MODULE VII

GROUNDWATER MONITORING PROTECTION

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MODULE VII - GROUNDWATER MONITORING / PROTECTION

VII.A. APPLICABILITY

VII.A.1. HAZARDOUS WASTE LAND DISPOSAL UNITS

The requirements of this module pertain to the following units:

Surface Impoundment A
Landfill Cell 1
Landfill Cell 2
Landfill Cell 3
Landfill Cell 4
Landfill Cell 5
Landfill Cell B/6 (Permitted as a RCRA/TSCA Landfill from Cell B)
Landfill Cell 7
Industrial Waste Landfill Cell 1
Industrial Waste Landfill Cell 2

Note: Landfill Cell B/6 was previously clean-closed as Landfill Cell 6 and re-permitted as TSCA Landfill Cell B. On August 31, 2005, it was permitted as TSCA/RCRA Landfill Cell B/6.

VII.A.2. SOLID WASTE LAND DISPOSAL UNITS

In addition, the following units shall also be subject to certain provisions of this module:

TSCA Landfill Cell X
TSCA Landfill Cell Y
TSCA Landfill Cell Z
TSCA Landfill Cell A

Industrial Waste Landfill Cell 3

VII.A.3. New land disposal units constructed at the facility shall also be subject to this Module. Permit modification provisions under Condition VII.E.5. shall be followed for the specific well placement and other groundwater monitoring requirements.

VII.A.4. Where there are conflicts with conditions of this permit and TSCA, the requirements under TSCA shall take precedent at designated TSCA landfill cells and the PCB treatment area; whereas the requirements under this permit shall take precedent at all other areas.

VII.A.4.a. In addition to required monitoring at the PCB landfill cells under TSCA, the Permittee shall monitor for the same compounds in detection monitoring as for regulated units defined in Condition VII.A.6. These data shall be submitted to the Director at the same time as those semi-annual or other submissions required herein, except that sampling and reporting may be adjusted to meet any required timetables under TSCA.

VII.A.5. The Permittee shall follow all of the provisions under Utah Admin. Code R315-8-6, Groundwater Protection, and as defined by these permit conditions. For purposes of this permit, Utah Admin. Code R315-8-6 regulations for Groundwater Protection apply to all land disposal units; however, provisions for detection and compliance monitoring are defined in VII.A.5.a. through VII.A.5.m. for specific unit waste management compliance points under Utah Admin. Code R315-8-6.6, except as determined by the Director. Compliance points are all groundwater monitoring wells listed for the Waste Management Areas (WMAs) as defined in VII.A.5.b through VII.A.5.i. Due to the particular nature of the groundwater piezometric surface at the facility, downgradient conditions may occur in any direction from the WMA units. The present WMAs and compliance points defined below are shown in Attachment VII-1:

VII.A.5.a. There shall be a common well system serving as background for all of the individual waste management units. Monitoring wells MW-1, PZ-06, PZ-07, and PZ-08 shall serve as the background well system.

VII.A.5.b. WMA 1 shall include Surface Impoundment A. The points of compliance are a line encircling this unit at the toe of the outer dike. Wells MW-10, MW-11, and MW-12 shall serve as downgradient monitoring wells for WMA 1.

VII.A.5.c. The land treatment units have been clean closed. There is no requirement to maintain the wells for WMA 2, which defined the land treatment unit monitoring system. However, at the discretion of the Permittee, Wells MW-8, MW-5, MW-18A, and MW-19 which served as downgradient monitoring wells for the WMA 2, may be maintained or closed. If the Permittee wishes to abandon these wells, a well abandonment plan shall be submitted to the Director for approval.

VII.A.5.d. WMA 3 shall include Landfill Cells 1, 2, 3, and 4. The points of compliance are a line encircling these cells at the toe of the outer berm on all sides (north, south, east, and west). Wells MW-24, WM-25, MW-27A, MW-28, MW-29A, MW-30A, MW-2, MW-43, MW-44, MW-45, MW-46, MW-58A, and MW-59 shall serve as initial downgradient monitoring wells for WMA 3.

VII.A.5.e. WMA 4 shall include TSCA Landfill Cells X, Y and Z. The points of compliance are a line encircling these cells on all sides at the toe of the outer berm. Wells MW-2, MW-21, MW-22, MW-23, MW-36, MW-40A MW-41, MW-53, MW-54, MW-55, MW-56, MW-57shall serve as initial downgradient monitoring wells for WMA 4.

VII.A.5.f. WMA 5 shall include Industrial Landfill Cell 1. The points of compliance are a line encircling this unit at the toe of the outer berm. Wells 32A, MW-75, and MW-33 shall serve as initial downgradient monitoring wells for WMA 5. The Director may specify any additional downgradient wells that may be required for WMA 5.

VII.A.5.g. WMA 6 shall include Industrial Landfill Cell 2. The points of compliance are a line encircling this unit at the toe of the outer berm on the southern, western and eastern sides and the center of the common dike with Industrial Landfill Cell 1 on the northern side. Wells MW-18A, MW-34, and MW-35 shall serve as initial downgradient monitoring wells for WMA 6.

VII.A.5.h. WMA 7 shall include Landfill Cell 5. The points of compliance are a line encircling this unit at the toe of the outer berm on the northern, eastern, and southern sides and the center of the common dike with Landfill Cells 4 and 1 on the western side. Wells MW-50, MW-51, MW-52 and MW-60 shall serve as initial downgradient monitoring wells for WMA 7.

VII.A.5.i. WMA 8 shall include Industrial Landfill Cell 3. The points of compliance are a line encircling this unit at the toe of the outer berm on the eastern, western, and southern sides and the center of the common dike with Industrial Landfill Cell 2 on the northern side. Wells MW-47, MW-48, and MW-49 shall serve as initial downgradient monitoring wells for WMA 8.

VII.A.5.j. WMA 9 shall include RCRA/TSCA Landfill Cell B/6. The points of compliance are a line encircling this unit at the toe of the outer berm on the northern, eastern, and southern sides and the center of the common dike Landfill Cell 5 on the western side. Wells MW-67, MW-68, MW-69, MW-70, MW-71, MW-72, MW-73, MW-74, and MW-9 shall serve as initial downgradient monitoring wells for WMA 9.

VII.A.5.k. WMA 10 shall include TSCA Landfill Cell A. The points of compliance are a line encircling this unit at the toe of the outer berm on the northern, western, and eastern sides and the center of the common dike with Industrial Landfill Cell 1 on the southern side. Wells MW-61, MW-62, MW-63, MW-64, MW-65, and MW-66 shall serve as initial downgradient monitoring wells for WMA 10.

VII.A.5.l. WMA 11 shall include Landfill Cell 7. The points of compliance are a line encircling these cells on all sides at the toe of the outer berm. Wells MW-76, MW-77, MW-78 and MW-79 shall serve as initial downgradient monitoring wells for WMA 11.

VII.A.5.m. Addition of new WMAs subject to this module shall follow the modifications procedures of Condition I.D.

VII.A.6. The regulations and conditions of this permit for groundwater monitoring apply during the active life of the regulated unit including the closure period, and as defined in Utah Admin. Code R315-8-6.1.(c) during compliance monitoring and post-closure periods. These regulations shall also apply for the life of SWMUs.

VII.B. REQUIRED PROGRAMS

VII.B.1. The Permittee shall conduct a monitoring and response program as follows for all units subject to these provisions:

VII.B.1.a. Whenever hazardous constituents under Utah Admin. Code R315-8-6.4. (Class 1 compounds selected for the detection monitoring program (Attachment VII-3, Table 1)) from a regulated unit or SWMU are detected at the compliance point(s), the Permittee shall institute a compliance monitoring program as specified in Condition VII.F. and Utah Admin. Code R315-8-6.10. The compliance monitoring program will be in force for the affected WMA(s), initially including the full list of constituents found in Utah Admin. Code R315-50-10, in addition to the hazardous constituent(s) detected. The compliance monitoring program supersedes the detection monitoring program for the affected WMA(s) and detected hazardous constituent(s). For Class 1 parameters, "detected" shall mean exceeding the critical level as defined in Attachment VII-3, Table 1.

VII.B.1.b. Hazardous constituents defined in Utah Admin. Code R315-8-6.4. (Class 3 compounds) shall be evaluated according to Attachment VII-7.

VII.B.1.c. Whenever the groundwater protection standard under Utah Admin. Code R315-8-6.3. and Section VII.C. is exceeded, the Permittee shall institute a corrective action program under Utah Admin. Code R315-8-6.11. and Section VII.G.

VII.B.1.d. Whenever hazardous constituents under Utah Admin. Code R315-8-6.4. exceed concentration limits under Condition VII.C. of this permit in groundwater between the compliance point defined in Condition VII.A.5. above and the facility property boundary, the Permittee shall institute a corrective action program under Utah Admin. Code R315-8-6.11, and section VII.G. of this permit.

VII.B.1.e. In all other cases, the Permittee shall institute and maintain a detection monitoring program under Utah Admin. Code R315-8-6.9. and section VII.E. of this permit.

VII.C. GROUNDWATER PROTECTION STANDARD

VII.C.1. The Director may specify groundwater protection standards for each hazardous constituent that has entered groundwater at the time the detection monitoring program or other evidence indicates that hazardous constituents have entered groundwater beneath a WMA. The Director may also determine at such time the hazardous constituents to which the protection standard applies as defined in Utah Admin. Code R315-8-6.4., the concentration limits as defined in Utah Admin.

Code R315-8-6.5, the point(s) of compliance under R315-8-6.6, and the compliance period under Utah Admin. Code R315-8-6.7.

VII.D. GENERAL GROUNDWATER MONITORING REQUIREMENTS

VII.D.1. The Permittee shall comply with the following requirements for groundwater monitoring:

VII.D.1.a. 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:

VII.D.1.a.i Represent the quality of background water that has not been affected by leakage from a regulated unit; and

VII.D.1.a.ii Represent the quality of groundwater passing the point of compliance.

VII.D.1.b. Separate groundwater monitoring systems shall be required for each present and any new unit (and solid waste management unit as appropriate).

VII.D.1.c. The minimum number of wells for any unit shall be proposed by the Permittee and installed subject to the written approval of the Director.

VII.D.1.d. All monitoring wells shall be constructed in accordance with the provisions in Utah Admin. Code R315-8-6.8(c) and Condition VII.D.2.

VII.D.1.e. The groundwater monitoring program shall include sampling and analysis procedures defined in Utah Admin. Code R315-8.6.8(d) and (e) and Condition VII.D.3.

VII.D.1.f. The Permittee shall follow requirements for measurement of the groundwater surface elevation in Utah Admin. Code R315-8-6.8(f) and Condition VII.D.4.

VII.D.1.g. The Permittee shall follow the requirements for establishing background water quality for specified hazardous constituents and monitoring parameters as defined in Utah Admin. Code R315-8-6.8.(g) and Condition VII.D.5.

VII.D.1.h. The Permittee shall follow the procedures for statistical evaluation in determining whether background values of concentration limits have been exceeded as defined in Utah Admin. Code R315-8-6.8.(h) and Condition VII.D.6.

VII.D.2. The following guidelines shall apply to well location and construction:

VII.D.2.a. Well construction shall follow the techniques described in the Technical Enforcement Guidance Document A(TEGD), OSWER-9950.1, September 1986, and the 1992 TEGD addendum. All monitoring wells shall be cased in a manner

that maintains the integrity of the borehole. This casing shall be screened or perforated, and packed with gravel or sand where necessary (i.e., the space between the borehole and well casing). Above the sampling depth the annulus shall be sealed to prevent contamination of samples and the groundwater. All wells shall be developed until the turbidity of groundwater being withdrawn from the well is less than five Nephelometric Turbidity Units (NTUs). If the Permittee cannot reach this standard, submission of the documentation and development procedure to the Director is required. The Director may accept the well development or require further development, if proper demonstration of well development is inadequate.

VII.D.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 VII.E.5. Prior to the installation of all new wells, the Permittee must have approval of the Director for the following: number of wells, construction details and locations of all new wells.

VII.D.2.c. Additional saturated zone monitoring wells shall be installed to maintain compliance if subsurface conditions change after permit issuance. Such changes may include, but are not limited to, water level elevation or apparent flow direction changes, detection of saturated conditions below a leak detection sump, or detection of organic constituents in a well. The Director may require the Permittee to install and sample additional wells at any time during the active life, 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.

VII.D.2.d. The Permittee shall submit within 90 days of the completion of a new monitoring well the completion reports (schematics) which shall include boring logs with lithological descriptions, sieve analyses (grain size), water levels, and well development results including recharge rates. New cross sections or fence diagrams shall also be submitted which incorporate the new data.

VII.D.2.e. Existing monitoring wells shall be maintained in a fully operating condition for the duration of this permit. 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), and if the cause of the malfunction cannot be repaired within two weeks, or if a well is out of service during a sampling episode and cannot be sampled within two weeks of schedule. Any time a well is found to be unfit for monitoring, a notation shall be made in the Operating Record, with a similar notation made when the well is returned to service. The Director shall also be notified prior to the event when the Permittee intends to close one or more wells associated with a regulated unit or solid waste management unit. The Director shall approve the conditions for replacement or correction of improperly operating wells.

VII.D.2.f. The Permittee shall determine the depth to the bottom of all groundwater monitoring wells once every two years, or within two weeks of final development of any new well, or when a given well does not function properly. All total depth information shall be recorded, with the date, on the field data sheets and reported to the Director within 30 days of completion of the survey. If a problem is observed, the Permittee shall follow the procedures described above in Condition VII.D.2.e.regarding notification and corrective procedures.

VII.D.3. The following guidelines shall apply to sampling and analysis procedures:

VII.D.3.a. The Permittee shall include and maintain consistent sampling and analysis procedures in the groundwater monitoring program that are designed to ensure reliable monitoring results of groundwater quality downgradient of a WMA. At a minimum, the program shall include procedures and techniques for:

VII.D.3.a.i. Sample collection;

VII.D.3.a.ii. Sample preservation and shipment;

VII.D.3.a.iii. Analytical procedures; and

VII.D.3.a.iv. Chain-of-custody control.

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

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

VII.D.3.c.i. Samples shall be collected by the technique described in Attachment VII-2.

VII.D.3.c.ii. Samples shall be preserved and transported in accordance with the procedures specified in Attachment VII-2.

VII.D.3.c.iii. Samples shall be analyzed according to the methods and/or procedures specified in Attachment VII-3, Tables 1 through 4, in addition to the following:

VII.D.3.c.iii.A. The use of quality control sample data shall be explained in full detail. The Permittee shall provide field blanks for analysis at each annual sampling interval under the detection monitoring program as specified in Attachment VII-2. Any field, trip, or laboratory blanks exceeding three times the critical level for any organic parameter, shall result in evaluation of the data for that parameter for the samples collected during the day the QA/QC samples were collected, or for the samples that are associated with the QA/QC sample laboratory lot number. Detections in field, trip, bottle or equipment blank

samples shall be evaluated with respect to the results of analyses performed on samples collected from the related monitoring wells. Qualifiers shall be indicated on all organic laboratory reports when blanks indicate contamination above the method detection level. If laboratory data indicate that the data should be rejected, re-sampling of the affected wells shall be performed within three weeks. If the Permittee determines that the contamination does not invalidate the environmental sample results, the Permittee may petition the Director to use those results and not have to resample. This consultation must take place within two weeks of receiving the data from the laboratory. Re-sampling will be performed in accordance with Section V.E and Attachment VII-2.

VII.D.3.c.iii.B. The Director may request at any time all laboratory QA/QC documentation and supporting data on any sampling episode. The Permittee shall retain either at the laboratory or the facility for organic compounds being analyzed, the raw information for required sampling and analysis, including gas chromatographic printouts, mass spectral analyses, QA/QC surrogate and spiking results, etc. These data shall be retained for a period of not less than three years.

VII.D.3.c.iv. Samples shall be tracked and controlled using the chain-of-custody procedures specified in Attachment VII-2.

VII.D.3.d. In the case of sample container breakage (i.e., during shipping), missed holding times, or any other unforeseen event, resampling shall be initiated within two weeks of the facility being notified of such an event.

VII.D.4. The following guidelines shall apply to measurement of groundwater elevation:

VII.D.4.a. The Permittee shall determine the groundwater surface elevation in all monitoring wells and piezometers on an annual basis, unless otherwise instructed by the Director. Well casing elevations will be resurveyed every three years commencing in 2009 and upon request of the Director.

VII.D.4.b. The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer based on the most current surveyed well elevations and submit an updated groundwater contour (potentiometric) map to the Director no later than May 15th of each year.

VII.D.5. The following guidelines shall apply to monitoring of background groundwater quality and groundwater chemical parameters:

VII.D.5.a. For purposes of the detection monitoring program as specified in Section VII.E., the three classes of parameters for measurement and analysis are:

VII.D.5.a.i. Class 1- Class 1 parameters consist of a set of organic hazardous constituents or indicator compounds measurable by gas chromatography/mass spectrometry (GC/MS), and are listed in Attachment VII-3, Table 1. Attachment VII- 3 lists a set of numerical standards for each Class 1 Detection Monitoring parameter considered to be the concentration equal to or above which a given parameter value exceeds the critical level.

VII.D.5.a.ii. Class 2- Class 2 parameters consist of a set of compounds considered analyzable by available methods specified in SW-846, 3rd Edition and referred to in Attachment VII-3, Table 2.

VII.D.5.a.iii. Class 3- Class 3 parameters are identified as "Background Groundwater Quality Parameters" in Attachment VII-3, Table 3.

VII.D.5.b. The Class 1 GC/MS detection monitoring parameters shall be used as the principal hazardous constituents and indicators. They shall be monitored and analyzed for annually, and shall be subjected to statistical evaluation as defined in Condition VII.E.1. Class 2 parameters shall be sampled as required under Condition VII.E.1.k., when the detection monitoring program indicates a statistically significant difference in detection monitoring. Class 3 parameters shall be monitored annually during required detection monitoring events and shall be subjected to statistical evaluation as defined in Condition VII.E.2.

VII.D.5.c. A tentative value is defined as any measured concentration for an analyte less than the laboratory PQL/LOQ and above the laboratory MDL, but otherwise meeting criteria for identification using GC/MS techniques. These values shall be reported to the Director as values identified by the letter J, but shall not be used as indications of detection.

VII.D.5.d A tentatively identified compound is a non-target compound that is detected using GC/MS technology. The mass spectrum is compared to standard reference spectra for potential identification. Manual interpretation may be necessary. Identification and quantitation may vary significantly when compared to authentic standards. These values shall be reported to the Director as values identified by the letter A.

VII.D.5.e. A reportable value is defined as any measured concentration for an analyte in Attachment VII- 3, Table 1 that equals or exceeds the laboratory PQL/LOQ as determined by the analytical laboratory.

VII.D.5.f. A critical value for a given compound is any measured concentration that equals or exceeds the .01 level of significance as listed in Attachment VII-3.

VII.D.5.g. The Permittee may petition the Director to modify the background data, based on future detection monitoring results obtained during the term of this permit.

VII.D.5.h. The Permittee has conducted groundwater monitoring at all monitoring wells identified in Condition VII.A.5.a. for the background water quality parameters listed in Attachment VII-3, Table 1. The Permittee shall provide information on past and required monitoring events as described in Section VII.E.

VII.D.6. Other Conditions:

VII.D.6.a. The Permittee shall monitor all wells covered by this permit annually at a minimum, in either the detection or compliance monitoring program, and notify the Director at least 14 days prior to a regularly scheduled groundwater sampling event. This notice requirement does not include any re-sampling or other testing performed to follow-up a regularly scheduled monitoring event. The Permittee shall also notify the Director at least 72 hours prior to any re-sampling activities.

VII.D.6.b. All newly constructed monitoring wells shall require two years of quarterly sampling for all Class 3 parameters listed in Attachment VII-3. The Permittee shall conduct at least one evaluation of Class 1 parameters immediately following completion of the wells. If no hazardous constituents are found, then detection monitoring for Class 1 parameters shall begin in the next semi-annual period following installation of the wells. However, if hazardous organic constituents are detected above the critical levels, the Permittee shall also conduct quarterly sampling at those wells for a one-year period for Class 2 parameters. The Director may or may not determine that the wells can be used at any time in this period for detection monitoring.

VII.D.6.c. The Director may modify parameters or methods analysis, including statistical analysis, for any samples upon written notice to the Permittee. Conditions requiring modification may include maintaining or upgrading the quality or type of data produced by the Permittee to account for background conditions, future conditions such as availability of improved analytical methods, the presence of better indicators, or more easily detectable parameters in leachate. The Director will also prescribe in writing additional sampling and analysis for wastes contained in a unit or leachate deemed appropriate to determine whether a hazardous constituent may have originated from a unit, to establish appropriate monitoring parameters, or for other reasons. The Director may request at any time all laboratory QA/QC documentation and GC/MS data pertaining to data generated as a result of the additional sampling and analysis.

VII.D.6.d. The Permittee shall collect and record measurements for WMA 8 (Industrial Landfill Cell 3):

VII.D.6.d.i. The Permittee shall collect water level measurements annually in accordance with Condition VII.D.4.a.

VII.D.6.d.ii. The Permittee shall collect Total Depth measurements and maintain the well pump once every two years in accordance with Condition VII.D.2.f.

VII.D.6.d.iii. The Permittee shall inspect the wells in accordance with the RCRA Permit Module II, Attachment II-3.

VII.D.6.e. Prior to activation of WMA 8, the Permittee shall sample these wells for Class 1 and Class 3 parameters and these wells shall be reinstated through a permit modification to the Detection Monitoring Program Schedule.

VII.D.7. Development and Calibration of a Groundwater Flow and Solute Transport Model:

VII.D.7.a. The Permittee shall develop a numerical, finite difference or finite element-based groundwater flow model for the Facility. The conceptual portion of the model and grid design shall be submitted by October 31, 2002; a calibrated model run shall be submitted by February 28, 2003.

VII.D.7.b. The Permittee shall develop a numerical, advective-dispersive-reactive, solute transport model for WMA 5 and any other areas where releases of hazardous constituents to the groundwater have been detected. The transport model shall be based on the calibrated groundwater flow model and be contaminant(s)-specific (for the WMA release). The conceptual portion of the model and grid design shall be submitted by June 30, 2003; a calibrated model run shall be submitted by October 31, 2003.

VII.D.7.c. The Permittee shall refine and recalibrate the groundwater flow and groundwater solute transport models annually. A report describing annual model recalibration runs for both groundwater flow and contaminant transport models shall be submitted by August 31st of every year, utilizing the previous spring and fall groundwater monitoring data.

VII.D.7.d. The Permittee shall perform a one-time Monte Carlo-type uncertainty analysis of predictive simulations for contaminants 1,1-DCE and 1,1,1-TCA at WMA 5, based on the transient calibration of the groundwater flow model, by September 30, 2013. A work plan outlining the scope and methods to be employed shall be submitted by October 30, 2012.

VII.E. DETECTION MONITORING PROGRAM AND DATA EVALUATION

VII.E.1. The detection monitoring program for Class 1 parameters listed in Attachment VII-3, Table 1, shall follow the protocol given in Attachment VII-2 and as specified by the following conditions:

VII.E.1.a. The Permittee shall analyze for Class 1 parameters listed in Attachment VII-3 annually for all monitoring wells covered in this module. Results from all replicates, all field blanks, all trip blanks, and all laboratory blanks shall be reported annually. All dilutions made shall be specified on laboratory reports.

VII.E.1.b. The Permittee shall provide the Director, within 60 days after analysis, a list of compounds analyzed, reportable and tentative values for each compound found in a well sample, the critical level for each compound, a determination whether any reportable values have exceeded critical values in Attachment VII-3, and any additional relevant analyses.

VII.E.1.c. The Permittee shall provide an organized table of the reportable Class 1 compound information. All reportable, flagged values, tentatively identified compounds, and critical values shall be shown for each well and for each of the last three analyses (including repeat analyses). Wells shall be grouped as background and for each of the WMA well sets defined in Condition VII.A.1. A summary cover sheet shall be submitted which shows all values that are at or above the critical values identified for all wells.

VII.E.1.d. The Permittee shall determine whether a given compound concentration value has equaled or exceeded the critical value by simple comparison with the table values in Attachment VII-3.

VII.E.1.e. The Permittee shall provide to the Director information regarding observed patterns of any compound in wells, concentrations found in well samples similar to current or past QA/QC data, and as otherwise provided in Attachment VII-4, to explain statistical trends of compounds.

VII.E.1.f. For any well where one or more Class 1 parameters are found at or above critical levels, the well shall be re-sampled within one month of notification to the Facility, unless the Director has determined that re-sampling is unnecessary or the compound is already being tracked in the compliance monitoring program. The Permittee may choose to re-sample immediately upon receipt of initial data results, where values at or slightly above the critical levels are indicated. A copy of the initial data will be provided along with the re-sampling data to the Director within 30 days of completion of the re-sample. Re-sampling need only take place for those compounds and at those wells where values at or above the critical levels are indicated.

VII.E.1.g. Once the monitoring data has been submitted to the Director, the Permittee shall continue to develop evidence that could indicate a source of contamination other than in groundwater. If repeat sampling, as indicated in Condition VII.E.1.f., indicates exceedences of the critical level for at least one compound in a well, the data shall be considered a statistically significant indication of well contamination, subject to one further monitoring analysis as described in Condition VII.E.1.h.

VII.E.1.h. For a well or wells which have indicated potential contamination by twice exceeding the critical level for the annual sampling event, the Permittee shall obtain a third sample no later than 45 days from the second re-sampling event.

The results from the third re-sampling event shall be provided to the Director within 60 days of the third re-sampling event. The Permittee shall analyze for all Class 1 parameters at the well(s) detected in the two previous sampling events (Conditions VII.E.g. and VII.E.f.) which are not already being tracked in the compliance monitoring program.

VII.E.1.i. If the third sampling event (Condition VII.E.h.) shows Class 1 parameter concentrations at or above the critical levels actions under Condition VII.E.1.k. and Section VII.F., compliance monitoring shall be required.

VII.E.1.j. The Director may consider a number of factors identified in Attachment VII-3, Table 3, regarding the likelihood and potential severity of contamination in determining the appropriate course of action. However, unless informed otherwise, the Permittee shall follow the prescribed courses of action in Condition VII.E.1.k. and Section VII.F.

VII.E.1.k. If, pursuant to Conditions VII.E.1.h. and VII.E.1.i., there is a statistically significant increase in any Class 1 parameters, the Permittee shall notify the Director in writing within seven days. The notification shall indicate the affected parameter(s) and well(s). The Permittee may demonstrate under Utah Admin. Code R315-8-6.9(g)(6) that a source other than a regulated unit caused the increase, or that the increase resulted from an error in sampling, analysis, or evaluation. In making this demonstration the Permittee shall:

VII.E.1.k.i. Within 90 days submit a report to the Director which demonstrates that a source other than a regulated unit caused the contamination, or that the contamination resulted from an error in sampling, analysis, or evaluation;

VII.E.1.k.ii. Within 90 days submit to the Director a permit modification request to make any appropriate changes to the detection monitoring program at the facility;

VII.E.1.k.iii. Continue to monitor according to the detection monitoring program outlined in this permit; and

VII.E.1.k.iv. The Permittee shall submit a permit modification request under Condition VII.E.5.a. unless the demonstration successfully shows that a source other than a regulated unit caused the increase or that the increase resulted from error in sampling, analysis, or evaluation.

VII.E.1.l. For a WMA in which one or more of the downgradient monitoring wells have shown statistically significant levels of Class 1 parameter contamination (Condition VII.E.1.k.), the Permittee shall immediately sample the groundwater in all monitoring wells associated with that WMA. This sampling event will occur no later than 45 days of third sampling date. These wells will be sampled and analyzed to identify and quantify any Class 2 parameters identified in Attachment VII-3, Table 2.

VII.E.1.m. The Permittee shall establish a background value for each Class 2 parameter that has been detected at the compliance point(s).

VII.E.1.n. Within 90 days of the notification that the results of three analysis showed levels at or above the critical value of any Class 1 parameter, the Permittee shall submit to the Director a permit modification to establish a compliance monitoring program for the affected WMAs:

VII.E.1.n.i. An identification of the concentration of any Class 2 parameter found in the groundwater at each monitoring well in the affected WMA;

VII.E.1.n.ii. Any proposed modification to the groundwater monitoring system at the facility necessary to meet the requirements of the facility's compliance monitoring program, as detailed in Section VII.F. and Utah Admin. Code R315-8-6.10.;

VII.E.1.n.iii. Any proposed modification to change the monitoring frequency, sampling and analysis procedures used at the facility necessary to meet the requirements of the facility's compliance monitoring program, Section VII.F. and Utah Admin. Code R315-8-6.10.; and

VII.E.1.n.iv. For each hazardous constituent found at the compliance point, a proposed concentration limit or a notice of intent to seek an alternate concentration limit under Utah Admin. Code R315-8-6.5.(b).

VII.E.1.o. The Permittee shall submit to the Director within 180 days of the notification that any Class 1 compound was found to be at or above the critical value in three consecutive samples, all data necessary to justify any alternate concentration limit sought under Utah Admin. Code R315-8-6.5.(b) and an engineering feasibility plan for a corrective action program necessary to meet the requirements of Section VII.G and Utah Admin. Code R315-8-6.11, unless:

VII.E.1.o.i. All hazardous constituents identified under this section are listed in Table 1 of Utah Admin. Code R315-8-6.5., and their concentrations do not exceed the respective values given in that Table, or

VII.E.1.o.ii. The Permittee has sought an alternate concentration limit under Utah Admin. Code R315-8-6.5.(b) for each hazardous constituent identified in Utah Admin. Code R315-8-6.9.(h)(2).

VII.E.1.p. If the detection monitoring program for a WMA no longer satisfies the requirements of this section, the Permittee shall, within 90 days, submit an application for a permit modification to make appropriate changes to the program.

VII.E.1.q. The Permittee shall assure that monitoring and corrective action measures necessary to achieve compliance with the groundwater protection standard under

Utah Admin. Code R315-8-6.3. and Section VII.C. of this module are taken during the term of permit modification.

VII.E.1.r. The Permittee shall maintain and upon request, provide to the Director, historical data series of total depth, water levels, general water quality parameters, Class 3 parameters and detected Class 1 parameters for any well in the detection monitoring program.

VII.E.2. Class 3 Detection Monitoring Background Water Quality Parameters

VII.E.2.a. The Permittee shall monitor all Class 3 parameters listed in Attachment VII-3, Table 3 at each annual sampling interval for all wells covered under this section. In addition, field measurements shall be conducted for pH, specific conductance, turbidity, and sample temperature. The results of all measurements shall be reported to the Director. The field measurements shall be used as a qualitative measure of Class 3 water quality unless the Permittee or the Director has reason to believe the field data is inaccurate, in which case pH, specific conductance, turbidity, and sample temperature will need to be analyzed quantitatively by a Utah-certified, analytical laboratory.

VII.E.2.b. The Permittee shall provide with each report of the annual sampling event, an analysis by WMA of each of the Class 3 parameters as defined in Attachment VII-3, Table 3 with Attachment VII-7 and a summary of the gross cation/anion balance.

VII.E.2.c. The Director shall utilize these data and information in assessing the weight of evidence regarding potential statistical significance of Class 1 parameters, as described in Attachment VII-3, Table 1.

VII.E.3. The Permittee shall report quality control and quality assurance data, including required method blanks annually, in conjunction with the submission of annual groundwater sampling reports.

VII.E.4. The Permittee shall enter all monitoring, testing and analytical data into the Operating Record as required by Utah Admin. Code R315-8-5.3(b)(6) and this permit.

VII.E.5. Permit Modification

VII.E.5.a. If the detection, compliance monitoring or corrective action program required by this permit no longer satisfies the requirements of the regulations, the Permittee shall, within 90 days of this determination, submit an application for a permit modification to make any appropriate changes to the program which will satisfy the regulations.

VII.E.5.b. The Permittee shall ensure that monitoring and corrective action measures, necessary to achieve compliance with the groundwater protection standard under Utah Admin. Code R315-8-6.3 and Module VII, are being implemented.

VII.F. COMPLIANCE MONITORING REQUIREMENTS

VII.F.1. The compliance monitoring program and assessment shall begin for wells within a WMA at the time the third consecutive sample shows positive indication of contamination as described in Condition VII.E.1., and shall extend until the Permittee demonstrates satisfactorily that the groundwater protection standard in Section VII.C has not been exceeded at the compliance point(s) for three consecutive years. The compliance monitoring program shall consist of a semi-annual monitoring program, in which a full Class 2 (Attachment VII-3, Table 2) parameter analysis is conducted every fall and a Class 1 and 3 parameter analysis is conducted every spring for all compliance point wells within an affected WMA.

VII.F.1.a. Only those parameters showing statistically significant contamination shall be included in the compliance monitoring program;

VII.F.1.b. The rest of the class 1 parameters, including the annual Class 2 parameters, are monitored in the detection monitoring program;

VII.F.1.c. The procedures for sampling and analysis defined in the detection monitoring program shall be used in the compliance monitoring program;

VII.F.1.d. The Director may modify, change, add, or delete any specific parameters, in order to meet the criteria of Utah Admin. Code R315-8-6.

VII.F.2. The Director may require monitoring of hazardous constituents in wastes, leachate or suspected sources of contamination to determine whether contaminants entering groundwater are reasonably expected to be derived from the unit in question.

VII.F.3. The Director may require additional field tests, groundwater monitoring or soil vapor well installation, or further analytical tests necessary to adequately assess the horizontal and vertical rate and extent of migration of the contaminants, including the unsaturated zone routes of migration.

VII.F.4. If any regulated or solid waste management unit within the WMAs defined in Condition VII.A.1. is determined to be the source of hazardous constituents in groundwater, the Corrective Action Plan developed pursuant to Module VIII shall include actions to contain or stop the release from that unit.

VII.F.5. The Permittee shall, if appropriate, request a permit modification to comply with Utah Admin. Code R315-8-6.9.(h) and Condition VII.E.5.

VII.F.6. The Permittee shall submit to the Director within 90 days from initiation of the compliance monitoring program, an interim information report of all information collected or proposed to be collected to identify the source of contaminants and extent of release in groundwater, and any proposed alternate concentration limits. This interim information report is not intended to be a petition for an alternative concentration limit.

VII.F.6.a. The Director may accept, reject, or modify any part of the proposed information collection procedures, based on the technical adequacy of the proposals, in complying with the requirements of Utah Admin. Code R315-8-6.10.

VII.F.6.b. The Permittee shall ensure that monitoring and corrective action measures necessary to achieve compliance with the groundwater protection standard are taken during the compliance monitoring period.

VII.F.7. The Director may modify statistical testing procedures, as outlined in Attachment VII-7, as necessary.

VII.F.8. The Permittee shall determine whether there is a statistically significant increase over concentration limits established for each hazardous constituent under the groundwater protection standard, each time the concentration of hazardous constituents is determined at the compliance point(s).

VII.F.9. If the groundwater protection standard is being exceeded at any monitoring well for any parameters, other than those already in the compliance monitoring program, within the point(s) of compliance, the Permittee shall:

VII.F.9.a. Notify the Director of this finding in writing within seven days. The notification shall include identifying the compound(s) that exceeded the concentration limits and their respective concentrations;

VII.F.9.b. Submit to the Director an application for a modification to the corrective action program developed for the preexisting contaminants within 180 days, or within 90 days if a corrective action program has already been approved under Module VIII. The application shall include, at a minimum, a detailed description of corrective actions that will achieve compliance with the groundwater protection standard specified in the permit, and a plan for a groundwater monitoring program that will demonstrate the effectiveness of corrective action.

VII.F.10. If the compliance monitoring program no longer is needed or no longer satisfies the requirements of this section, the Permittee shall, within 90 days, request a permit modification to make any appropriate changes to the program.

VII.G. CORRECTIVE ACTION REQUIREMENTS

VII.G.1. If the Permittee is required to establish a corrective action program under this section, he shall establish it pursuant to Module VIII meeting the following requirements:

VII.G.1.a. Take corrective action to ensure that regulated and solid waste units under these requirements are in compliance with the groundwater protection standard under Utah Admin. Code R315-8-6.3. and Module VII . The Director may specify the groundwater protection standard requirements in the facility permit modification, including but not limited to:

VII.G.1.a.i. A list of hazardous constituents identified under Utah Admin. Code R315-8-6.4.;

VII.G.1.a.ii. Concentration limits under Utah Admin. Code R315-8-6.5. for each of those hazardous constituents;

VII.G.1.a.iii. The compliance point(s) under Utah Admin. Code R315-8-6.6.; and

VII.G.1.a.iv. The compliance period under Utah Admin. Code R315-8-6.7.

VII.G.2. The Permittee shall implement a corrective action program that prevents hazardous constituents from exceeding their respective concentration limits at the compliance point(s) by removing the hazardous constituents or treating them in place. The Permittee shall submit to the Director a permit modification request, which will list the specific measures to be taken.

VII.G.3. The Permittee shall begin corrective action as soon as the groundwater standard has been reported to have been exceeded. The Director will specify the time period in the permit modification. If the facility intends to include a corrective action program in addition to a compliance monitoring program, the permit modification shall specify when the corrective action will begin and such a requirement shall operate in lieu of Utah Admin. Code R315-8-6.10(i)(2).

VII.G.4. In conjunction with a corrective action program, the Permittee shall establish and implement a groundwater monitoring program to demonstrate the effectiveness of the corrective action program. Such a monitoring program shall be based on the requirements for a compliance monitoring program under Utah Admin. Code R315-8-6.10. and Section VII.F.

VII.G.5. Corrective action measures under this permit shall be terminated once the concentration of hazardous constituents identified in Utah Admin. Code R315-8-6.4. and Section VII.F meet the criteria of Module VII for a period of three consecutive years.

VII.G.6. The Permittee shall continue corrective action measures during and beyond the compliance period for as long as necessary to achieve compliance with the groundwater protection standard.

VII.G.7. The Permittee shall report semi-annually in writing to the Director on the effectiveness of the corrective action program.

VII.G.8. If corrective action is no longer needed or no longer satisfies the requirements of this section, the Permittee shall, within 90 days, request a permit modification.

VII.G.9. The Permittee shall initiate corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any solid waste management unit at the facility, regardless of the time at which the waste was applied in such unit. This requirement shall remain in effect for the life of the permit and through the closure/post-closure period for all SWMUs at the facility.