MODULE V - LANDFILL 5 POST-CLOSURE CARE

V.A. APPLICABILITY

V.A.1. The requirements of this Permit module pertain to Landfill 5.

The hazardous waste in Landfill 5 was excavated until waste concentrations in the surficial soil were less than the industrial RSL. The soil excavations extended deep into the landfill (sometimes greater than 20 feet below ground surface and it is possible that waste concentrations exceed the industrial RSL threshold below the measured surface.) Following excavation of the cells within the landfill, compacted clean soil was used to fill the cells.

As waste was placed on the clean fill during the excavation operations, a cumulative risk assessment was performed to confirm that the risk associated with the surficial landfill soil was less than the industrial threshold. Finally, the surface of the landfill was then returned to one that directs precipitation to outside of the cell and the entire surface of the landfill was seeded with native vegetation. Additional work may be needed to maintain this final cover surface.

V.B. GENERAL POST-CLOSURE CARE CONDITIONS

V.B.1. The Permittee shall conduct all post-closure care activities in accordance with this permit, in compliance with UAC R315-264-110.

V.B.2. The Permittee shall monitor the closed facility throughout the post-closure care period in a manner that will ensure detection of subsidence, erosion channels, ponding water, damage to the cover, or deterioration or malfunction of corrective action systems. The Permittee shall maintain all monitoring equipment throughout the post-closure care period, in compliance with UAC R315-264-310(b) and specifications of this permit.

V.B.3. The Permittee shall maintain the fencing, gates, and warning signs that surround the closed landfill and restrict unauthorized access to the facility, in accordance with Condition V.C.

V.B.4. The Permittee shall prohibit any use of the property that may disturb the monitoring system in compliance with UAC R315-264-310(b).

V.B.5. Maintenance of the cover and corrective action systems shall be conducted in accordance with the respective Director-approved plans.

V.B.6. The Permittee shall protect and maintain surveyed benchmarks used in complying with UAC R315-264-310(b)(6).

V.B.7. The Permittee shall prohibit the use of groundwater impacted by the landfill.

V.B.8. The Permittee shall prohibit any use of this property without prior approval from the Director except as to maintain the cover.

V.C. SECURITY

V.C.1. The Permittee shall comply with the following security conditions:

V.C.1.a. The fence with locking gates surrounding the closed facility on all sides, which inhibits unauthorized entry, shall be maintained throughout the post-closure care period.

V.C.1.b. Signs that read "DANGER, UNAUTHORIZED PERSONNEL KEEP OUT" shall be posted at the entrance gates and every 100 feet along the fence and shall be maintained throughout the post-closure care period. The signs must be legible from a distance of at least 25 feet in compliance with UAC R315-264-14(c).

V.C.1.c. The fence, locking gates, and signage shall be inspected annually throughout the post-closure care period.

V.C.1.d. Damaged security equipment shall be noted in the inspection checklist and repairs shall be completed as soon as practicable but no later than 72 hours after discovery. If the remedy requires more than 72 hours the Permittee shall notify the Director, before the expiration of the 72-hour period, of a proposed time schedule for correcting the problem

V.D. INSPECTIONS

V.D.1. The Permittee shall inspect the closed landfill annually and in the event of a major storm or flood during the post closure care period. A major storm or flood is defined as a storm with one-inch of precipitation or more over a 24-hour period. The Permittee shall record the results of each inspection on the inspection checklist. All records of inspections and remedial actions taken to correct problems discovered during the inspections shall be retained in the operating record for at least five years. Any deterioration or malfunction discovered by an inspection will be remedied in compliance with the time frames specified in Condition V.C.1.d.

V.D.2. The Permittee shall inspect all groundwater monitoring wells during groundwater monitoring events. Results of the inspection will be reported in the groundwater monitoring event reports.

V.D.3. Upon discovering erosional features that are greater than six (6) inches, the Permittee shall repair the cover in compliance with the time frames specified in Condition V.C.1.d.

V.D.4. The Permittee shall inspect the Passive Soil Vapor Extraction System (SVE) as required by the currently approved Operation and Maintenance plan or as requested by the Director.

V.E. DOCUMENTS TO BE MAINTAINED AT FACILITY

V.E.1. The Permittee shall maintain at the UTTR Facility for the duration of the post-closure care period, the following documents and all amendments, revisions, and modifications to these documents:

V.E.1.a. The post-closure permit application;

V.E.1.b. The closure plans;

V.E.1.c. Certification of closure;

V.E.1.d. Personnel training documents and records as required by UAC R315-264-16(d) and this Permit;

V.E.1.e. Completed inspection checklists as required by this Permit;

V.E.1.f. Post-closure monitoring records, to include groundwater monitoring records, groundwater monitoring reports and analytical results, as required by this Permit; and,

V.E.1.g. The operating record as required by UAC R315-264-73 and this Permit.

V.F. POST-CLOSURE GROUNDWATER MONITORING

V.F.1. The Permittee shall monitor groundwater, as described in the *Landfill 5 Groundwater Sampling and Analysis Plan* (Attachment 18) , in a manner compliant with UAC R315-101.

V.G. RESERVED

V.H. GROUNDWATER PROTECTION STANDARD

V.H.1. The groundwater protection standards (GPS) for each hazardous constituent that has entered groundwater shall be the maximum contaminant level (MCL), or, if MCL is not available, the tap water regional screening level (RSL).

V.I. GROUNDWATER MONITORING REQUIREMENTS

V.I.1. General Requirements. The groundwater monitoring system shall consist of a sufficient number of wells, installed at appropriate locations and depths to yield

groundwater samples from the uppermost aquifer that represent the quality of background water that has not been affected by leakage from the landfill.

V.I.1.a. All monitoring wells shall be constructed in accordance with the provisions in UAC R315-264-97(c) and Condition V.I.2.

V.I.1.b. The groundwater monitoring program shall include sampling and analysis procedures consistent with UAC R315-264-97(d) and (e) and the *Landfill 5 Groundwater Sampling and Analysis Plan* (Attachment 18).

V.I.1.c. The Permittee shall follow the requirements for measurement of the groundwater surface elevation as defined in UAC R315-264-97(f).

V.I.1.d. The Permittee shall follow the requirements for establishing background water quality for specified hazardous constituents and monitoring parameters as defined in UAC R315-264-97(g).

V.I.1.e. The Permittee shall follow a Director approved analysis for statistical trend evaluation, as described in the *Landfill 5 Groundwater Sampling and Analysis Plan* (Attachment 18), to meet the requirement of UAC R315-264-97(h) in determining whether background concentrations have been exceeded.

V.I.2. Well Location, Construction and Abandonment.

V.I.2.a. Well construction shall follow the techniques described in the Technical Enforcement Guidance Document (TEGD), OSWER-9950.1, September 1986. All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing shall be screened or perforated and packed with sand at the sample depth within the upper aquifer. Above the sampling depth, the well bore shall be sealed to prevent contamination of samples and the groundwater.

V.I.2.b. The Permittee shall construct and maintain new monitoring wells in accordance with plans and specifications to be submitted to the Director for approval at the time of permit modification under Condition I.D. The Permittee shall submit to the Director, for written approval, the following: numbers, construction details, and locations of all new wells prior to installation.

V.I.2.c. Additional groundwater monitoring wells shall be installed to maintain compliance if subsurface conditions significantly change after permit issuance. Such changes may include, but are not limited to, water level elevation or apparent flow direction changes, or detection of organic constituents in a well. The Director may require the Permittee to install and sample additional wells at any time during closure or post-closure or compliance periods if new information or unforeseen circumstances reveal a need for additional monitoring to protect human health and the environment.

V.I.2.d. The Permittee shall submit monitoring well completion reports which include boring logs, sieve analysis (grain size), standard penetration tests, analytical tests performed on soils (e.g. Atterberg limits), the surveyed elevation to the exact point of measurement (example: top of PVC cap) for the well, groundwater elevation at the time of well completion, well development results including recharge rates, a cross section or Fence diagram showing how the new well compares with adjacent wells, and any other appropriate data. The report shall be submitted within 90 days after completion of wells which are installed after permit issuance. All monitoring wells constructed and installed after the issuance of this Permit, shall be immediately sampled for the parameters specified in the *Landfill 5 Groundwater Sampling and Analysis Plan* (Attachment 18).

V.I.2.e. The Permittee shall notify the Director within 72 hours when a well is no longer properly functioning (including a marked change in pumping rate, presence of sandy or silty materials, and cracked or broken casings) or when the Permittee intends to close one or more wells associated with the landfill. The Director shall approve the conditions for replacement or correction of improperly operating wells.

V.I.2.f. The Permittee shall determine the depth to the bottom of a groundwater monitoring well any time a pump is removed for maintenance. This information shall be recorded on well purging volume calculation sheets as required. If a problem is observed, the Permittee shall follow the procedures described above in Condition V.I.2.e. regarding notification and corrective procedures.

V.I.2.g. Abandonment of any monitoring well shall be accomplished in a manner that prevents vertical movement of water and possible contaminants within the borehole and annular space surrounding the well casing. The Permittee shall also comply with Utah Division of Water Rights rules for well abandonment.

V.I.3. Sampling and Analysis Procedures

V.I.3.a. The Permittee shall maintain consistent sampling and analysis procedures in the groundwater monitoring program that are designed to ensure reliable monitoring results of groundwater quality below the waste management area. At a minimum, the program shall include procedures and techniques for:

V.I.3.a.i. Sample collection;

V.I.3.a.ii. Sample preservation and shipment;

V.I.3.a.iii. Analytical procedures;

V.I.3.a.iv. Chain-of-custody control; and

V.I.3.a.v. Quality assurance and control.

V.I.3.b. The sampling and analytical methods shall be appropriate for groundwater sampling and accurately measure hazardous constituents in groundwater samples.

V.I.3.c. The Permittee shall use the following techniques and procedures when obtaining samples and analyzing samples from the groundwater monitoring wells:

V.I.3.c.i. Samples shall be collected by the technique in the *Landfill 5 Groundwater Sampling and Analysis Plan* (Attachment 18) and as required by UAC R315-264-97.

V.I.3.c.ii. Samples shall be preserved and transported in accordance with the procedures in the *Landfill 5 Groundwater Sampling and Analysis Plan* (Attachment 18).

V.I.3.c.iii. Samples shall be analyzed using appropriate USEPA test methods and the procedures specified in the *Landfill 5 Groundwater Sampling and Analysis Plan* (Attachment 18). All major peaks greater than 25% of the peak height of the closest internal standard will be identified using the latest NBS Library. The quantity of the compounds represented by major peaks will be estimated based upon the closest internal standard. Any major peak found during the analysis may become a target parameter.

V.I.3.c.iv. Reserved

V.I.3.c.v. Samples shall be tracked and controlled using the chain-of-custody procedures in the *Landfill 5 Groundwater Sampling and Analysis Plan* (Attachment 18).

V.I.3.c.vi. In the case of sample breakage (i.e., during shipping, etc.), re-sampling shall be done within seven (7) working days of the facility being notified of such an event.

V.I.3.d. The Director may request at any time all laboratory QA/QC documentation and supporting data on any sampling event. The Permittee shall retain, either at the laboratory or at the facility, the raw organic data for required sampling and analysis, including gas chromatographic printouts, mass spectral analyses, and QA/QC surrogate and spiking results, etc. These data shall be retained for a period of not less than three (3) years at the laboratory or the facility.

V.I.4. Groundwater Elevation

V.I.4.a. The Permittee shall determine the groundwater surface elevation in all monitoring wells on an annual basis, or as requested by the Director. This data shall be submitted to the Director in tabular form and on a contour map as part of each groundwater monitoring report.

V.I.4.b. The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer yearly. This information shall be submitted to the Director as part of each groundwater monitoring report.

V. J. SOIL VENTING SYSTEM

V.J.1. A passive soil venting well system with 11 vent wells was installed from 2008-2010 and used to remediate the vadose zone of volatile contaminants. This system was modified in 2020 to total 30 vent wells. As the waste materials have been removed and Landfill 5 is in post-remediation management, the active soil venting system is no longer required. The soil venting wells will be capped. If the groundwater data indicate a statistically significant increase in VOCs, the passive soil venting system may be reinstated to mitigate the volatile contamination.

V.K RESERVED