

MODULE V

DISPOSAL IN LANDFILLS

V.A. APPLICABILITY

- V.A.1. The Permittee may dispose of hazardous wastes in the Mixed Waste Landfill Cell, and in future cells, when permitted, as shown in the embankment drawings of Attachment II-11, *Facility Drawings*.
- V.A.2. The combined total capacity of the Mixed Waste Landfill Cell shall be 1,354,092 cubic yards. Maximum capacities of all phases of approved construction and future construction are listed in Table V-1.
- V.A.3. The Permittee may modify this Permit to construct other Mixed Waste Landfill Cells and phases on undeveloped land within the Permittee's 540 acres of Section 32, Township 1S, Range 11W. Construction of future cells shall be subject to Director approval.

V.B. PERMITTED AND PROHIBITED WASTE IDENTIFICATION

- V.B.1. The Permittee may dispose of the wastes identified in Condition III.B. of Module III, *Storage and Treatment in Containers*, in the Mixed Waste Landfill Cell, and future mixed waste cells at the Facility.
- V.B.2. The Permittee shall be prohibited from disposing at the Facility any hazardous waste not included in Condition V.B.1.
- V.B.3. The Permittee shall be prohibited from disposing at the Facility the wastes identified in Condition III.C. of Module III, *Storage and Treatment in Containers*.

V.C. GENERAL DESIGN AND CONSTRUCTION OF LANDFILL CELLS AND PHASES

- V.C.1. The Permittee shall construct landfill cells in accordance with the following conditions:
- V.C.1.a. The Permittee shall install liners with a leachate collection and removal system for each cell in accordance with the design plans and drawings contained in Attachment II-11, *Facility Drawings*.
- V.C.1.b. The Permittee shall submit to the Director, prior to the commencement of construction of any new landfill cell, landfill cell specific plans, drawings, and design details to include the following:

- V.C.1.b.i. Cell specific hydrology, geotechnical investigation and stability analysis;
- V.C.1.b.ii. Specifications for all components of the landfill cell; and
- V.C.1.b.iii. Cell specific construction quality assurance plans for all aspects of construction.
- V.C.1.c. A modification of this Permit shall be required for construction of additional cells.
- V.C.2. The Permittee shall construct landfill cell phases in accordance with the following conditions:
 - V.C.2.a. The Permittee shall install liners with a leachate collection and removal system for each phase in accordance with the design plans and drawings contained in Attachment II-11, *Facility Drawings*.
 - V.C.2.b. The Permittee shall submit to the Director, prior to the commencement of construction of any new landfill cell phase, landfill cell phase specific plans, drawings, and design details including the following:
 - V.C.2.b.i. Specifications for all components of the landfill cell phase; and
 - V.C.2.b.ii. Phase specific construction quality assurance project plans for all aspects of construction.
 - V.C.2.b.iii. A historical data review. The scope of this review shall include Cell Design and Construction Methods, Construction Technical Specifications, Synthetic Liner Specifications, Construction Quality Assurance Plan, Seismology, Slope Stability & Liquefaction Potential, Erosion Protection Design (Flooding Analysis and Rock Cover), Liner Loading Calculations, Settlement and Cover Cracking, Slippage of Liners, Liner and Leachate Collection System Compatibility, Run-Off Calculations, Infiltration Potential and Hydrogeologic Monitoring Specifications.
 - V.C.2.b.iv. The Permittee may submit topic-specific certifications that previous landfill cell construction phase's historical data reviews are adequate and no new information has become available to require additional data review.
 - V.C.2.c. A Class 1 modification of this Permit shall be required for construction of additional cell phases, provided the design and construction details follow those of permitted phases.
- V.C.3. Changes in design or construction details shall require a modification, in accordance with Utah Admin. Code R315-3-4.2, Utah Admin. Code R315-4-1.5 and Conditions I.F.10 and I.F.11. of Module I, *Standard Conditions*.

- V.C.4. The Permittee shall not commence disposal of hazardous waste in a newly constructed portion of a Mixed Waste Landfill Cell or an existing cell being modified at the Facility until the requirements of Condition I.F.11. of Module I, *Standard Conditions*, are met.
- V.C.5. Construction of each landfill cell shall follow the approved Attachment II-9, *Construction QA/QC Manual (CQAM)*.
- V.C.6. In accordance with Attachment II-9, *CQAM*, a test pad shall be constructed to demonstrate the appropriate materials of construction, construction equipment, and construction techniques that shall be used for full-scale construction.
- V.C.7. The data from a test pad may be used for more than one cell or cell phase where design, materials, equipment, and construction techniques are all equivalent. Test pads shall be constructed in accordance with Attachment II-9, *CQAM*.
- V.C.8. The Permittee shall construct Mixed Waste Landfill Cells in accordance with approved drawings contained in Attachment II-11, *Facility Drawings*. The construction may differ only by minor routine construction changes. Change control procedures are provided in Section 3 of Attachment II-9, *CQAM*. The construction documentation shall be submitted to the Director no later than 90 days after each phase of construction of the landfill is completed.
- V.C.9. The Permittee shall construct all Mixed Waste Landfill Cells with a liner system that, at a minimum, consists of the following (in ascending order, from bottom to top) as described in Attachment II-9, *CQAM*:
- V.C.9.a. A composite liner comprised of three feet of compacted clay and a secondary High Density Polyethylene (HDPE) liner;
- V.C.9.b. A Secondary Leachate Collection\Leak Detection System consisting of a drainage net;
- V.C.9.c. A primary HDPE liner;
- V.C.9.d. A Primary Leachate Collection\Leak Detection System consisting of a drainage net and a geotextile fabric;
- V.C.9.e. A two-foot soil protective cover;
- V.C.9.f. A tertiary HDPE liner;
- V.C.9.g. A Tertiary Leachate Collection System consisting of a drainage net and a geotextile fabric; and

- V.C.9.h. A two-foot soil protective cover.
- V.C.10. The minimum nominal liner thickness for each HDPE liner shall be 60 mils.
- V.C.11. Soil protective cover shall meet specifications provided in Attachment II-9, *CQAM*.
- V.C.12. The clay liner for each landfill cell shall have a minimum thickness of three feet and be compacted to a permeability of no more than 1.0×10^{-7} cm/sec as verified by in-situ and laboratory testing.
- V.C.13. The clay to be used for the liner shall be amended if necessary (e.g. through the addition of sodium tripolyphosphate) to lower its permeability.
- V.C.14. For each Mixed Waste Landfill Cell or phase, the Permittee shall design a leachate detection/collection/removal system that shall have a minimum slope of one percent at construction as described in Attachment II-11, *Facility Drawings*.
- V.C.15. The Permittee shall construct all leachate detection/collection/removal layers to have an in-situ hydraulic transmissivity of 5×10^{-4} m²/sec or greater.
- V.C.16. Where a soil protective cover is required, a filter fabric shall be placed over the drainage net to prevent clogging.
- V.C.17. Sumps shall be adequately located and designed to efficiently collect and provide for removal of leachate.
- V.C.18. The Permittee shall install all leachate detection, collection, and removal systems in accordance with Attachment II-9, *CQAM*.
- V.C.19. The Permittee shall inspect the landfill construction in accordance with Attachment II-9, *CQAM*.
- V.C.20. The Permittee shall perform all construction inspections under the direction of a Construction Quality Assurance Officer (CQAO). This person shall be independent of the design, engineering and cell construction personnel and functions. The CQAO shall be a qualified Utah registered Professional Engineer.
- V.C.21. Waste placement activities shall be performed in accordance with the Permittee's Radioactive Material License (UT 2300249).
- V.C.21.a. Stockpiling of waste in the Mixed Waste Landfill Cell shall be subject to the following conditions:

- V.C.21.a.i. A stockpile is defined as bulk or containerized waste being managed in the Mixed Waste Landfill Cell without being in its final disposal lift.
- V.C.21.a.ii. Stockpiles may include containerized bulk waste or both, that will be disposed of in the Mixed Waste Landfill Cell.
- V.C.21.a.iii. Stockpiled wastes shall meet the Land Disposal Restrictions in accordance with Attachment II-1, *Waste Analysis Plan*, and shall not have any free liquids.
- V.C.21.a.iv. Stockpiles shall be placed only over approved liner.
- V.C.21.a.v. Stockpiles shall not be placed on top of temporary cover over partially closed sumps of the Mixed Waste Landfill Cell.
- V.C.21.a.vi. Stockpiles shall be subject to Attachment II-10, *Plan for Controlling Wind Dispersal*.
- V.C.21.a.vii. The volume of waste in stockpiles shall be tracked against the maximum waste inventory provided at Condition 8.b of Attachment II-7, *Closure Plan*.
- V.C.21.a.viii. Stockpiled waste shall be placed in final disposal or transferred to a permitted storage pad no later than 6 months after placement into a stockpile.
- V.C.22. The Permittee shall contract with a qualified independent firm to perform an annual audit of the Facility's Construction QA/QC program. The auditor shall audit a minimum of 15% of the Permittee's documentation for mixed waste placement activities and 15% of embankment construction. Each audit shall include observations of field activities that occur while the auditor is on-site. The auditor's report shall be submitted to the Director annually, no later than March 31st.
- V.C.23. The Permittee shall construct final cover in accordance with Attachment II-9, *CQAM*, Attachment II-7, *Closure Plan*, and Attachment II-11, *Facility Drawings*.
- V.C.23.a. The final cover shall consist of the following layers (bottom to top):
 - V.C.23.a.i. at least twelve inches of compacted clean material as a temporary cover over the waste.
 - V.C.23.a.ii. two-feet of compacted clay material with a permeability less than or equal to 5×10^{-8} cm/sec;
 - V.C.23.a.iii. a 60 mil HDPE geomembrane;
 - V.C.23.a.iv. a 12 oz. Geotextile protective layer;

- V.C.23.a.v. a minimum six-inch granular drainage layer;
- V.C.23.a.vi. a twelve inch layer of sacrificial soil (freeze-thaw barrier);
- V.C.23.a.vii. a six-inch granular filter layer; and
- V.C.23.a.viii. an eighteen inch rock erosion barrier.
- V.C.23.b. Prior to construction, the Permittee shall conduct shear testing of the synthetic interfaces within the cover system. Laboratory testing results shall be submitted to the Director for approval at least 30 calendar days prior to cell construction using the synthetic materials.
 - V.C.23.b.i. Shear testing shall be conducted on the following interfaces: HDPE/compacted clay, HDPE/geotextile, and geotextile/granular drainage layer.
 - V.C.23.b.ii. Shear testing shall be conducted in accordance with ASTM D-5321. Other testing methods shall require Director approval.
 - V.C.23.b.iii. Each interface shear test shall consist of four samples; one sample tested at the low end of the normal stress range, two samples tested in the middle of the normal stress range, and one sample tested at the high end of the normal stress range. The extra sample in the middle of the normal stress range shall be a quality control sample to verify test performance.
 - V.C.23.b.iv. Material approval shall require an interface friction angle greater than or equal to 16° and an adhesion/cohesion greater than or equal to 50 pounds per square foot.
- V.C.24. At the conclusion of each phase of cover construction, the Permittee shall submit As-Built Drawings and a Construction Certification Report for Director approval. Details of the Construction Certification Report are described in Attachment II-9, *CQAM*.
- V.D. GENERAL OPERATING CONDITIONS
 - V.D.1. The Permittee shall not exceed the final design elevation by more than ten feet during cap construction.
 - V.D.2. This exceedance shall be allowed only after notification of closure pursuant to Condition II.N.3. of Module II, *General Facility Conditions*.
 - V.D.3. This exceedance shall be allowed only for the purpose of working with power equipment to gain final contours.

- V.D.4. The unit shall meet the final waste contours and rated capacity within 90 days of the first exceedance of elevation.
- V.D.5. The Permittee shall repair any damage to the liner caused during landfill operations according to repair procedures in Attachment II-9, *CQAM*, or as approved by the Director.
- V.D.6. Leachate shall be inspected and managed as follows:
- V.D.6.a. The Permittee shall operate each Mixed Waste Landfill Cell so that the vertical depth of leachate, as measured in the lower two sump(s), shall not exceed one foot.
- V.D.6.a.i. The vertical depth of leachate in the lower two sump(s) shall be measured on a weekly basis.
- V.D.6.a.i.(1) During scheduled site shutdowns, where no waste is managed other than off-loading shipments, the weekly measurement may be skipped; however, successive measurements may not be more than ten days apart.
- V.D.6.a.ii. If the vertical depth of leachate exceeds one foot, the Permittee shall pump the leachate out of the sump until it is below one foot.
- V.D.6.a.iii. When leachate is removed from the primary or secondary liners within a sump, the liner leakage rate shall be calculated based on the volume removed and the number of days since leachate was previously removed from the specific liner.
- V.D.6.a.iv. The liner leakage rate to the primary liner for each sump shall not exceed 15 gallons per acre per day.
- V.D.6.a.v. The liner leakage rate to the secondary liner for each sump shall not exceed ten (10) gallons per acre per day.
- V.D.6.a.vi. For liner leakage rate calculation purposes, the assumed area for each sump is equal to the smallest sump area of 1.34 acres.
- V.D.6.b. The tertiary (top) leachate collection and removal system shall be operated such that the vertical depth of leachate on any part of the liner system, including the sump, shall not exceed one foot.
- V.D.6.c. The Permittee shall inspect the leachate pipes and measure leachate, if present, in accordance with Attachment II-3, *Site Inspection Plan*.

- V.D.6.d. Any leachate removed from the Mixed Waste Landfill Cell shall be managed in accordance with Module IV, *Storage and Treatment in Tanks and Surface Impoundments*.
- V.D.6.e. All leachate measurements and leachate volumes removed shall be documented in the Operating Record.
- V.D.7. During partial closure operations, leachate depth inspections (Condition V.D.6.a.i.) need only be made bi-weekly for sumps that are approved for closure by the Director, or are closed.
- V.D.8. The Permittee shall cease open waste handling activity at the Mixed Waste Landfill Cell when the wind speed is in excess of 35 mph for a period longer than five minutes.
- V.D.9. The Permittee shall document in the Operating Record that the activity was stopped during periods when the wind speed exceeded 35 mph for a period longer than five minutes.
- V.D.10. The Permittee shall not land dispose of restricted hazardous waste that does not meet the treatment standards of Utah Admin. Code R315-13-1 (40 CFR 268.41 and 268.43 incorporated by reference) for every applicable waste code.

V.E. LAND DISPOSAL RESTRICTIONS

- V.E.1. The Permittee shall not in any way dilute a restricted waste or the residual from treatment of a restricted waste as a substitute for treatment to achieve compliance with Utah Admin. Code R315-13-1 (40 CFR Part 268 Subpart D incorporated by reference), to circumvent an effective date or to otherwise avoid a prohibition in Utah Admin. Code R315-13-1 (Subpart C of Part 268 incorporated by reference).
- V.E.2. For any waste restricted under Utah Admin. Code R315-13-1 the Permittee may apply for case-by-case approvals of:
 - V.E.2.a. Extensions to the effective dates in accordance with Utah Admin. Code R315-13-1;
 - V.E.2.b. Petitions to allow disposal of restricted wastes granted under Utah Admin. Code R315-13-1; or
 - V.E.2.c. Variances from a treatment standard in accordance with Utah Admin. Code R315-13-1.
- V.E.3. All requirements of Condition V.E. shall be fulfilled prior to disposal of any restricted wastes by the Permittee under these sections. Upon request, the

Permittee shall provide the Director with all applicable submissions, additional information, etc., necessary to support the position of an extension, petition, or variance.

- V.E.4. The Permittee shall ensure compliance with all applicable requirements specified in Utah Admin. Code R315-13-1 (40 CFR Part 268, Subpart C incorporated by reference).
- V.E.5. The Permittee shall not place in the Mixed Waste Landfill Cells, any hazardous wastes restricted under Utah Admin. Code R315-13-1 which do not meet the treatment standards specified in Utah Admin. Code R315-13-1, unless:
 - V.E.5.a. Such wastes are subject to a national variance;
 - V.E.5.b. A petition in accordance with Condition V.E.2.b. and Utah Admin. Code R315-13-1 is approved by the Director;
 - V.E.5.c. An extension in accordance with Condition V.E.2.a. and Utah Admin. Code R315-13-1 is approved by the Director; or
 - V.E.5.d. A treatment standard variance in accordance with Condition V.E.2.c. and Utah Admin. Code R315-13-1 is approved by the Director.
 - V.E.5.e. The waste is being placed in a MACRO Vault constructed and managed in accordance with Attachment II-1-5, *Macroencapsulation Plan*.
- V.E.6. The Permittee shall not dispose of any hazardous waste having free liquids in the Mixed Waste Landfill Cell.
- V.E.7. The Permittee shall comply with all applicable requirements in Utah Admin. Code R315-13-1 for the land disposal of hazardous wastes.
- V.E.8. The Permittee is neither restricted by nor exempted from further requirements of RCRA Section 3004 and changes to Utah Admin. Code R315-13-1 that are identified as self-implementing regulations or requirements, as a result of these permit conditions.
- V.E.9. The Permittee shall comply with all applicable requirements specified in Utah Admin. Code R315-2-9(g), Utah Admin. Code R315-50-7 and Utah Admin. Code R315-13.
- V.E.10. The Permittee shall comply with regulations that promulgate new waste codes.
- V.E.11. The Permittee shall perform a review of the Waste Profile Record to ensure that any non-hazardous radioactive waste placed into the Mixed Waste Landfill Cell is compatible with the liner system, and other disposed waste.

V.F. RECORDKEEPING AND REPORTING

- V.F.1. The Permittee shall submit to the Director on a quarterly basis (no later than 20 calendar days following the end of each quarter), leachate collection/removal volumes for each collection or leak detection sump.
- V.F.2. The report referenced in Condition V.F.1. shall include the total amount of liquid discovered in each system, an estimate of the leakage rate, and any other information deemed necessary by the Permittee or the Director.
- V.F.3. If the Permittee discovers the presence of liquid in the second-lowest leak detection system in quantities greater than 15 gallons per acre per day; or if the Permittee discovers the presence of liquid in the lowest leak detection system in quantities greater than ten gallons per acre per day; the Permittee shall notify the Director within 72 hours of discovery.
- V.F.4. Within ten calendar days of detecting leachate in excess of volumes listed in Condition V.F.3. above, in either the primary or secondary (the two lowest) leak detection systems, the Permittee shall submit a Remediation Plan, in accordance with Condition V.F.3., to the Director, outlining the steps to be taken to correct the problem. Upon approval by the Director, the Permittee shall implement the plan.
- V.F.5. The Permittee shall collect leachate and shall manage the leachate in accordance with the requirements for generators of hazardous waste in Utah Admin. Code R315-5 before placing it in the evaporation tank(s) or surface impoundment(s) for treatment or shall transfer the leachate directly to the permitted evaporation tanks or surface impoundments.
- V.F.6. The Permittee shall treat the leachate in the permitted evaporation tanks or surface impoundments. When sludge is removed from the evaporation tanks, the sludge shall be solidified, treated if necessary, and disposed of in a permitted landfill cell.
- V.F.7. The Permittee shall cover or otherwise manage the landfill to control wind dispersal of particulate matter, in accordance with the provisions of Attachment II-10, *Plan for Controlling Wind Dispersal*.
- V.F.8. If hazardous waste subject to land disposal restrictions is treated, the Permittee shall comply with all applicable requirements specified in Utah Admin. Code R315-13-1.
- V.F.9. The Permittee shall maintain Paint Filter Liquid Test or inspection results for LDR wastes in the Operating Record.

- V.F.10. Test results for wastes treated subject to land disposal restrictions shall be kept in the Operating Record .
- V.F.11. The Permittee shall comply with all applicable requirements specified in Utah Admin. Code R315-8-17 and Utah Admin. Code R315-8-18.
- V.F.12. When disposing of an on-site generated hazardous waste subject to land disposal restrictions, the Permittee shall maintain documentation to support the certification claim that such waste meets the treatment standards of Utah Admin. Code R315-13-1. These documents shall be kept as a part of the Operating Record.
- V.F.13. On or before December 1st, the Permittee shall submit to the Director the Annual As-Built Report for the Mixed Waste Landfill Cell. The report shall include the following items certified by a qualified Utah Registered Professional Engineer:
- V.F.13.a. Drawings that detail east to west cross-sections of the Mixed Waste Landfill Cell through each constructed sump comparative to the cell design profile;
- V.F.13.b. Drawings that detail east to west cross-sections of the Mixed Waste Landfill Cell at the location of cap shoulders comparative to the cell design profile;
- V.F.13.c. Drawings that detail north to south cross-sections of the Mixed Waste Landfill Cell at the centerline and north to south cross-sections of the Mixed Waste Landfill Cell at the location of cap shoulders comparative to the cell design profile;
- V.F.13.d. Drawings that detail the plan view of the constructed cells in the Mixed Waste Landfill Cell. The plan view drawing shall show the location of each cross-section and contain planar coordinates and elevations relevant to the constructed/construction features of the Mixed Waste Landfill Cell based on the site coordinate system.
- V.F.13.e. Drawing scales shall be clearly identified to allow data to be scaled from the drawings.
- V.F.14. The Permittee shall submit an electronic copy of the drawings identified in Condition V.F.13.
- V.G. MANAGEMENT OF RUN-ON/RUN-OFF FACILITIES
- V.G.1. The Permittee shall manage run-on/run-off in accordance with Attachment V-1, *Design of Run-On/Run-Off Control Berms*.
- V.H. INSPECTION SCHEDULES AND PROCEDURES

- V.H.1. The Permittee shall conduct inspections of the Mixed Waste Landfill Cell as outlined in Attachment II-3, *Site Inspection Plan*.
- V.I. WASTE TRACKING
- V.I.1. The Permittee shall track waste disposed of in the Mixed Waste Landfill Cell in accordance with Attachment III-2, *Waste Identification and Tracking Plan*.
- V.J. CLOSURE AND POST-CLOSURE CARE
- V.J.1. The Permittee shall conduct closure and post-closure activities in accordance with the following conditions:
- V.J.1.a. At final closure of the landfill, or upon closure of any cell, the Permittee shall follow the procedures in the approved Attachment II-7, *Closure Plan*;
- V.J.1.b. After final closure, the Permittee shall follow the plans and procedures in the approved Attachment II-8, *Post-Closure Plan*.

TABLE V-1

PHASE	SUMP DESIGNATION	APPROVED FOR DISPOSAL	CAPACITY (Cubic Yards)
1A	1A	April 24, 1992	~ 36,586
1A	2A	April 24, 1992	~ 59,976
1B	1B	February 16, 1996	~ 36,371
1B	2B	February 16, 1996	~ 59,429
II	3B	January 15, 1999	~ 59,097
II	4B	January 15, 1999	~ 60,738
II	5B	October 13, 1999	~ 60,891
II	6B	October 13, 1999	~ 60,998
III	3A	February 16, 2001	~ 61,314
III	4A	February 16, 2001	~ 61,312
III	5A	February 16, 2001	~ 61,497
III	6A	February 16, 2001	~ 61,554
IV	7A	June 24, 2004	~ 61,593
IV	7B	June 24, 2004	~ 59,194
IV	8A	May 26, 2005	~ 61,620
IV	8B	May 26, 2005	~ 61,173
V	9A	July 2, 2007	~ 61,634
V	9B	July 2, 2007	~ 61,244
VI	10A	April 19, 2012	~ 61,180
VI	10B	April 19, 2012	~ 61,245
VII	11A		~ 56,193
VII	11B		~ 59,824
	12A		~ 33,050
	12B		~ 36,377
		Total Capacity	1,353,004 cubic yards

END OF MODULE V