the approved CMI Plan, except for re-vegetation (Section 2.4.5).

In accordance with the DPG RCRA Part B Permit, the signature and seal certify that a licensed professional has reviewed the Corrective Measures Implementation Report in accordance with the above referenced regulatory requirements.

Respectfully submitted,

Jeffrey S. Carter
Directorate of Environmental Programs
Dugway Proving Ground

Sunil Kishnani, P.E.
Utah Registered Civil Engineer No. 6027103
Certification Engineer

REGISTERED PROFESSIONAL ENGINEER
No. 6027103
SUNIL S. KISHNANI
3-31-09
STATE OF UTAH