**TULSA DISPOSAL, LLC**

**TULSA, OKLAHOMA**

**TAB XI**

**CLOSURE PLAN**

In Compliance With

40 CFR 270.14 (b)(13)

Revised October 2015

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11.0 – CLOSURE PLAN

ODEQ Item Number B-13

40 CFR 270.14 (b)(13)

The Tulsa Disposal, LLC facility (the Facility) is an inactive hazardous waste recycling and handling facility. The only permitted unit, which is operated at the Facility, is an approved corrective action system for contaminated groundwater. Upon completion of corrective action, Clean Harbors will decommission and close the corrective action system in accordance with the closure requirements of 40 CFR 270.14(b)(13) and 40 CFR 264 Subpart G. Closure of the corrective action system at this Facility will be carried out in accordance with the steps outlined in this plan. Appendix 2, Figure 7 and Appendix 1, Table 3 contain an estimated schedule and cost for the completion of final closure, respectively.

# PURPOSE

This closure plan identifies the steps necessary to complete closure of the corrective action system. Additionally, this closure plan includes provisions for re-use of portions of the closed unit on site or off site. Clean Harbors will remove all hazardous wastes and residuals from the Facility to a level determined to be protective of human health and the environment; therefore, upon completion of closure activities, the need for further maintenance and care will be minimized or eliminated.

The corrective action system is the only unit at the Facility subject to closure. The previous permitted waste handling units ceased operation in June 1996 (Appendix 3, Attachments 5 and 6). Laidlaw Environmental Services, Inc. conducted closure activities in accordance with the ODEQ-approved closure plan contained in Appendix XII of the 1993 Permit Application (Appendix 3, Attachment 4). The ODEQ issued a letter approving partial closure for the Facility on March 17, 1997 (Appendix 3, Attachment 7).

# DESCRIPTION OF CORRECTIVE ACTION SYSTEM

The corrective system consists of one 540-foot long containment trench located along the north and west perimeter of the Facility, and one 70-foot long recovery trench located on the northwest corner of the solvent recycling area. The layout of the trench system is shown in Appendix 2, Figure 8. The trenches consist of trench-observation wells, filter media, perforated conduit at the bottom of the trenches, recovery sumps, mechanical and operational controls, and double-containment discharge piping. Recovered groundwater is pumped via a dual-lined underground piping system to an aboveground 500,000-gallon storage tank (Tank V-69). The collected groundwater is then treated through carbon adsorption. The carbon adsorption unit is approximately six feet high and five feet in diameter, and holds approximately 2,000 pounds of granular activated carbon. From the carbon unit, the water is discharged to the City of Tulsa Publicly Owned Treatment Works (POTW) under industrial pretreatment and discharge permit (Permit Number 3620). Tank V-69 and the carbon adsorption unit are associated with the permitted POTW discharge, and as such, are not permitted hazardous waste management units.

37 monitoring wells were installed for site assessment purposes during the RCRA Facility Investigation. All wells not previously plugged and abandoned, with ODEQ approval, will be plugged and abandoned during closure.

# CORRECTIVE ACTION SYSTEM CLOSURE

Decommissioning and closure of the corrective action system will occur when the ODEQ site-specific target levels (SSTLs) are met. It is presumed this will result in a “no further action” determination by the ODEQ. The following components of the corrective action system will be decommissioned and closed:

* Trench observation wells;
* Containment and recovery trenches;
* Monitoring wells;
* Carbon adsorption treatment system;
* Aboveground storage tanks V-68 and V-69; and
* Ancillary Equipment.

Closure activities will be conducted under the oversight of an Oklahoma-registered Professional Engineer (PE) in accordance with the approved closure plan.

## Trench Observation Well and Monitoring Well Closure

There are currently 14 trench observation wells and 37 groundwater monitoring wells used to measure water levels during routine groundwater monitoring. The trench observation wells are 2-inch diameter, polyvinyl chloride (PVC) wells completed at approximately 13 to 18 feet below land surface. The monitoring wells are 2-inch or 4-inch diameter PVC wells completed at 10 to 65 feet below land surface. Each well will be abandoned using the following method:

* The total depth and diameter of each well will be verified prior to closure;
* The casing and screen of each well will be removed from the borehole, and the borehole will be grouted with a cement-bentonite mixture from the bottom of the borehole to the surface using a tremie pipe. If the casing and screen cannot readily be removed, then the well casing will be cut to approximately one-foot below land surface, and the well will be pressure-grouted as described above;
* All screen and casing that can readily be removed from the wells will be pressure washed (water/detergent solution) and rinsed (water) and then disposed of at an ODEQ-approved facility;
* Abandonment will be conducted by a certified and licensed drilling contractor; and
* All abandonment activities will be observed and documented by a qualified geologist or engineer.

## Trench Closure

The containment trench and recovery trench will be closed in place by grouting. The trenches will be closed as follows:

* Prior to grouting the trenches, any recovered groundwater remaining in the four recovery sumps and associated pumps and piping will be transferred to Tank V-69;
* The sumps, pumps, and ancillary equipment (water level indicators, floats, meters, etc.) will be disassembled and decontaminated using high pressure water or steam. The decontamination water will be containerized and transferred to Tank V-69 for final treatment and discharge;
* The filter media, perforated conduit located at the base of the trenches, and the underground discharge piping will be pressure-grouted and abandoned in place; and
* Abandonment of the lines will be conducted by certified and licensed contractors and all associated activities will be observed and documented by a qualified geologist or engineer.

## Aboveground Tanks (V-68 and V-69) and Associated Piping

The aboveground storage tanks V-68 and V-69 are not required to be permitted as hazardous waste storage tanks. However, as part of the corrective action system decommissioning and closure, the tanks will be emptied and cleaned in accordance with the following activities. The aboveground tanks will not necessarily be removed or scrapped. The following activities will be performed during partial or final closure (as appropriate). The activities will be sequenced to minimize the amount of liquids and cleaning residuals that may be discharged to POTW in accordance with the Facility’s discharge permit. The remaining materials will be disposed of at an ODEQ-approved facility.

The following steps will result in closing the tanks:

* Remove the remaining material from the tanks undergoing closure, and discharge to the carbon adsorption system for treatment and discharge to POTW;
* Provide access to the tanks undergoing decontamination;
* Visually inspect the tank, secondary containment, and appurtenant piping and equipment for evidence of staining and residue;
* Pressure wash (water/detergent solution) and rinse (water), and as necessary scrape and squeegee the tank interiors, removing all residual waste material and rinsate;
* Disconnect and decontaminate applicable appurtenant piping and pumping equipment and clean the concrete secondary containment (if appropriate) around the tanks undergoing decontamination. Appurtenant piping and equipment will also be pressure washed with detergent-water solution and rinsed with water; and
* Transport and dispose all waste material generated during the project. Liquids will be discharged to the POTW. All associated cleaning equipment will be thoroughly rinsed with a detergent solution and the rinsate will be collected and properly disposed.

The secondary containment area will be inspected during partial and final closure activities. If visual inspection during closure indicates an absence of waste-related staining, cleaning of the secondary containment area may be deemed unnecessary. The secondary containment area will be thoroughly cleaned (i.e. scrubbed, scraped, pressure washed and rinsed) to the extent practicable, if waste-related staining is observed during closure activities.

### Removal of Waste Material and Opening of the Tanks

The contents of the tanks will be removed using a pump, vacuum pump unit or similar equipment. The waste will be discharged to the POTW or a disposal facility.

To gain access to aboveground tanks, the manways at the sides of the tank will be used. Depending on the type of opening and the condition of the equipment, a variety of tools may be used to open the manway. Care must be exercised to minimize spark generation when working on the tank.

Prior to entering a tank, personnel should have full-face respiratory protection and protective clothing. Procedures for tank entry purging or venting the tank are described in API RP 1604 *Removal and Disposal of Used Petroleum Storage Tank*, API PUB 1604 *Cleaning Petroleum Storage Tanks* and OSHA *Permit Required Confined Spaces* (29 CFR Section 1910.146). The tanks will then be inspected to determine the approximate quantity and physical conditions of any remaining waste material.

### Removal of Residual Waste and Cleaning of Tanks

Before removing any residual waste from the tank, all piping and appurtenant equipment will be flushed with a detergent water-solution, and then rinsed with water. The method used to remove the residual waste material from the tanks will depend on the physical properties and quantities of that material. Prior to any person entering the tank, an effort will be made to remove as much liquid and sediment as possible.

Subsequent to removing the majority of the material from the tank, it may be necessary to use a high pressure wash system and a detergent water-solution to rinse residual material from the walls and floor of the tank. The evacuated material and the rinse solution will be discharged to the POTW or a disposal facility. The quantity of wash/rinse water used will be kept to a minimum in order to limit the amount of waste material.

Storage tanks are considered confined spaces (as defined in 29 CFR 1910) and confined space entry requires special procedures (29 CFR 1910.146):

* Tanks are to be washed, neutralized and/or purged (where a flammable atmosphere is present) prior to being entered;
* Supply valves must be closed and tagged and bleeder valves left open; or supply piping should be disconnected;
* Pumps or motors normally activated by automatic controls shall be operated manually to be sure they have been disconnected. Appurtenant power switches should be locked and tagged “Off”;
* All sources of ignition must be removed from tanks where flammable vapors may be present;
* Under circumstances where “hot work” (welding, burning, grinding, etc.) is to be performed in or on the vessel, a test for combustible gases shall be taken. In all tank entering situations, an oxygen deficiency test shall also be performed prior to tank entry. Tests for combustible gas concentration and oxygen deficiency will be performed by the supervisor of the area in which the work is being done;
* There must be a set of wristlets or a rescue harness and sufficient rope at the job site to effect a rescue. Any other rescue equipment considered necessary must also be on the job site;
* Workers should wear rescue harnesses if entering a tank to enable easy rescue. In tanks with small openings, only wristlets may be used. In cases where there are agitator shafts, drums or other hazards in which the lifeline would be entangled and the supervisor in charge feels that wearing the lifeline may entrap a man and increase the hazard, the wearing of a harness or wristlets may be eliminated;
* Appropriate personal protective equipment and supplied air breathing devices should be used during tank entry. In cases of short-term entry for inspection or removal of objects, a self-contained breathing apparatus (SCBA) is recommended;
* When a ladder is required to enter a tank, the ladder must be secured and not removed while anyone is in the vessel. In cases where a rigid ladder could become an obstacle, a chain ladder may be used;
* Adequate illumination must be provided and a flashlight or other battery operated light must also be on hand to provide illumination for a safe exit in the event of an electrical power failure;
* All electrical equipment to be used inside the tank must be in good repair and grounded;
* Other people working in the immediate area will be informed of the work being done, and they must inform the watcher or supervisor immediately of any unusual occurrence, which makes it necessary to evacuate the tank;
* The Watcher or Standby Observer System must be implemented. It consists of the following:

1. Workers inside a confined space must be under the constant observation of a fully instructed watcher.
2. Before anyone enters the tank, an entry authorization must be obtained from the person in charge and a rescue harness or wristlets must be used on the job.
3. The watcher must also know the location of the nearest telephone (with emergency numbers posted), eyewash and/or shower, fire extinguisher and oxygen inhalator. For all “hot work” on a tank, the watcher must be instructed how to shut down the welding/burning equipment.
4. As long as anyone is inside the vessel, the watcher must remain in continuous contact with the worker. *He/she is not to leave the job site except to report an emergency*. In the event of an emergency, he/she does not enter the tank until help is available.

* All welding and burning equipment must be provided with a shutoff under the control of the watcher; and the watcher must be shown how to shut off the equipment if it becomes necessary. Welding and burning equipment will only be taken into a tank immediately prior to its use and must be removed from the tank immediately after the job is finished; and
* For all “hot work” inside a tank, a properly executed permit, if needed, must be displayed at the job site and standard welding and burning safety precautions will always be followed.

Following removal of the residual waste, the tank will be pressure washed with detergent-water solution and rinsed with tap water. Washing/rinsing will continue until the tank, associated piping and appurtenances appear visually clean. If to be removed and scrapped, the tank will be considered properly decontaminated when free of waste-related residue/staining and visually clean to the extent practicable.

If the tank is to be reused, the final rinsate will be sampled to determine the cleanliness of the tank. The final rinsate sample(s) will be submitted to a qualified laboratory and analyzed for the applicable toxicity characteristic (40 CFR 261.24) parameters (i.e. volatile organic compounds) using SW-846 Methods. If the sample analytical results indicate the final rinsate does not exhibit the toxicity characteristics of hazardous waste, the tank will be considered properly decontaminated and suitable for reuse.

The residual waste materials and rinsate will be collected and discharged to the POTW or a disposal facility. The quantity of wash/rinse water that may be generated has been estimated at approximately 5,000 gallons per tank.

### Cleaning and Inspection of Secondary Containment Areas

The diked areas will be dry swept prior to decontamination. All cracked areas shall be sealed prior to commencement of cleaning to prevent migration of rinsate out of the containment area. The containment dike and floor area will be pressure washed using a detergent-water solution and rinsed with water at final closure. Following the final wash/rinse, the area will be inspected to determine the effectiveness and completeness of decontamination. If necessary, the containment area will be rewashed/rinsed until visually clean. The containment area will be considered properly decontaminated when free of waste-related residue/staining and visually clean to the extent practicable.

## Carbon Adsorption Unit Closure

Subsequent to treating and batch discharging the last of the recovered groundwater, the activated carbon unit will be closed as follows.

* The activated carbon will be vacuumed out and transferred to 55-gallon drums. The carbon will then be transferred into cubic yard bags, and properly labeled as hazardous waste;
* The carbon will be shipped to an ODEQ-approved disposal and/or recycling facility for processing and/or disposal;
* The unit housing will be disassembled and decontaminated with high pressure water and/or steam. The residual from the steam-cleaning will be containerized for proper off-site recycling or disposal at an ODEQ-approved facility; and
* The carbon housing unit and ancillary equipment will be disassembled and removed for possible reuse at another company facility or for disposal as scrap metal.

# WASTE ANALYSIS

Decontamination water and rinsate are the only closure wastes requiring analysis prior to disposal. It is proposed to discharge these wastes to the POTW in the same manner as currently used for treated groundwater from the facility. Consequently, samples of rinsate and decontamination water will be collected and tested for the parameters specified in the facility’s POTW discharge permit in effect at the time of closure. Sampling frequency will also be determined by the discharge permit.

# FACILITY CLOSURE SCHEDULE AND CERTIFICATION

Clean Harbors will commence Facility closure upon notification from the ODEQ that no further corrective action is necessary at the site. Within 90 days of notification of no further action, Clean Harbors will commence closure activities. Clean Harbors will complete the planned closure activities in accordance with the approved closure plan within 180 days after receiving notification of no further action. A tentative schedule is presented in Appendix 2, Figure 7. If necessary, a request for closure period extension may be submitted to ODEQ for review and approval. The request for closure period extension will be prepared in accordance with 40 CFR 264.113.

Within 60 days of completion of the planned closure activities, Clean Harbors will prepare and submit to the ODEQ, a closure report summarizing the closure activities. This report will include a description of the unit(s) which underwent closure, field tasks performed, field log, sampling protocols, results of analyses, a summary of the Facility status, quantity of waste removed, and supporting documentation including manifests and photographic documentation.

When closure is completed, Clean Harbors Environmental Services, Inc. shall submit to the ODEQ certification, both by the operator and by an independent registered Professional Engineer, that the Facility has been closed in accordance with the approved closure plan. The closure progress/certification report will also document any modifications or deviations from the approved plan(s).