

**MODULE VII - GROUNDWATER CORRECTIVE ACTION  
(CARETAKER STATUS)**

**VII.A. CORRECTIVE ACTION PROGRAM**

The Permittee shall maintain an ongoing corrective action program. The purpose of this program shall be to have the capability of removing hazardous constituents from the groundwater and to monitor the migration of the hazardous constituents as outlined in Module V. The corrective action program shall follow the plan specified below:

**VII.A.1.** The Permittee shall maintain a groundwater treatment system in a state of readiness. The system shall be capable of treating and removing volatile organic hazardous constituents listed in Condition V.B.1.a., Table V-1 from the groundwater. The system shall be capable of injecting the treated groundwater into the impacted aquifer.

**VII.A.2.** The Permittee shall operate the groundwater treatment system quarterly for a period specified in the most current version of the "*Operation and Maintenance Manual, Tooele Groundwater Treatment Plant.*" This plan identifies two modes of operation for the Groundwater Treatment Plant; a caretaker operational mode and a continuous operational mode. While the plant is in caretaker mode, the Permittee shall operate the groundwater treatment system quarterly to ensure that the plant is capable of transitioning from caretaker status to continuous operation status within fourteen (14) calendar days if determined necessary by the Executive Secretary and the Permittee.

**VII.A.3.** The Permittee shall sample the groundwater in the impacted aquifer, the groundwater as it enters and exits the groundwater treatment units, and measure the volume and rate of flow of groundwater through the groundwater treatment system as indicated in Module V of this permit.

**VII.A.4.** In accordance with section VI.A.1.e. and Attachment 4, Section H.1., the Permittee has submitted and received approval from the Executive Secretary to implement an alternative measures evaluation of the ground water treatment system. This evaluation was implemented following the spring 2004 ground water sampling event and will continue until the recommendations of the Corrective Measures Study for the combined SWMU 58 groundwater plume are approved for implementation. During this period, the existing pump and treat system will be maintained in a non-operational mode or "caretaker operational mode." Groundwater sampling and analysis and data reporting will be performed in accordance with Module V of this permit.

**VII.B. DESIGN AND EFFECTIVENESS OF THE GROUNDWATER TREATMENT SYSTEM**

**VII.B.1.** If and when the groundwater treatment system is required to be operated in the continuous operational mode, the following permit requirements will be implemented:

**VII.B.1.a.** The Permittee shall provide a summary of the effectiveness of the groundwater treatment system in each semi-annual report as indicated by Condition V.F.1, and listed in Table V-4.

**VII.B.1.b.** The Permittee shall maintain a system to prevent well plugging and to prevent particulate matter in the groundwater from plugging the air stripper and the injection wells.

## **VII.C. GROUNDWATER TREATMENT SYSTEM**

**VII.C.1.** The Permittee shall maintain a groundwater treatment system that consists of the following elements:

**VII.C.1.a.** The Permittee shall maintain and install, if required, an adequate number of groundwater extraction wells and groundwater injection wells to contain, capture and treat the contaminant plume.

**VII.C.1.b.** The Permittee may, based on the results of the Condition V.A.1.e., make modifications to the treatment system that will facilitate the acceleration of the cleanup. Significant modifications to the system, as classified in accordance with R315-3-4.3 must be approved by the Executive Secretary.

**VII.C.1.c.** The Permittee shall maintain a system to monitor the groundwater treatment units. This monitoring system shall be automated and shall be capable of system shutdown in the event of a malfunction that could impair the performance of the system or threaten human health and the environment.

**VII.C.1.d.** The Permittee shall operate an automatic alarm notification system. This system shall notify the appropriate personnel specified in the Contingency Plan, in the event that the system shuts down or requires attention.

**VII.C.3.** The Permittee shall maintain an inspection schedule for the inspection of all parts of the groundwater treatment system as outlined in Attachment 1. Any modification to the schedule shall be approved by the Executive Secretary.

## **VII.D. TREATMENT OF HAZARDOUS CONSTITUENTS**

**VII.D.1.** The Permittee shall maintain a treatment system that will treat the contaminated plume of groundwater to the concentration levels listed in Table V-2.

**VII.D.2.** The treatment system shall be designed to manage the flow of contaminated groundwater to ensure containment of the plume during periods of continuous operation.

**VII.D.3.** If the Executive Secretary receives information demonstrating that the treatment system is not capable of removing the volatile organic hazardous constituents to the levels specified in Condition V.D., Table V-2, the Permittee shall initiate a permit modification request to install additional treatment processes (e.g. carbon adsorption) to treat the groundwater to meet the requirements of Condition V.D., Table V-2.

## **VII.E. WELL LOCATION INSTALLATION AND CONSTRUCTION**

**VII.E.1.** The Permittee shall maintain groundwater extraction wells and groundwater injection wells as a part of the groundwater treatment system as specified below:

**VII.E.1.a.** The construction of additional extraction wells or injection wells shall follow the techniques described in the Technical Enforcement Guidance Document (TEGD), OSWER-9950.1, September 1986 and subsequent addenda. If techniques other than those described in the TEGD are used, the techniques must be approved by the Executive Secretary prior to installation of the extraction and injection wells.

**VII.E.2.b.** The Permittee shall maintain the extraction and injection wells at the locations shown in Attachment 1, Figure 1. The closure, abandonment, or installation of new extraction or injection wells shall follow the modification procedures of Condition I.E.

**VII.E.2.** In areas within the groundwater contaminant plume, the Permittee may generate groundwater contaminated with hazardous constituents from the following processes: 1) development of newly constructed piezometers, monitoring wells, extraction wells, and injection wells; 2) sampling of monitoring wells; and 3) water generated from treatment units and piping pursuant to Condition VII.F.8. Disposal of water generated from the processes listed above shall be as follows:

**VII.E.3.** Groundwater contaminated with the hazardous constituents listed in Table V-2 of Module V may be disposed of through the groundwater treatment system.

**VII.E.4.** Upon approval by the Executive Secretary, additional extraction and injection wells shall be installed to maintain plume capture compliance, as indicated by the annual groundwater model recalibration (reported in Table V-3). Such changes may include, but are not limited to, groundwater level elevation, direction of groundwater flow, and changes in the concentrations of hazardous constituents in the groundwater.

**VII.E.5.** Upon approval by the Executive Secretary, additional extraction wells or injection wells shall be added to the system if either the annual groundwater model recalibration, Volume II, Attachment 3, or the groundwater monitoring program outlined in Module V indicates that extraction wells or injection wells in places other than those specified in Volume II, Attachment 1 will enhance the removal of hazardous constituents from the impacted aquifer.

**VII.E.6.** If hazardous waste constituents exceeding the groundwater protection standard concentration limits as defined in Table V-2 are detected in hydraulically downgradient monitoring wells, the Permittee shall install additional extraction and injection wells further downgradient. A work plan addressing plume capture compliance shall be submitted for approval by the Executive Secretary within 60 days of discovery.

**VII.E.7.** The Permittee may be required to install additional extraction and injection wells at any time during the post-closure or compliance periods if new information or unforeseen circumstances reveal a need for additional removal of contaminated groundwater to protect human health and the environment. Installation of new extraction and/or injection wells shall constitute a permit modification under the terms of this permit and shall be initiated as specified in Condition I.D.

**VII.E.8.** Within 90 days of completion of wells installed after permit issuance, the Permittee shall submit extraction and injection well completion reports. These reports shall include, but not

limited to boring logs, sieve analysis (grain size), standard penetration tests, analytical tests performed on soils, water level elevations, groundwater contour maps, well development results including recharge rates, pump or slug test, cross sections or fence diagrams, as well as all other pertinent data.

**VII.E.9.** All extraction and injection wells shall be maintained in a fully operational condition for the duration of this permit. The Permittee shall notify the Executive Secretary in writing within seven days when a well is no longer found to be operable or when the Permittee intends to abandon one or more wells associated with groundwater treatment system. The Executive Secretary must approve the conditions for replacement or correction of improperly operating wells.

**VII.E.10.** The Permittee shall receive the approval of the Executive Secretary in order to permanently remove extraction wells or injection wells from the groundwater treatment system. All extraction and injection wells deleted from the groundwater treatment system shall be plugged and abandoned in accordance with procedures that will be submitted to and approved by the Executive Secretary. Well plugging and abandonment methods shall be submitted to the Executive Secretary and follow modification procedures as stated in Condition I.D.

## **VII.F. OPERATION OF THE GROUNDWATER TREATMENT SYSTEM**

**VII.F.1.** The Permittee shall maintain and operate the groundwater treatment system as specified in this permit.

**VII.F.2.** The Permittee shall operate the groundwater treatment system in a manner that will prevent spills, releases, or other adverse affects to human health and the environment and as specified by Conditions VII.C.1.c. and d.

**VII.F.3.** The Permittee shall monitor the effects of the groundwater treatment system as specified in Condition V.D.4.a. and b., and if the groundwater in any off-depot well(s) is affected, the Permittee shall notify the Executive Secretary within seven days, as specified in Condition I.L., Table I-2.

**VII.F.4.** The Permittee shall train all personnel operating the groundwater treatment system as outlined in Condition II.C.

**VII.F.5.** The Permittee shall maintain a Preventative Maintenance Schedule as part of the Contingency Plan as part of Attachment 6. This maintenance schedule shall include all parts of the groundwater treatment system as specified in Condition VI.C. and any other parts of the system not specified above, as provided in Attachment 1.

**VII.F.6.** The Permittee shall annually recalibrate the groundwater flow model and the groundwater solute transport model. A report describing annual model recalibration shall be submitted as required in Condition V.F.1, and reported as listed in Table V-4. An abstract of each year's modeling efforts will be included in Attachment 3.

**VII.F.7.** The Permittee shall take any action necessary to maintain the groundwater treatment system as indicated by annual recalibration of the groundwater flow model and the groundwater solute transport model.

**VII.F.8.** The Permittee shall not allow contaminated groundwater to remain in the groundwater treatment units or the piping leading from the extraction wells to the groundwater treatment units for a period exceeding 90 days. The Permittee will remove the contaminated groundwater prior to the end of the 90-day period and dispose of the groundwater as indicated in Condition VI.E.2.

**VII.F.9.** If the groundwater treatment unit is inactive due to a mechanical failure, or due to a power loss, then the Permittee shall implement the Contingency Plan, Attachment 6, specified in Condition II.E.2.

## **VII.G. INSPECTION AND DOCUMENTATION FREQUENCY**

**VII.G.1.** In order to prevent the release of hazardous wastes from the treatment system, the Permittee will operate, maintain, and inspect the system in accordance with R315-8-10, as well as Table VII-1 and VII-2 of this permit.

**VII.G.1.a.** Hazardous wastes may not be placed in the system if they could cause the system to rupture, leak, corrode, or otherwise fail.

**VII.G.1.b.** The Permittee shall maintain the use of appropriate controls and practices to prevent releases from the system.

**VII.G.1.c.** The Permittee shall maintain an inspection program and schedule intended to prevent the release of hazardous wastes from the system. Inspections shall be conducted on the components of the system, as specified in Table VII-1 and VII-2 of this permit.

**VII.G.1.d.** If, during inspections required under Condition VII.G.1.c., the release or potential release of a hazardous waste is identified, the component of the system will be taken out of service immediately. If failure of the component has resulted in a release of hazardous waste, the Contingency Plan (Attachment 6) will be immediately implemented.

## **VII.H. DURATION OF CORRECTIVE ACTION PROGRAM**

**VII.H.1.** The Permittee shall continue to treat the groundwater until such time as the Groundwater Protection Standard (as specified in Condition V.C.4.) has been met. Following written notification to the Executive Secretary that the standard has been met, the Permittee may discontinue treatment but shall continue to monitor the groundwater (as specified in Module V) to determine if the concentration of the hazardous constituents listed in Table V-2 have been met for three consecutive years.

**TABLE VII-1  
GROUNDWATER TREATMENT SYSTEM  
PREVENTATIVE MAINTENANCE INSPECTION SCHEDULE  
(Page 1 of 2)**

<b>Inspection Requirements</b>	<b>Frequency during Caretaker Status</b>	<b>Frequency during Continuous Operation</b>
<b>Stripper Feed Pumps</b> Pump On-line Switch Position Run Hours Mechanical Seals Valves and Associated Piping Fan Temperature Rotor Assembly Temperature Shaft Temperature Drive Bearing Temperature Non-drive Bearing Temperature	Dailey during periodic pumping events  Weekly when not pumping  (Temperature data not collected during weekly inspections)	Daily
<b>Hydropneumatic System (In-plant Water)</b> Pressure Operation (Abnormal Noise or Vibration) Water Reservoir Level	Daily during periodic pumping events  Weekly when not pumping	Daily
<b>Containment Basins/Sump Pumps/Valves and Piping</b> Visual Check (Flooding) Surge Tank and Stripping Tower Valves & Piping Excessive Debris Freezing (Winter)	Daily during periodic pumping events  Weekly when not pumping	Daily
<b>Plant Alarm System</b> Dry Contact Operation Auto Dialer Operation Emergency Lighting	Daily during periodic pumping events  Weekly when not pumping	Daily
<b>Stripper Blowers</b> Blower On-line Switch Position Run Hours Filters, Belts, Bearings Operation (Abnormal Noise or Vibration) Intake Filters Beltside Bearing Temperature Blowerside Bearing Temperature	Daily during periodic pumping events  Weekly when not pumping  (Temperature data not collected during weekly inspections)	Daily
<b>Stripper Blowers</b> Belts (Wear/Tension)	Once during each periodic pumping event	Weekly

**TABLE VII-1  
GROUNDWATER TREATMENT SYSTEM  
PREVENTATIVE MAINTENANCE INSPECTION SCHEDULE  
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<b>Inspection Requirements</b>	<b>Frequency during Caretaker Status</b>	<b>Frequency during Continuous Operation</b>
<b>Stripper Feed Pumps</b> Vibration	Daily during each periodic pumping event	Weekly
<b>Stripper Feed Pumps</b> Pump Cooling Return Line Water Flush to Seal Bearing Lubrication	Daily during each periodic pumping event	Monthly
<b>Stripper Blowers</b> Off-line Blower Check Belt Tension/Wear/Alignment Motor Temperature (Windings, In-board/Out-board) Bearing Lubrication	Once during each periodic pumping event	Monthly
<b>Extraction Well Variable Frequency Drives (VFDs)</b> Operation (Abnormal Noise and Vibration) Air Conditioning Filters Condensation Run Hours	Once during each periodic pumping event	Monthly
<b>Electrical Checks (AC Amps) and Run Hours</b> Blowers Feed Pumps Extractions	Once during each periodic pumping event	Monthly
<b>Stripping Towers</b> Internal Conditions and Packing	Monthly	Annual

**Table VII-2  
GROUNDWATER TREATMENT SYSTEM  
SAFETY CHECKLIST**

<b>Treatment Facility</b>	<b>Frequency</b>
Emergency Shower / Eye Wash Safety Signs Fire Extinguishers Facility Piping and Valves Emergency Lighting Flammable Storage Containers (Sealed and Labeled) House-keeping Equipment Ladders Aisles and Walkways Exits Equipment Being Repaired (Lock-out/Tag-out) Pump and Equipment Areas Fire Alarm	Weekly
<b>Outside Treatment Facility – Containment Areas and Grounds</b>	
Ladders and Safety Cages Manways, Flanges, Valves, and Piping Containment Areas Sumps Aisles and Walkways Exits Pumps and/or Equipment	Weekly
<b>Outside Treatment Facility – Containment Areas and Grounds</b>	
Air Stripper Containment Area G.F.C.I Tested	Monthly