

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

APPENDIX 3

ATTACHMENTS

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TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 1

PHOTOS



Former solvent recycling plant view towards the southeast



West entry gate to facility from the south facing north



Groundwater collection system control panel



Recovery sump #4



Inside of Recovery Sump #4



Recovery Sump #2 outside facility north fence (outer collection trench)



North entry gate facing southeast and North drum storage pad under roof



Tank V-68 (foreground) and Tank V-69 (background)



Tank V-68 secondary containment and sump



Water treatment system carbon bed



Water treatment carbon bed



3-inch discharge pipe to POTW with totalizing meter



Groundwater collection tank V-69



Inside view of groundwater collection pipe into double walled open top tank



View of annulus walkway between the inner and outer tank (secondary containment)



View to the Northeast from top of Tank V-69



POTW discharge line entering underground sewer line



Sewer manway for sampling location for POTW discharges



View of facility from the South facing North



Main facility building entrance

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 2

LOCAL CLIMATOLOGICAL AND METEOROLOGICAL DATA

Tulsa, Oklahoma Climatology Data

Obtained from: http://www.srh.noaa.gov/tsa/?n=climo_tulsacli

NOAA / National Weather Service

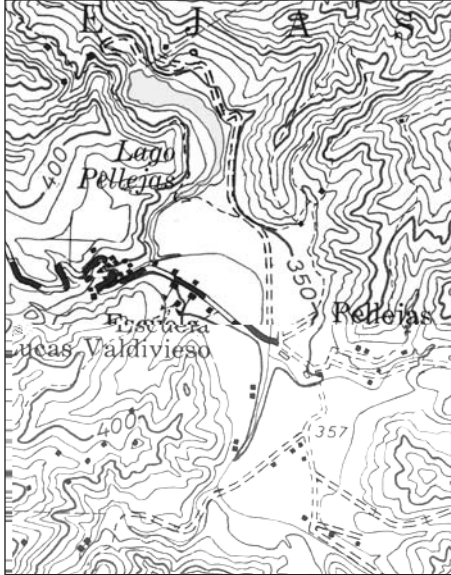
Tulsa, Oklahoma Weather Forecast Office

10159 E 11th Street, Suite 300

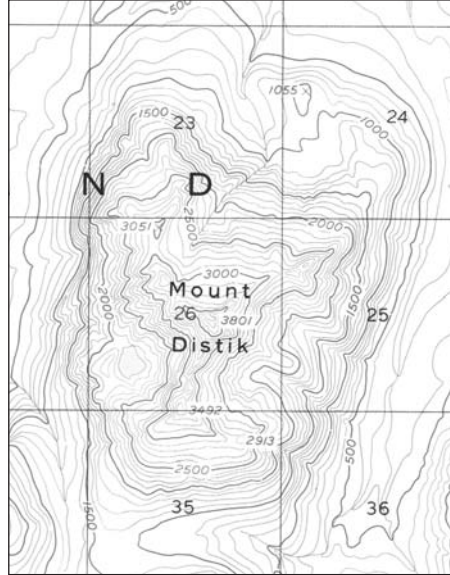
Tulsa, OK 74128

918-838-7838

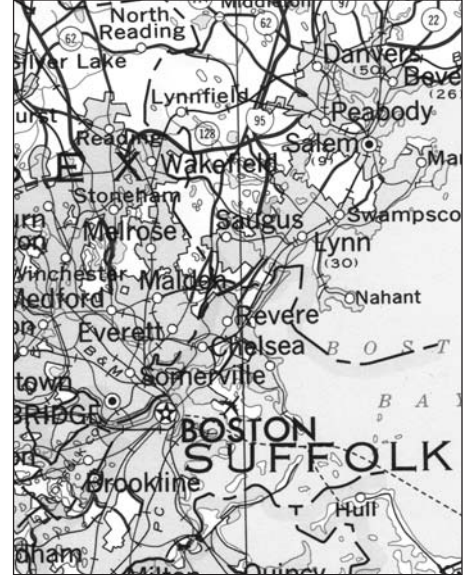
Map Scales



1:20,000-scale map



1:63,360-scale map



1:500,000-scale map

Large Is Small

U.S. Geological Survey Scales



Tulsa, OK	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average High Temperature	48.0	53.2	62.4	71.8	79.4	87.5	93.1	93.1	83.9	73.0	60.9	49.3	71.4
Average Low Temperature	27.5	31.3	40.1	49.3	59.1	67.7	72.7	71.3	62.1	50.6	39.6	29.6	50.2
Average Mean Temperature	37.7	42.3	51.3	60.6	69.3	77.6	82.9	82.2	73.0	61.8	50.3	39.5	60.8
* Record High Temperature	82	90	99	102	100	108	113	115	109	98	89	80	115
* Record Low Temperature	-16	-15	-3	22	32	49	51	48	35	15	10	-8	-16
Average Days at or above 100 Degrees	0	0	0	0	0	0.2	3.3	4.9	0.6	0	0	0	9.0
Average Days at or above 90 Degrees	0	0	0.1	0.5	2.0	11.3	22.6	21.9	7.6	0.3	0	0	66.3
Average Days at or below 32 Degrees	21.6	14.8	6.3	0.7	0	0	0	0	0	0.4	7.1	18.8	69.6
Average Days at or below 0 Degrees	0.1	0.1	0	0	0	0	0	0	0	0	0	0.2	0.4
Average Rainfall	1.66	1.85	3.29	3.79	5.91	4.72	3.36	2.90	4.26	3.93	2.81	2.49	40.97
* Record Rainfall	6.74	5.74	11.94	9.33	18.00	14.87	11.39	11.80	18.81	16.51	8.29	8.70	69.88
** Record Rainfall in 24 Hours	2.25	4.34	3.17	4.58	9.27	5.01	7.54	5.37	6.39	5.80	5.14	3.27	9.27
* Record Least Rainfall	0	0	0.08	0.34	0.80	0.27	T	0	0	T	T	0	23.24
Average Number of Rain Days	6.1	6.6	8.7	8.5	10.5	9.8	6.4	6.6	8.0	7.9	6.8	7.0	92.9
¹ / ₂ Average Number of Thunderstorm Days	1	1	3	6	9	8	6	6	5	3	2	1	50
Average Snowfall	2.7	1.8	2.1	T	0	0	0	0	0	T	0.7	2.3	9.6
* Record Snowfall	12.7	22.5	19.7	1.7	T	0	0	0	0	0.3	10.5	11.4	29.6
Measurable Snowfall:	Latest / April 12 (1.7" in 1957)						Earliest / October 29 (0.3" in 1993)						
Trace of Snowfall:	Latest / May 2 (in 2013)						Earliest / October 7 (in 2000)						
*** Average Sunshine (%)	53	56	58	60	60	66	74	73	66	64	56	53	62
*** Average Wind Speed (mph)	10.4	10.7	11.9	11.9	10.6	9.9	9.3	8.8	9.1	9.6	10.3	10.1	10.2
Average Heating Degree Days	845	638	438	186	37	1	0	0	24	162	450	792	3574
Average Cooling Degree Days	0	1	11	53	169	379	555	533	264	63	8	0	2037
* Average Date Of 32 Degrees:	Last: March 29						First: November 3						
Freezing Temperature:	Latest Recorded: May 2 (in 1909)						Earliest Recorded: October 7 (in 2012)						
Station Information	Elevation: 650 ft / Latitude: 36 11N / Longitude: 95 54W												

Temperatures are reported in Fahrenheit and rainfall/snowfall totals are reported in inches. Rain days are defined as a day with 0.01 inches or more of rain.
 * Temperature records are for the period January 1905-Present. * Rainfall records are for the period January 1888-Present. ** Record Rainfall in 24 hours are for the period 1938-Present. * Snowfall records are for the period January 1900-Present. Averages are for the period 1981-2010. ***Averages are for the period 1971-2000.
¹/₂Averages are for the period 1961-1990. (Annual totals may be slightly different than monthly totals due to rounding.)

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 3

SAMPLING AND ANALYSIS PLAN

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 3

SAMPLING AND ANALYSIS PLAN

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1.1. INTRODUCTION

This Sampling and Analysis Plan (SAP) has been developed for the Tulsa Disposal, LLC facility (the Facility) in accordance with U.S. Environmental Protection Agency (EPA) requirements. The SAP may be amended by mutual written consent of the Oklahoma Department of Environmental Quality (ODEQ) and the Facility.

The following subsections present the field methodologies implemented for the semi-annual monitoring program:

- Well Inspection;
- Equipment Decontamination Procedures;
- Total Depth and Groundwater Level Measurements;
- Well Purging;
- Groundwater and Trench Sampling;
- Groundwater Sample Analysis;
- Quality Assurance and/ Quality Control (QA/QC);
- Review of the Precision and Accuracy of Reported Data; and
- Corrective Measure Operation and Maintenance.

1.2. WELL INSPECTION

During each groundwater sampling event, the physical integrity of each well, including the concrete pad and protective casing, will be inspected for damage. The cap will be checked to ensure it is closed and locked. Damage or irregularities will be noted in the Groundwater Level Measurement/Well Inspection Log, and corrected as necessary.

1.3. EQUIPMENT DECONTAMINATION PROCEDURES

Commercially-prepared or laboratory-prepared deionized/distilled water will be used during equipment decontamination procedures and for the collection of quality assurance/quality control (QA/QC) blank samples. During semi-annual groundwater sampling, at least one complete blank (bottle blank) will be

collected as a QA/QC check using this water. This blank will be in addition to trip blanks, field blanks, and equipment blanks collected during the sampling event. The bottle blank will be collected away from the Corrective Measure wells and pumping system.

1.3.1. DECONTAMINATION OF GROUNDWATER LEVEL INDICATOR

Groundwater levels in Facility wells are measured using an electronic groundwater level indicator. Prior to use in each well, the groundwater level indicator will be decontaminated as described below.

- Rinse (or spray) the indicator with a low alkaline, low phosphate detergent solution. Laboratory or commercially prepared deionized water will be used for the solution.
- Thoroughly rinse (or spray) the indicator with a reagent-grade water immediately prior to use.
- Wipe the probe and permanent line/cable with a clean paper towel to remove excess water.

1.3.2. DECONTAMINATION OF SAMPLING AND BAILING EQUIPMENT

Monitoring wells will be purged and groundwater samples collected using disposable, bottom-entry, high density polyethylene (HDPE) bailers. Each bailer will be lowered into the well using nylon cord. A new bailer and cord will be used for each well to eliminate the possibility of cross-contamination.

1.3.3. DECONTAMINATION WATER DISPOSAL

All water associated with decontamination procedures will be placed in labeled drums. The Facility will collect and properly dispose of the decontamination water by pumping it into the on-site 500,000-gallon holding tank (V-69) prior to discharge to the POTW. This will be done in accordance with regulatory requirements.

1.4. TOTAL DEPTH AND GROUNDWATER LEVEL MEASUREMENTS

Prior to beginning each groundwater sampling event a complete round of groundwater levels will be measured in all permanent monitoring wells, in trench observation wells TOW-A through TOW-N, and in

the trench-sump observation wells RS-1 through RS-4. The groundwater levels will be measured to the nearest 0.01 foot and recorded on the Groundwater Level Measurement/Well Inspection Log.

Based on these water level measurements, groundwater elevations will be determined for each well by subtracting the depth to groundwater from the surveyed top of casing elevation. The value obtained will be the groundwater elevation referenced to mean sea level (MSL), and will be used to generate potentiometric surface maps of the groundwater-bearing zones monitored at the Facility.

The groundwater levels will be measured using an electronic groundwater level probe or equivalent measuring device. The groundwater level probe will be decontaminated as described previously in Subsection 1.3.1. The probe will be lowered into the well until the instrument indicates the groundwater surface has been contacted.

Total depth readings for each well will be measured on an annual basis as part of the regularly scheduled groundwater sampling event. The total depth of each well will be measured using the groundwater level probe or equivalent.

1.5. WELL PURGING

Prior to sampling each monitoring well, the volume of water in the well will be calculated, and a minimum of three casing volumes will be removed, except for wells in which water recovery is extremely slow. These wells will be purged dry and sampled within 24 hours. Evacuation of standing water will be performed through the use of disposable HDPE bailers. Data collected prior to and during well purging activities will include the following:

- initial depth to water;
- well purge start and end times;
- volume of water purged;
- well inspection information; and
- other pertinent information.

1.5.1. PURGE WATER VOLUME

Groundwater data will be collected prior to and during purging activities and recorded on the Groundwater Sampling Field Data Sheet. The Facility has 2-inch and 4-inch diameter wells of various depths. The standing water volume from each well will be calculated by using the following formula:

$$\text{Water volume to be purged (gal)} = (\text{Casing Length in Ft} - \text{Depth to Water in Ft}) * X * 3$$

Where: X = 0.147 for 2-inch wells

X = 0.650 for 4-inch wells

Gallons may be converted to liters by multiplying by 3.785. Values for additional casing sizes are available and values may change as construction materials vary.

At least two consecutive field measurements of temperature, pH, and turbidity will be measured before purging is complete. These measurements will be made after each purge volume has been evacuated to establish that the stagnant water within the well casing has been removed. All readings will be recorded on the field data sheet.

1.5.2. PURGE WATER DISPOSAL

All groundwater removed during purging will be placed in labeled drums. The Facility will collect and dispose of the decontamination water by pumping it into the on-site 500,000-gallon holding tank (V-69) prior to discharge to the POTW. This will be done in accordance with regulatory requirements.

1.6. GROUNDWATER AND TRENCH SAMPLING

Following completion of well purging activities, the water in the well will be allowed to recover and groundwater samples will be collected using a disposable HDPE bailer. If practical, groundwater samples will be collected beginning with monitoring wells known to be the least impacted to monitoring wells known to be the most impacted. This will be determined based on historical groundwater data. All wells except those with low recovery rates will be sampled the same day they are purged. Regardless, the wells will be sampled within 24 hours of purging activities. This general sampling approach may be modified, as necessary, to accommodate access restrictions due to inclement weather or other factors.

1.6.1. SAMPLE COLLECTION

Groundwater samples will be collected in containers supplied by the analytical laboratory. The supplied containers will have been cleaned before being shipped to the Facility in accordance with the laboratories QA/QC programs. Sample containers requiring preservative will be preserved prior to shipment to the Facility. Sampling personnel will wear protective gloves during each phase of sampling. Gloves will be changed as appropriate, and at least one new pair of gloves will be worn at each well site. Samples will be collected and containerized for laboratory analysis, taking into consideration the volatilization sensitivity of the analytical parameters.

1.6.1.1. WELL SAMPLING

Groundwater samples will be collected from all monitoring wells designated for sampling during the semi-annual monitoring program. The revised monitoring well network for the semi-annual groundwater monitoring events at the Tulsa Disposal Facility are listed in Attachment 1, Table 4. The samples collected from these wells will be submitted to an ODEQ- and EPA-certified laboratory for analysis of VOCs by EPA Method 8260.

1.6.1.2. TRENCH SAMPLING

Groundwater samples will also be collected from the sample ports of recovery sumps RS-1, RS-2, RS-3, and RS-4. Recovery sumps RS-1 through RS-3 are located in the containment trench and recovery sump RS-4 is located in the recovery trench. Each recovery sump is located immediately adjacent to a piezometer from which groundwater-level measurements are obtained. The sample ports consist of a T-valve in the discharge line from each recovery sump. The samples collected will be submitted to the ODEQ- and EPA-certified laboratory for analysis of VOCs by EPA Method 8260.

1.6.2. SAMPLE CONTAINERS, PRESERVATION AND FILTRATION

All groundwater samples will be collected in hydrochloric acid (HCL) preserved, 40-milliliter (ml) volatile organic analyte (VOA) vials containing Teflon lined caps. The samples will be submitted to the lab and analyzed for VOCs by EPA Method 8260 within 14 days.

Containers used to transport samples for laboratory analyses will be provided by the laboratory performing the analyses. The bottles will be prepared according to EPA specifications (EPA, 1987).

Documentation of bottle preparatory procedures must be available to the Facility upon request. Once prepared, the bottles will not be opened until they are to be filled with sample preservative or sampled groundwater.

Sample preservation is intended to retard biological action, retard hydrolysis, and reduce absorption effects. Methods which will be used to preserve groundwater samples collected at the Facility include pH adjustment of selected samples, refrigeration, and protection from light.

For preservation of samples for VOC analysis, a sufficient amount of HCl will be added to the sample vials to modify the pH of the samples to less than two. The HCl will normally be added to the sample vials prior to shipment of the containers to the site. However, additional preservative will be available during the sampling event to supplement the preservative provided in the sample containers, if necessary. Care will be taken not to overfill prepreserved bottles during sample collection.

1.6.2.1. VOLATILE ORGANIC MONITORING PARAMETERS

All groundwater samples collected during the Corrective Measure sampling events will be submitted to the certified laboratory for analysis of VOCs by EPA Method 8260. Sample containers for VOC analyses will be filled with unfiltered groundwater. Bottles containing samples to be analyzed for volatile organic parameters will be slowly filled until a positive meniscus is achieved, thus minimizing the possibility that the sample becomes aerated during transport to the laboratory as a result of trapped air within the bottle. Care will be taken so that bottles that contain preservatives are not over-filled to prevent diluting the preservative. In the unlikely event that a VOC vial sample container is overfilled, the vial will be discarded and a new VOC vial with preservative will be filled.

Once capped, the bottle will be checked for air bubbles by turning the bottle upside down, tapping the cap of the inverted bottle and visually inspecting the bottle for air bubbles. If air bubbles are present, the vial will be uncapped and additional sample will be carefully added to displace the bubble. Care will be taken not to overfill the vial. The container will again be checked for bubbles as previously described. If after two attempts bubbles are still present in the container, this sample will be discarded and a separate sample will be collected.

1.6.3. SAMPLE STORAGE AND TRANSPORT

All samples will be placed in airtight plastic bags, cooled and transported to the laboratory within two days of sampling. The sample containers will be placed in an insulated ice chest containing ice

immediately after collection to maintain the sample temperature at or as near four degrees Celsius as possible.

1.6.4. SAMPLE DOCUMENTATION

A sample documentation program will be implemented to document possession and handling of groundwater samples from the time of field collection through laboratory analysis. The program will include:

- sample labels which clearly identify sample locations;
- custody seals to preserve the integrity of each shipping container of samples during sample shipment to the laboratory;
- completing the Groundwater Sampling Field Data Sheet with information about each sample collected during the monitoring event;
- chain-of-custody record to establish sample possession from the time of collection to laboratory analysis. (The chain-of-custody will serve as official communication to the laboratory of the particular analysis required for each sample, and provide further evidence that the chain-of-custody is complete); and
- laboratory log or record, which is maintained at the laboratory and records all pertinent information about the sample.

1.6.4.1. SAMPLE LABELS

Legible, waterproof labels will be affixed to each sample container and will be sufficiently durable to remain legible even when wet. Each label will contain the following information:

- Facility/project identification;
- sampling point identification name and/or number;
- date and time of collection;
- analysis required; and
- preservative inside bottle, if applicable.

1.6.4.2. CUSTODY SEALS

In cases where samples are to be shipped off-site by a commercial carrier, a custody seal will be placed on each container of sample bottles to ensure the samples have not been disturbed during transportation.

1.6.4.3. SAMPLING RECORD

A Groundwater Sampling Field Data Sheet will be maintained for all sample collection activities. The following specific data will be documented during the groundwater sampling event:

- name of collector(s);
- identification of well or sampling point;
- depth to groundwater in wells referenced from top of casing;
- purge volume, time, and date;
- results of field analyses (pH, temperature, and turbidity);
- sample observations;
- field observations (broken lock, cracked casing, etc.); and
- any other pertinent data.

A log or record of each day's events will be kept by sampling personnel during the collection of the samples. All pertinent information, including the time and date of sample collection, all measurements, observations, and other information as indicated in this Plan, will be recorded in the field log.

A field map showing the well locations and the Groundwater Sampling Field Data Sheet will be checked to ensure that all wells requiring sampling are sampled.

1.6.4.4. CHAIN-OF-CUSTODY DOCUMENTATION

Evidence of collection, shipment, and laboratory receipt of groundwater samples will be documented using chain-of-custody forms. Groundwater samples will be considered in custody if the samples are:

- in a person's actual possession;
- in view, after being in physical possession;

- sealed so that no one can enter the shipping container after having been in physical custody; and/or
- in a secured area restricted to authorized personnel.

Chain-of-custody documentation will be used to record collection and shipment of all samples. The chain-of-custody record will specify the analyses to be performed. The chain-of-custody should contain at least the following information:

- project name, site address and location;
- any pertinent comments or instructions to laboratory;
- sample type (e.g., groundwater);
- listing of all sample bottles and type of analysis to be performed by the laboratory;
- well number or sampling point;
- date and time of sample collection;
- signature of sample collector; and
- "relinquished by" and "received by" signatures, with date/time.

The chain-of-custody procedure will be as follows:

- The chain-of-custody record for all samples and blanks shall be initiated in the field. The name(s) of the sampler(s) will be listed on the chain-of-custody record. Samples can be grouped for shipment on a common form.
- Each time responsibility for custody of the samples changes, the receiving and relinquishing custodians will sign the record and denote the date and time.
- If the samples are shipped to the laboratory by commercial carrier, the chain-of-custody record shall be sealed in a water resistant container and placed in the shipping container with the samples. The shipping container will be sealed prior to submittal to the carrier. The carrier waybill shall serve as an extension of the chain-of-custody record between the final field custodian and receipt in the laboratory.
- Upon receipt in the laboratory, a designated individual shall open the shipping containers, measure and record cooler temperature, compare the contents with the chain-of-custody record, and sign and date the record. Any discrepancies shall be noted on the chain-of-custody record.
- If discrepancies occur, the project manager will be notified for clarification.

- The chain-of-custody record is completed after sample disposal. Samples not consumed during analysis shall be kept for a minimum of six months, or as otherwise established by the laboratory.
- Chain-of-custody records, including waybills, if any, shall be maintained as part of the project records.

1.7. GROUNDWATER SAMPLE ANALYSIS

1.7.1. ANALYTICAL PARAMETERS

All samples will be analyzed for VOCs by EPA Method 8260.

1.8. QUALITY ASSURANCE AND/QUALITY CONTROL (QA/QC)

Quality assurance and quality control (QA/QC) address both field and laboratory activities. QA/QC for both the field and laboratory activities is described below.

1.8.1. FIELD QUALITY ASSURANCE/QUALITY CONTROL

The Field Quality Assurance/Quality Control program includes collection of trip blanks, equipment blanks, field blanks, and field duplicate samples. Methods for collecting each QA/QC sample are listed below.

1.8.1.1. TRIP BLANKS

A trip blank will consist of deionized/distilled water prepared by the laboratory and will be analyzed for VOCs by EPA Method 8260. A trip blank for the remaining analytes in the sample set will not be required. Each trip blank will consist of a minimum of two 40 ml VOA vials filled with deionized/deionized water. Trip blanks will originate at the laboratory, remain with a shipment cooler during all sampling activities, and will be returned to the laboratory with sample shipments for analysis.

The trip blank is laboratory-supplied, certified VOC-free ASTM Type-II water included in the thermally-insulated ice chest during sampling and shipping. The trip blank provides a measure of the positive

interferences which may be introduced by the sample preservation, transportation, storage, and analysis. The concentration levels of any artifact found in the trip blank will be noted and compared to the groundwater sample results.

1.8.1.2. FIELD BLANKS

Field blanks will be taken with the same care as regular samples and treated the same as a groundwater sample collected from a monitoring well. At a minimum, at least one complete field blank will be collected during each week (seven days) of sampling. A complete field blank means one full set of analytes similar to a sample set collected from a point-of-compliance monitoring well. Field blanks will be collected at a sample location (i.e. wellhead) or in the immediate vicinity of facility activity (such as near an active cell). The sample team leader will be responsible for selecting the location for collection of the field blank.

1.8.1.3. FIELD DUPLICATES

One duplicate sample will be collected from two different monitoring wells. Each duplicate will be analyzed for the same parameters as the original sample. Duplicates will be collected by alternating the filling of bottles between the sample and the duplicate sets. Each duplicate will be labeled to disguise the sample location from the laboratory. The location and identity of each duplicate sample will be maintained in the field documentation. Each field duplicate sample will be submitted as a "blind" sample to the laboratory. Pertinent information regarding each duplicate sample will be noted on the Groundwater Sampling Field Data Sheet.

1.8.2. LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

The laboratory QA/QC procedures that will be performed by the selected laboratory are described below.

1.8.2.1. LABORATORY SELECTION

The laboratory selected to analyze groundwater and QA/QC samples collected at the Facility will be ODEQ- and EPA-certified. In addition, the laboratory will maintain a written QA/QC program which conforms, as a minimum standard, with QA/QC protocol set forth in the latest edition of U.S. EPA's *Test Methods for Evaluating Solid Waste*, EPA SW-846. If requested, the laboratory will provide its own laboratory standard operating procedures (LSOP) as part of the QA requirements.

1.8.2.2. LABORATORY QA/QC PROCEDURES

In accordance with EPA SW-846, the selected laboratory's QA/QC will include analysis of the following quality control samples:

- matrix spiked samples (one per analytical batch or every 20 samples whichever is more frequent);
- method blanks (one per analytical batch);
- for organic analyses, surrogate spiked samples (every method blank, laboratory control sample, matrix spike, and matrix spike duplicate sample);
- laboratory control sample (one per analytical batch or every 20 samples whichever is more frequent);
- continuing calibration standard (performed at least daily, frequently varies with test method);
- for applicable organic analyses, column check sample (after activating or deactivating a batch of adsorbent);
- initial and continuing calibration blanks (where applicable per reference method); and
- development of standard curves at a frequency specified by the method.

The results of the laboratory QA/QC samples will be compared to EPA limits (where available) or to laboratory limits that are generated per EPA guidelines and are statistically consistent with EPA limits. If the laboratory QA/QC results are not within EPA-specified or laboratory limits (as applicable), the samples will be reanalyzed within the sample's required holding time. Data for samples reanalyzed outside of holding time will be qualified.

In addition to the QA/QC procedures described above, the laboratory will have in place an internal QA/QC plan. This laboratory QA/QC plan will include the following:

- laboratory sample handling procedures;
- laboratory quality assurance organization and responsibilities;
- equipment calibration procedures and frequencies;
- data reduction, validation, and reporting procedures;
- internal quality control analysis procedures and frequencies; and
- performance and system audit procedures and frequencies.

1.8.2.3. LABORATORY LOG OR RECORD

Samples will generally be delivered to the laboratory in coolers by an overnight courier. Upon receipt, any associated chain-of-custody is signed and dated. The chain-of-custody is reviewed to ensure it contains the following information:

- sample collection date/time;
- field sampler's identification;
- requested analyses;
- signature of the delivery individual;
- date of delivery; and
- client technical contact.

A copy of the chain-of-custody form is provided to the person relinquishing the samples (when that person is not an overnight courier). The original chain-of-custody is retained by the laboratory and included if necessary as a part of the final data package.

Shipping container(s) are to be examined for the presence, absence, and/or condition of custody seals; the examination is to be documented. The container exterior and interior is subject to a radiological screen. If a temperature blank was included in the cooler, its temperature is to be measured and recorded.

Bottles in the shipping container are inspected for damage. If sample bottles have been broken in shipment, appropriate safety procedures are taken and the client is notified. Enclosed sample documents are removed and the following information is recorded:

- presence/absence of chain-of-custody forms;
- presence/absence of request for analysis forms; and
- presence/absence of bill of lading or other sample information documents.

Information on the sample containers is compared with that on the chain-of-custody and any discrepancies are documented. The physical condition of the samples is checked and documented for the following:

- cracked or broken container or cap;
- improper sample container;
- insufficient sample volume for analyses;
- improper bottle filling technique (i.e. headspace in volatiles, etc.);

- improper preservation (cooler not chilled);
- missing, mismarked, or unlabeled bottles;
- leaking bottles;
- samples needing to be divided for different analyses;
- samples needing to be composited prior to analysis; and
- samples containing hazardous substances or high concentrations of analytes.

The pH of all volatiles samples will be checked and documented by the laboratory at the time of analysis.

Aliquots of aqueous samples assigned to parameters requiring other chemical preservation are checked to ensure that they are labeled, preserved, and that the preservative (if described) is the correct one for the parameter. The results of the sample review, any discrepancies, and resolution with the client are documented.

Once the assessment of the samples' condition has been completed and documented, the following sample information is recorded in a logbook:

- initials of technician entering the data;
- date received;
- client identification (name and project number);
- client sample identification and laboratory sample number;
- matrix;
- number of bottles, by type;
- parameters tested; and
- storage location(s).

Each sample is then entered into an interim database in Laboratory Information Management System (LIMS) and a unique sequential laboratory control number is assigned to each sample. The information entered as a part of each sample's record in the interim database includes the following:

- client's identification for the sample;
- sampling date;
- sample matrix;

- the laboratory number assigned to the sample;
- the analyses requested in the documentation arriving with the sample; and

- the number and types of bottles provided.

The information entered for the batch of samples received includes:

- initials of the technician entering the data;
- client identification, site, and client job number;
- data of the sample receipt at the laboratory;
- project manager;
- laboratory submission ID number;
- sample delivery group (SDG) number and data deliverable QC level(s) requested for the analysis;
and
- storage location for the samples.

All aliquots of a sample are to be labeled with the sample's laboratory number for identification. Sample containers are then to be moved to designated storage areas.

A hard copy of the above information is generated ("project sheet") and combined with documented checks of the received samples, the chain-of-custody, and any supporting documentation shipped with the sample containers and provided to the laboratory project manager for review.

The laboratory project manager reviews the documentation package, making any necessary changes to the project sheet based on consultation with the client as well as on the information provided. When the laboratory project manager is satisfied that the project sheet represents the client's needs for the batch, the project manager assigns a due date for the batch and signs and dates the project sheet.

Once approved and returned by the project manager, the original project sheet along with a copy of the rest of the sample documentation package is filed. The project sheet covering the batch of samples is electronically transferred from the interim database to the laboratory schedule system on the LIMS.

Sample aliquots which are scheduled for VOC analyses and metals analyses are to be stored in the refrigerators, freezer, and/or cabinets assigned to these parameters. All other non-hazardous aqueous samples are to be stored in designated walk-in coolers.

The retrieval of samples for analysis will be initiated through a request by the analyst to sample log-in personnel who retrieve the specified samples. Both the request and subsequent return of the same samples are to be documented on internal chain-of-custody. Samples will be disposed in accordance with

applicable regulations. Disposal requires project manager approval and client consent and is documented.

1.9. REVIEW OF THE PRECISION AND ACCURACY OF REPORTED DATA

QA/QC data review procedures that will be used by the Facility or its consultant are described below. Any discrepancies or corrective measure actions and their resolution which occur during analysis of groundwater samples will be included as part of the required groundwater monitoring report.

1.9.1. REPORTING LIMITS

Reporting limits for a specific compound will be checked for variation among sampling points. Higher reporting limits can occur when a different, less sensitive analytical technique is used or when the chemical matrix of the sample interferes with the analytical technique. Where reporting limits are higher than the PQL specified in the test method or than those previously reported, the limit will be reduced in future samples, if possible, by using an alternative test method or by using alternative laboratory procedures that remove or control interfering constituents.

1.9.2. MISSING DATA VALUES

Care will be taken to complete all analyses in order to provide a complete data set for statistical comparison. If a value is found to be missing during the initial data review, the laboratory will be contacted immediately to determine if the omission is due to data entry or other transmittal error. Missing values will be reported immediately to the Facility and/or its representatives.

1.9.3. PRECISION AND ACCURACY OF REPORTED DATA

Analytical data will be qualitatively reviewed for apparent outliers or detected quantities of analytes. In general terms, an outlier is an observation which is markedly different from all other observations in a group of observations. Causes for outliers in groundwater samples may be due to inconsistent sampling or analysis procedures or errors in transcription of the data values.

Where a suspect value is reported, the internal QA/QC data relevant to the Facility's sample set (method blanks, matrix and method spikes, spike duplicates and charge balances) will be requested from the

laboratory if not already provided. The Facility and/or its representatives may also request that the laboratory check calculations performed in completing analyses and/or check for data transcription errors. These data will be reviewed to evaluate the precision and accuracy of the analytical results. In particular, the data will be compared to EPA control limits for blank, spike, and duplicate samples, where applicable.

Where lab error is apparent, corrective action will be taken. Corrective action may include re-analysis of the sample and/or deletion of the erroneous data from the groundwater data base. Documentation of the cause of any outlier will be provided prior to correcting or excluding data values from evaluations. Where the cause of the outlier cannot be attributed to sampling, laboratory or reporting error, or to laboratory contamination, the value will not be excluded from the data base.

Tentative values will be defined as any measured concentration for an analyte less than the PQL, but otherwise meeting criteria for identification using GC/MS techniques. These values shall be reported as values identified by the letter J, but shall not be used as indications of detections.

A tentatively identified compound is a non-target compound which 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 as values identified by the letter A.

The laboratory provides additional information related to sample analysis as part of the laboratory narrative which accompanies the laboratory reports. The narrative will summarize all aspects of data analysis performed at the laboratory. Any additional qualifiers or data flags will be described within the narrative.

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 4

INITIAL CLOSURE PLAN

CLOSURE PLAN

Final Closure

The waste recycling activities accomplished by Hydrocarbon Recyclers, Inc. (HRI) may remain ecologically and economically feasible indefinitely. The anticipated life-span of present equipment is twenty years; however, maintenance and upgrading (including replacement of units when required) may prolong facility life expectancy.

Final closure of the HRI-Tulsa facility (if required) will be accomplished in compliance with EPA closure performance standards. Closure of the facility would involve the closure of hazardous waste tanks, non-regulated tanks and container storage areas as well as the removal of containment systems and decontamination of underlying soil (if necessary). Decontamination will include chemical analysis for land disposal restricted (LDR) constituents as well as analysis for "F" listed solvents. Table XII-1 outlines the sequence of closure procedures. The facility closure cost estimate is summarized in Attachment XII-1.

Table XII-1

HRI-Tulsa Closure Sequence

- 1) Removal of hazardous waste inventory;
- 2) Decontamination of waste storage tanks, units, empty containers and containment areas;
- 3) Soil analysis to assess contamination of soil beneath process area;
- 4) Removal of all contaminated soil on site;
- 5) Decontamination of closure equipment;
- 6) Certification of closure.

The Industrial Waste Division of the Oklahoma State Department of Health (OSDH) will be notified at least forty-five days prior to closure of the facility.

STORAGE UNIT CLOSURE

Closure of Container Storage Areas

The HRI facility has permitted storage space for a total of 77,935 gallons of hazardous waste in containers (equivalent to volume of 1,417 fifty-five gallon containers); other container sizes may be used including 5, 15, 20, 30, 85 and 120 gallon capacity containers as well as marino bags, tote tanks and gondolas. Containerized wastes are stored on concrete container storage pads located in one of four areas at the facility; these are the East Pad, South Pad (east and south of the solvent process area respectively), West Pad (inside process area) and the North Pad (warehouse). Closure of each container storage pad is discussed separately. Note that although other container sizes may be on site, management of waste in fifty-five gallon drums is assumed for closure cost estimating purposes; in addition, specific waste types and quantities are estimated for these closure cost calculations.

Closure procedures for each container storage pad are discussed below.

East Pad -

- 1) Inspect all containers for leaks, open lids and corrosion. Re-package any material stored in a defective container.
- 2) Transfer all containers to an off site recycling facility or pump containers into bulk transport tanker using on site pumps.
- 3) Decontaminate containment structures.

West Pad -

- 1) Pump contents of containerized liquids (as appropriate) into bulk transport tanker using on site pumps.
- 2) Transport wastes for incineration to an off site facility for disposal.
- 3) Wash empty containers using on site container washing equipment.
- 4) Crush empty containers and transfer to off site disposal facility.
- 5) Decontaminate containment structures.

South Pad -

- 1) Inspect all containers for leaks, open lids and corrosion. Re-package any material stored in a defective container.
- 2) Transfer containerized wastes for incineration to off site facility for disposal.
- 3) Pump suitable wastes into kiln fuel blending process for use in cement kilns.
- 4) Wash empty containers using on site container washing equipment.
- 5) Crush empty containers and transfer to off site disposal facility.
- 6) Decontaminate containment structures.

North Pad -

- 1) Inspect all containers for leaks, open lids and corrosion. Re-package any material stored in a defective container.
- 2) Transfer containerized corrosives to off site TSD facility for neutralization and disposal.
- 3) Transfer containerized wastes for incineration to off site facility for disposal.
- 4) Pump suitable liquids into tanker for transport to off site recycling and/or kiln fuel burning facility.
- 5) Wash empty containers using on site container washing equipment.
- 6) Crush empty containers and transfer to off site disposal facility.
- 7) Decontaminate containment structures.

Decontamination of Container Storage Areas

Container pads will be decontaminated after all wastes have been removed from container areas.

- 1) Wash all floors and other containment structures with high pressure water equipment.

- 2) Obtain and analyze samples of the final rinse water from each containment area. The containment area will be considered clean when volatile organic constituents are not detectable by chemical analysis.
- 3) Rinse water will be collected in V-10 (process area sump).

Tank Closure

Hazardous wastes are managed in twenty-six (26) waste storage tanks (Table XII-2). Table XII-3 shows the breakdown of waste types and capacity as well as the number of tanks permitted for each waste type. Four tanks used during processing are also permitted for hazardous waste; these tanks are not used for long term waste storage. Nine (9) additional tanks are used to store wastes including waste oil, jet fuel and diesel fuel (Table XII-4).

Chlorinated Waste Solvent Tanks - Waste chlorinated solvents are stored in V-1, V-2, V-6, V-7, V-32, V-33, V-57 and V-64; in addition, tanks V-23, V-24, V-51 and V-52 are designated for either chlorinated or nonchlorinated waste storage. Tank closure procedures are as follows:

- 1) If the tank closure is a partial closure (i.e., the rest of the facility is operational) pump the contents of the tank to another tank or to an appropriate recycling unit.
- 2) If the tank closure is part of final closure of the facility, pump the contents of the tank into a tanker truck for transport to an off site solvent recycling facility.
- 3) Decontaminate tank(s) as described below.
- 4) Drain all piping, pumps, valves and other ancillary equipment used to transfer waste from the storage tanks to the recycling units. Collect any liquid waste and send it off site along with the waste removed from the tank(s).
- 5) Disassemble each pump, valve and section of pipe. Clean each piece with steam, collect the condensate for off site disposal, and allow to air dry. Repeat procedure two times.

Table XII-2

Hazardous Waste Tank Service Designation

Vessel	Capacity	Waste Type	(gallons)
V-1	8,558	Waste Chlorinated Solvent	
V-2	8,822	Waste Chlorinated Solvent	
V-3	8,666	Waste Nonchlorinated Solvent	
V-6	2,253	Waste Chlorinated Solvent	
V-7	2,542	Waste Chlorinated Solvent	
V-10	5,245 *	Sump - Process Area	
V-16	44,670	Water & Kiln Fuel Storage	
V-23	5,632	Waste Non/Chlorinated Solvent	
V-24	5,632	Waste Non/Chlorinated Solvent	
V-26	5,775	Waste Mixed Oil & Water	
V-27	18,019	Waste Nonchlorinated or Water	
V-31	27,637	Kiln Fuel - Mixing Tank	
V-32	5,266	Waste Chlorinated Solvent	
V-33	5,266	Waste Chlorinated Solvent	
V-36	5,266	Waste Nonchlorinated Solvent	
V-37	5,266	Waste Nonchlorinated Solvent	
V-46	7,541	Waste Nonchlorinated Solvent	
V-49	3,854 *	Process Unit Feed	
V-50	3,599 *	Process Unit Feed	
V-51	4,093	Process Unit Bottoms Mixing Tank	
V-52	7,099	Processed Non/Chlorinated Solvent	
V-53	7,099	Processed Nonchlorinated Solvent	
V-57	5,266	Processed Chlorinated Solvent	
V-58	5,266	Processed Nonchlorinated Solvent	
V-59	5,266	Waste Nonchlorinated Solvent	
V-60	5,266	Waste Nonchlorinated Solvent	
V-63	21,415	Kiln Fuel - Mixing Tank	
V-64	7,099	Processed Chlorinated Solvent	
V-78	2,200 *	Kiln Fuel - Mixing Tank	
V-79	572	Processed Nonchlorinated Solvent	

Note: * Indicates process feed tank, blending tank or sump.

Table XII-3

Hazardous Waste Tank Storage Capacities

Waste Type	Quantity (Tanks)	Capacity (gallons)
Chlorinated Solvent	8	45,072
Nonchlorinated Solvent	10	68,227
Non/Chlorinated Solvent	4	18,363
Kiln Fuel	2	49,052
Waste Water/Fuel	2	50,445
Waste Storage (Subtotal)	26	231,159
Permitted Process Tanks	4	14,898
Total Permitted Tank Capacity	30	246,057

Table XII-4

Waste Tank Service Designation - Waste Oil Plant

Vessel	Capacity (gallons)	Waste Type
V-4	16,921	Mixed Waste Hydrocarbons
V-5	16,921	Mixed Waste Hydrocarbons
V-14	15,274	Oil/Water Waste/Process Tank
V-17	22,216	Oil/Water Waste/Process Tank
V-21	5,224	Oil/Water/Sludge Waste/Process
V-22	5,224	Oil/Water/Sludge Waste/Process
V-56	7,802	Dehydrated Waste Oil-O.H. Prod.
V-72	21,415	Mixed Waste Hydrocarbons Process
V-73	21,415	Waste Oil/Coolant/Water Process
	132,412	Total storage capacity

Nonchlorinated Solvent Storage Tanks - Waste nonchlorinated solvents are stored V-3, V-27, V-36, V-37, V-46, V-53, V-58, V-59, V-60 and V-79. Tank closure procedures are as follows:

- 1) If the tank closure is a partial closure (i.e., the rest of the facility is operational) pump the contents of the tank to another tank or to an appropriate recycling unit.
- 2) If the tank closure is part of final closure of the facility, pump the contents of the tank into a kiln fuel blending tank for off site use by cement kiln.
- 3) Decontaminate tank(s) as described below.
- 4) Drain all piping, pumps, valves and other ancillary equipment used to transfer waste from the storage tanks to the recycling units. Collect any liquid waste and transfer to a kiln fuel tank.
- 5) Disassemble each pump, valve and section of pipe. Clean each piece with steam, collect the condensate for off site disposal, and allow to air dry. Repeat procedure two times.

Other Waste Tanks - Three tanks are utilized as process feed or blending tanks; these tanks are V-49, V-50 and V-78. In addition, kiln fuel tanks V-31 and V-63, waste water tanks V-16 and V-26 as well as the process area sump (V-10) will require decontamination after removal of the contents.

- 1) Kiln fuel management is discussed below.
- 2) Waste water management is discussed below.
- 3) Decontaminate empty tanks as discussed below.

Tank Decontamination - Each waste storage tank as well as waste process tanks will be steam cleaned or power washed and allowed to air dry three times. The residue from steam cleaning will be collected in V-10 which will be cleaned last. Tank decontamination procedures are as follows:

- 1) Test the internal tank atmosphere for organic vapors prior to tank entry.
- 2) Steam clean tank and air dry. Repeat two times.
- 3) Collect steam condensate in V-10.

Process/Storage Area Decontamination

Sampling and Analysis - Soil samples will be collected from beneath the concrete of the process area as well as from the unpaved truck unloading area adjoining the North Pad. Decontamination will include excavation and disposal of all contaminated soil.

- 1) Approximately 60,000 square feet of concrete make up the process area and the container storage areas; a sampling grid will be used for selection of sample points (25 foot sampling increments will be used for visibly contaminated areas). Note that this cost estimate is conservatively based on a proposed 25 foot grid sampling plan that may be modified by the independent professional engineer supervising the project if deemed appropriate. A maximum of 101 soil samples will be taken from the following areas: 1) 48 samples from the process area; 2) 9 samples from the East Pad; 3) 17 samples from the South Pad; 4) 24 samples from the North Pad; 5) 2 samples of gravel from the truck unloading area to the North pad; and 6) 1 sample (background) will be taken from an area separated from waste management areas.
- 2) Core through the concrete and obtain a sample of the upper six inches of soil from each of the sample locations. Analyze each soil sample for organic solvents. Any sample location at which the organic solvent concentration is less than or equal to the solvent concentration of the background sample will be considered uncontaminated.
- 3) If soil sample analyses indicate contaminated areas, then contaminated soil must be removed. First clean the overlying concrete with high pressure wash water. Sample and analyze the final rinse for volatile organic constituents.
- 4) Remove concrete from each contaminated area; dispose of decontaminated concrete as a non-hazardous solid waste.
- 5) Excavate soil from the contaminated area(s). Dispose of soil at a hazardous waste landfill facility.
- 6) Re-sample soil beneath all contaminated areas and analyze for organic solvents.
- 7) Continue soil removal and sampling procedures until all contaminated soil has been identified and removed.

Equipment Decontamination

Transfer Equipment Decontamination - Transfer equipment will be used for container loading and contaminated soil excavation (if required).

- 1) Wash equipment with high pressure water or steam.
- 2) Collect wash water or steam condensate in V-10.

Unit Closure - Several units are utilized for solvent recycling or waste processing; these include atmospheric distillation units ("A", "C", and specialty still), the thin film evaporator, the vacuum ("V") distillation unit, the solids dryer and the coalescer.

- 1) If the unit closure is a partial closure (i.e., the rest of the facility is operational) transfer the contents of the unit to an appropriate tank or alternate recycling unit for proper management.
- 2) If the unit closure is part of final closure of the facility, transfer the contents of the unit into an appropriate tank/container for transportation off-site for proper disposal.
- 3) Decontaminate unit(s) as described below.
- 4) Drain all piping, pumps, valves and other ancillary equipment. Collect any liquid waste for proper disposal.
- 5) Disassemble each pump, valve and section of pipe. Clean each piece with steam or high pressure power wash, collect liquid residue for proper disposal.
- 6) Should solids (i.e., still bottoms and etc.) be identified on heater bundles or other equipment, scrape or shovel residue from pieces to the greatest degree practical; store residue in containers prior to shipment off-site for proper disposal. Clean parts with steam or high power wash. Allow parts to air dry; repeat cleaning/drying procedure two times.

Drum Handling Equipment - Decontamination of drum handling equipment includes the Drum Scraper, Drum Dumper, Disperser, Drum Washer and Drum Crusher as well as associated ancillary equipment.

- 1) Disassemble and wash with high pressure water or steam; collect residue for proper disposal.
- 2) Collect wash water or steam condensate in V-10.

Waste Water Management

Waste Water - Capacity of V-16 and V-26 (hazardous waste water volume stored in tanks will be appropriately managed) as well as the process area sump (V-10) is included in the quantity of waste water to be managed; all wash waters generated by closure activities will be collected and managed in V-10.

- 1) Pump waste water into tank trucks for transport to an off site disposal or treatment facility.
- 2) Decontaminate tank as described above.
- 3) Drain all piping, pumps, valves and other ancillary equipment. Collect additional waste water and send off site for disposal along with contents of the sump.
- 4) Disassemble each pump, valve and section of pipe. Steam clean each piece and collect condensate for off site disposal; allow piece to air dry. Repeat procedure two times.

Kiln Fuel Management

Capacity of kiln fuel tanks (V-31 and V-63), bulk and containerized nonchlorinated waste solvent as well as residue generated by container washing will be blended into kiln fuel. Kiln fuel will be managed as follows:

- 1) Blend kiln fuel to meet cement kiln specifications.
- 2) Transfer kiln fuel into tanker for transport to off site cement kiln.

Certification of Closure

Partial closure of tanks or final closure of the facility will be certified by an independent registered professional engineer (PE).

- 1) An independent PE will make weekly (or more frequent) inspections during closure activities.
- 2) An independent PE will certify closure of individual tanks (partial closure) or the facility (final closure).

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 5

SUMMARY OF PARTIAL CLOSURE ACTIVITIES

SAFETY-KLEEN (TULSA), INC. FACILITY PARTIAL CLOSURE

A. Initial Notice of Partial Closure

On April 18, 1996 a letter addressed to Mr. H. A. Caves, Director of the ODEQ Hazardous Waste Management Service was submitted by Mr. Michael Sanderock, Facility Manager for the Hydrocarbon Recyclers, Inc. facility (aka Safety-Kleen (Tulsa), Inc.) would begin partial closure effective June 3, 1996. This partial closure would be conducted in accordance with the ODEQ approved closure plan (Appendix XII of the permit).

Elements of the partial closure were to be as follows:

- Page XII-1: Table of Contents, not affected.
- Page XII-2: Final Closure, will be implemented as written, except Table XII-1, Tulsa Closure Sequence. HRI will complete closure items, 1,2,5 and 6 as written in the closure plan.
- Page XII-3: Closure of Container Storage Areas, will undergo closure as written.
East Pad, will undergo closure as written.
West Pad, will undergo closure as written.
- Page XII-4: South Pad, will undergo closure as written.
North Pad, will undergo closure as written.
Decontamination of Container Storage Areas, will undergo closure as written.
- Page XII-5: Tank Closure, will undergo closure as written.
Chlorinated Waste Solvent Tanks, will undergo closure as written.
- Page XII-6: Table XII-2, all listed units will undergo closure as written.
- Page XII-7: Table XII-3, and Table XII-4, all listed units will undergo closure as written.
- Page XII-8: Non Chlorinated Solvent Storage Tanks, will undergo closure as written.
Other Waste Tanks, will undergo closure as written.
Tank Decontamination, will undergo closure as written. In addition, the tank farm containment area will undergo decontamination as outlined for the container storage areas.

Page XII-9: Process/Storage Area Decontamination, will **not** be implemented at this time.

Page XII-10: Equipment Decontamination, will undergo closure as written.
Transfer Equipment Decontamination, will undergo closure as written.
Unit Closure, will undergo closure as written.
Drum Handling Equipment, will undergo closure as written.

Page XII-11: Waste Water Management, will undergo closure as written.
Kiln Fuel Management, will undergo closure as written.
Certification of Closure, will be performed as written.

Page XII-12: Maximum Extent of Unclosed Operations, will be implemented as written.
Compliance with Closure Regulations, will be implemented as written. **HRI's groundwater corrective action will continue, but not be affected by this partial closure.**

Table XII-5, Estimated Maximum Storage Capacity at Closure, all listed units will undergo closure.

Page XII-13: Closure Schedules and Expected Date of Final Closure, HRI will follow the referenced schedules for the applicable units.

Page XII-14: Figure XII-1, HRI expects to meet this schedule.
Figure XII-2, HRI expects to meet this schedule.

Page XII-15: Figure XII-3, is changed by this partial closure. A substitute schedule has been submitted. This partial closure schedule is intended to show the closure schedule for those units that are covered by the partial closure. The unaffected units will remain unclosed.

Page XII-16
to XII-22: Attachment XII-1 (Facility Closure Cost Estimate), this estimate will remain in tact with no changes at this time.

B. ODEQ Partial Closure Approval Document

On June 19, 1996 ODEQ issued a response to the April 18, 1996 letter notifying the Department of HRI's intent to implement partial closure activities.

C. Certification of Partial Closure by Independent Registered Professional Engineer

On November 18, 1996, Professional Engineer, W. D. Bunn certified the following as being clean closed in accordance with the Hydrocarbon Recyclers, Inc. Closure Plan:

Containment Areas

East Pad

West Pad

South Pad

North Pad

Tank Farm Secondary Containment

Waste Tanks

V-1	V-2	V-3	V-6	V-10
V-16	V-26	V-27	V-31	V-32
V-36	V-37	V-49	V-51	V-52
V-53	V-58	V-59	V-60	V-63
V-78	V-79			

Finished Product Tanks

V-11	V-12	V-13	V-15	V-18
V-19	V-29	V-30	V-35	V-38
V-47	V-61	V-62	V-70	V-74
V-75	V-76	V-77		

Process Units

V-39	V-40	V-41	V-42	V-48
V-71				

D. Documentation of Completion of Partial Closure

February 12, 1997 letter from Mr. Timothy F. Kent to ODEQ outlining the documentation of completion of the partial closure activities.

E. Analytical Results Submission

March 10, 1997 letter from Mr. Michael Sanderock to ODEQ submitting the analytical reports for the closure of tanks and containment areas that was completed in Aug/Sept. 1996.

F. ODEQ Acceptance of Partial Closure

March 17, 1997 letter from Mr. H. A. Caves to the facility acknowledging their acceptance of partial closure for the facility.

G. Post Partial Closure Activities

Since Partial Closure approval, the facility contracted a demolition company to take down and scrap the complete tank farm including all tanks, except for two insulated tanks in the former Waste Oil Plant, and associated piping and support structures except those that were being used for the groundwater remediation/POTW activities. This work began in August 1998 and was completed in January 1999. Equipment not essential to the operations conducted at the facility, such as cooling towers, natural gas fired furnaces etc. were either sold to other companies or salvaged as scrap.

In addition the secondary containment wall for the tank farm was breached in the NW corner to allow rainfall to escape and not be collected within secondary containment.

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 6

DOCUMENTATION AND CERTIFICATION OF PARTIAL CLOSURE

FILE COPY
RECEIVED

FEB 13 1997

Charles D.
EXECUTIVE Director

DELIVERY VIA OVERNIGHT MAIL

February 12, 1997

Mr. H.A. Caves, Division Director
Waste Management Service - 0205
Oklahoma Department of Environmental Quality
1000 N. E. 10th Street
Oklahoma City, Oklahoma 73117-1299

Re: Hydrocarbon Recyclers, Inc.
5324 W. 46th St. South
Tulsa, Oklahoma 74107
EPA ID # OKD 000632737
HSWA Permit No. 3572028

Documentation of Completion of Partial Closure

Dear Mr. Caves:

On April 18, 1996 Hydrocarbon Recyclers, Inc ("HRI") in Tulsa, Oklahoma submitted its notification for partial closure to you for review and approval. Your approval document was issued on June 19, 1996. Closure work commenced on June 3, 1996 and is now complete.

Please find enclosed two sets of documents:

1. Unit-by-unit breakdown of closure activities.
2. Independent, registered, professional engineer's certifications for attainment of each unit's clean standard.

With this submission, HRI believes it has completed each element of the partial closure that was requested and approved. It now requests the formal Oklahoma DEQ recognition of this partial closure. Per the June 19, 1996 DEQ letter, HRI is now requesting that the DEQ grant to HRI Item 1's indefinite time extension for the remaining aspects of closure (per 40 CFR 264.112). This indefinite time extension is necessary to allow HRI to continue the site groundwater corrective measure action and to maintain the facility permit.

With partial closure in place, HRI is operating the facility as a "less-than-10-day" transfer facility. However, as the permit is retained, it will continue to pay the annual \$2,500 per unit monitoring fee for its five units (four drum storage and one tank

Mr. H.A. Caves
February 12, 1997
Page 2

storage units, \$500 @ unit). Additionally, HRI has updated its current closure cost assurance from \$948,213 to \$970,970 for 1997. Upon Oklahoma DEQ recognition of closure, HRI may elect to recalculate this cost based on the extent that the partial closure reduces the work to be done under the full closure plan.

With the site partial closure being complete, the HRI facility no longer has any employees. All communication should be routed through me at the following address:

Timothy F. Kent
Laidlaw Environmental Services, Inc.
515 W. Greens Road, Suite 600
Houston, Texas 77067

Phone: (281) 884-7026
FAX: (281) 884-7051

Thank you for your cooperation on this matter. If you or your staff have any questions, please call me at the above number.

Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,



Timothy F. Kent
Regional Regulatory Compliance Manager
Laidlaw Environmental Services, Inc. (for)
Hydrocarbon Recyclers, Inc.

Enclosures

cc: Greg Garber, OKDEQ - Oklahoma City, OK
Bill Hallam, Laidlaw - La Porte, TX
Mike Sanderock, Laidlaw - San Antonio, TX

Page XII-2:

Final Closure, was implemented as written, except the applicable elements of soil investigation. Table XII-1 of the Closure Plan, lists the Tulsa Closure Sequence; detailed below is the status of each of the closure items:

- 1) "Removal of hazardous waste inventory," will be completed in February, 1997 with the final waste shipment.
- 2) "Decontamination of waste storage tanks, units, empty containers and containment areas," was completed on November 18, 1996.
- 3) "Removal of all contaminated soil on site," was not addressed under this partial closure plan.
- 4) "Certification of closure," was performed by Antec Services, Inc. of Sand Springs, Oklahoma. Certification was provided by Mr. W. D. Bunn, P.E.

Page XII-3:

Closure of Container Storage Areas, was completed per the closure plan as written. Individual areas are listed below:

East Pad, underwent closure as written. All containers on the pad were inspected for leaks, open lids and corrosion. Defective containers were repackaged as necessary. HRI transferred all containers to on-site tanks or off-site disposal facilities. The East Pad containment structure was sandblasted and hydroblasted; the rinse sample met clean closure standards. An "East Pad (EP) Certification of Decontamination" was issued on November 18, 1996 by Antec Services, Inc.

West Pad, underwent closure as written. All containers on the pad were inspected for leaks, open lids and corrosion. Defective containers were repackaged as necessary. HRI transferred all containers to on-site tanks or off-site disposal facilities. The West Pad containment structure was hydroblasted; the rinse sample met clean closure standards. A "West Pad (WP) Certification of Decontamination" was issued on November 18, 1996 by Antec Services, Inc.

Page XII-4:

South Pad, underwent closure as written. All containers on the pad were inspected for leaks, open lids and corrosion. Defective containers were repackaged as necessary. HRI transferred all containers to on-site tanks or off-site disposal facilities. The South Pad containment structure was sandblasted and hydroblasted; the rinse sample met clean closure standards. A "South Pad (SP) Certification of Decontamination was issued on November 18, 1996 by Antec Services, Inc.

North Pad, underwent closure as written. All containers on the pad were inspected for leaks, open lids and corrosion. Defective containers were repackaged as necessary. HRI transferred all containers to on-site tanks or off-site disposal facilities. The North Pad containment structure was hydroblasted; the rinse sample met clean closure standards. A "North Pad (NP) Certification of Decontamination was issued on November 18, 1996 by Antec Services, Inc.

Decontamination of Container Storage Areas, underwent closure as written above.

Pages XII-5 through XII-8:

Tank Closure, all tanks underwent closure as written in the closure plan. Specifically, the hazardous wastes managed in the waste storage tanks underwent the following procedure:

- a) The contents of each tank were pumped to tank trucks for transport to an off-site recycling facility or a disposal facility.
- b) The tanks had all ancillary equipment such as piping, pumps and valves drained of waste, which was sent off-site for recycling or disposal. Then pumps, valves and pipes were disassembled where practical. Each piece was hydroblasted or disposed as hazardous waste. Piping that was not disassembled was blanked off.
- d) The tank itself and surrounding pad were then hydroblasted several times, residues collected and properly disposed.

HRI - TULSA

CERTIFICATION OF CLOSURE

February 12, 1997

- e) Rinse samples for each tank were collected and analyzed. Individual certifications for each tank confirming clean closure were issued by Antec Services, Inc. on November 18, 1996.
- f) The Tank Farm Containment pad was then hydroblasted several times. A rinse sample was retained and analyzed. The rinse sample was confirmed clean in the Certification letter from Antec Services, Inc. dated November 18, 1996.

The above procedure covers the tanks listed in Table I and Table II, which are compilations of all facility tanks, listed by RCRA-status (hazardous waste vessels and recycling tanks):

Table I

Vessel	Capacity (g)	Waste Type
V-1	8,558	Waste Chlorinated Solvent
V-2	8,822	Waste Chlorinated Solvent
V-3	8,666	Waste Non-chlorinated Solvent
V-4	2,253	Waste Chlorinated Solvent
V-7	2,542	Previously Closed
V-10	5,245	Sump - Process Area
V-16	44,670	Water & Kiln Fuel Storage
V-23	5,632	Previously Closed
V-24	5,632	Previously Closed
V-26	5,775	Waste Mixed Oil & Water
V-27	18,019	Waste Non-chlorinated or Water
V-31	27,637	Kiln Fuel - Mixing Tank
V-32	5,266	Waste Chlorinated Solvent
V-33	5,266	Previously Closed
V-36	5,266	Waste Non-chlorinated Solvent
V-37	5,266	Waste Non-chlorinated Solvent
V-46	7,541	Previously Closed
V-49	3,854	Process Unit Feed
V-50	3,599	Process Unit Feed
V-51	4,093	Process Unit Bottoms Mixing Tank
V-52	7,099	Processed Non/chlorinated Solvent
V-53	7,099	Processed Non-chlorinated Solvent
V-57	5,266	Previously Closed
V-58	5,266	Processed Non-chlorinated Solvent
V-59	5,266	Waste Non-chlorinated Solvent
V-60	5,266	Waste Non-chlorinated Solvent
V-63	21,415	Kiln Fuel - Mixing Tank
V-64	7,099	Previously Closed
V-78	2,200	Kiln Fuel - Mixing Tank
V-79	572	Processed Non-chlorinated Solvent

Table II represents a list of recycling tanks that also underwent the tank decontamination process listed above. These units are regulated by Subpart J of Oklahoma regulations. Antec Services, Inc. certifications for closure of these units are enclosed.

Table II

Vessel	Waste Type
V-11	Recycling Tank
V-12	Recycling Tank
V-13	Recycling Tank
V-15	Recycling Tank
V-18	Recycling Tank
V-19	Recycling Tank
V-29	Recycling Tank
V-30	Recycling Tank
V-35	Recycling Tank
V-38	Recycling Tank
V-39	Coalescer
V-40	"A" Unit
V-41	Vacuum Unit
V-42	"C" Unit
V-47	Recycling Tank
V-48	Thin Film Evaporator
V-61	Recycling Tank
V-62	Recycling Tank
V-70	Recycling Tank
V-71	Solids Dryer
V-74	Recycling Tank
V-75	Recycling Tank
V-76	Recycling Tank
V-77	Recycling Tank

Page XII-9:

Process/Storage Area Decontamination, was not implemented in this partial closure plan.

Page XII-10:

The units for Equipment Decontamination, Transfer Equipment Decontamination, Unit Closure and Drum Handling Equipment each underwent closure as written using the above procedures.

Page XII-11:

Waste Water Management and Kiln Fuel Management underwent closure as written in the closure plan. Tanks V-68 and V-69 were not closed; they were retained for site stormwater and groundwater management.

Certification of Closure was performed as written in the closure plan by Antec Services, Inc. of Sand Springs, Oklahoma.

Page XII-12:

Maximum Extent of Unclosed Operations was implemented as described above.

Compliance with Closure Regulations was maintained during the closure of the facility. As noted in the Partial Closure Request letter, HRI's groundwater corrective action continued through the partial closure and was not adversely affected by the events.

Table XII-5:

Estimated Maximum Storage Capacity at Closure all listed units underwent closure as described above.

Page XII-13:

Closure Schedules and Expected Date of Final Closure, HRI followed the closure plan schedule for its units. Table III demonstrates milestone dates for the closure activities.

TABLE III

Activity	Date
Last Waste Accepted	May 31, 1996
Closure Activities Started	June 3, 1996
Hydroblasting Stopped	September 30, 1996
Closure Activities Stopped	November 18, 1996
Last Waste from Closure Shipped Off-site	Expected February, 1997

Pages XII-16 to XII-22:

Attachment XII-1 (Facility Closure Cost Estimate), this estimate remained intact during the closure and was updated for inflation to \$970,970 on February 4, 1997. The HRI financial assurance mechanism remains in effect; HRI will evaluate the site closure cost upon DEQ recognition of closure.

Miscellaneous Issues:

This partial closure was done in full compliance with all regulations, including RCRA and OSHA. Only properly trained personnel were allowed on-site during closure activities. HRI followed its on-site a "Health and Safety Plan" for the closure activity. This partial closure was implemented and completed such that the site posed no environmental threat. This report is being sent to your office within 60 days after completion of the partial closure. Manifests and Land Disposal Certifications for all waste shipped off-site have been retained at the HRI office.

As discussed with Oklahoma DEQ representatives, upon DEQ approval of this partial closure being completed, HRI plans to remove or alter some of the site's secondary containment systems to enhance stormwater sheet-flow, diverting it from the on-site waste water treatment system.

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 7

**OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY PARTIAL CLOSURE
ACCEPTANCE LETTER**



MARK S. COLEMAN
Executive Director

FILE COPY
FRANK KEATING
Governor

State of Oklahoma
DEPARTMENT OF ENVIRONMENTAL QUALITY

March 17, 1997

CERTIFIED MAIL

Timothy F. Kent
Laidlaw Environmental Services, Inc.
Laidlaw/USPCI/Hydrocarbon Recyclers, Inc.
515 W. Greens Road, Suite 600
Houston, TX 77067

Re: Review of the Documentation of
Completion of Partial Closure
Laidlaw Treatment and Recovery Services, Tulsa Facility
OKD000632737/HSWA PERMIT NO. 3572028

Dear Mr. Kent:

The Department of Environmental Quality (DEQ) received the Documentation of Completion of Partial Closure of the facility on February 14, 1997. It has been reviewed with respect to the permit closure plan and with respect to our June 19, 1996 letter responding to the Laidlaw's partial closure proposal.

Decontamination of the HRI facility was inspected by Greg Garber and John Smith of my office on August 13, 1996. The report reflects completion of work that was in progress on that date. The report is approved as documenting closure of the units listed therein and partial closure of the facility overall.

In order to allow Laidlaw to continue the site groundwater and corrective measure action, Laidlaw is granted a time extension for the remaining facility closure activities, under 40 CFR 264.111.

If you need any further information regarding this facility please contact Greg Garber of my staff at (405) 271-2395.

Sincerely,

H.A. Cavex, Division Director
Waste Management Division

HAC:glg

Handwritten:
marked
3-17-97
[initials]

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 8

**CERTIFICATE OF LIABILITY INSURANCE
HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE
OKLAHOMA BOND RIDER FOR CLOSURE OR POST-CLOSURE CARE
CLOSURE AND POST-CLOSURE FINANCIAL GUARANTEE BOND DECLARATIONS**



Clean Harbors
42 Longwater Drive
P.O. Box 9149
Norwell, MA 02061-9149
781.792.5000
800.282.0058
www.cleanharbors.com

October 15, 2014

Carol Bartlett, Environmental Programs Specialist
Land Protection Division
Oklahoma Department of Environmental Quality
707 North Robinson
Oklahoma City, Oklahoma 73102

RE: Clean Harbors Lone Mountain, LLC
Tulsa Disposal, LLC
2014-2015 Hazardous Waste Liability Insurance Policy Renewal

Dear Ms. Bartlett:

Enclosed is an original Hazardous Waste Facility Certificate of Liability Insurance, issued by Indian Harbor Insurance Company under policy number PEC0042039, for the Clean Harbors facilities in Oklahoma. The renewed policy number is PEC004203901.

If you have any questions, please contact me at hodge.kathleen@cleanharbors.com or at 803-225-5459.

Sincerely,

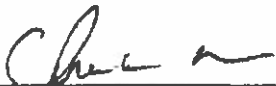
A handwritten signature in cursive script that reads "Kathy Hodge".

Kathy Hodge
Manager, EHS Compliance Administration

HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE

1. Indian Harbor Insurance Company, the Insurer of Seaview House, 70 Seaview Avenue, Stamford, CT 06902-6040, hereby certifies that it has issued liability insurance covering bodily injury and property damage to Clean Harbors, Inc., the Insured, of 42 Longwater Drive, Norwell, MA 02061 in connection with the Insured's obligation to demonstrate financial responsibility under 40 CFR 264.147(f) or 265.147(f). The coverage applies at EPA ID # OKD 000 632 737, Tulsa Disposal, LLC, 5354 W. 46th Street South, Tulsa, OK 74107, for sudden and non-sudden accidental occurrences.. The limits of liability are \$5,000,000 each occurrence and \$10,000,000 annual aggregate, exclusive of legal defense costs. The coverage is provided under policy number PEC004203901 issued on November 1, 2014. The effective date of said policy is November 1, 2014.
2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:
 - (a) Bankruptcy or insolvency of the Insured shall not relieve the Insurer of its obligations under the policy.
 - (b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the Insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147 or 265.147(f).
 - (c) Whenever requested by the Executive Director of the Oklahoma Department of Environmental Quality (DEQ), the Insurer agrees to furnish to the Executive Director a signed duplicate original of the policy and all endorsements.
 - (d) Cancellation of the insurance, whether by the Insurer or the Insured, a parent corporation providing insurance coverage for its subsidiary, or by a firm having an insurable interest in and obtaining liability insurance on behalf of the owner or operator of the hazardous waste management facility, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Executive Director of the Oklahoma Department of Environmental Quality (DEQ).
 - (e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Executive Director of the Oklahoma Department of Environmental Quality (DEQ).

I hereby certify that the wording of this instrument is identical to the wording specified in 40 CFR 264.151(j) United States Environmental Protection Agency approved amendment, for the State of Oklahoma, as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.



(Signature of Authorized Representative of Insurer)

Date: _____

10/26/14

Christopher Biddle, Vice President

Authorized Representative of Indian Harbor Insurance Company

c/o XL Insurance
505 Eagleview Boulevard
Suite 100
Exton, PA 19341-0636

OK-HAZWASTE (4/10)



Via FedEx

May 22, 2014

Carol Bartlett, Environmental Programs Specialist
Land Protection Division
Oklahoma Department of Environmental Quality
707 North Robinson Street
Oklahoma City, OK 73010

RE: Clean Harbors Financial Assurance
Revised Bond #K086449925

Dear Ms. Bartlett:

As we discussed, the above-referenced Bond Rider for the financial assurance for the Clean Harbors facilities in Oklahoma has been revised.

I had previously submitted a Rider, effective March 6, 2014, using the IPD of 1.015. After it was determined that the annual inflation increase should have been calculated, effective December 31, 2013, the closure, post-closure, and corrective action coverage amounts were recalculated using the IPD of 1.0179.

Going forward, the annual inflation increase date will be December 31.

Please contact me at 803-225-5459 or hodge.kathy@cleanharbors.com if you have any questions or need additional information.

Sincerely,

A handwritten signature in black ink that reads "Kathy Hodge".

Kathy Hodge
Manager, EHS Compliance Administration
Central Compliance

RIDER

TO BE ATTACHED TO AND FORM PART OF

FINANCIAL GUARANTEE BOND NO. **K08644925**
(Bond Type) *(Bond Number)*
IN FAVOR OF **STATE OF OKLAHOMA, DEPARTMENT OF ENVIRONMENTAL QUALITY**
(Obligee)
ON BEHALF OF **CLEAN HARBORS LONE MOUNTAIN, LLC; TULSA DISPOSAL, LLC**
(Principal)
EFFECTIVE **March 27, 2013**
(Original Effective Date)

IT IS AGREED THAT, in consideration of the original premium charged for this bond, and any additional premium that may be properly chargeable as a result of this rider.

The Surety, **WESTCHESTER FIRE INSURANCE COMPANY**,
hereby gives its consent to change;

Bond/Contract Amount

(of) the attached bond FROM: Old Bond Amount = \$36,312,431.30 to New Bond Amount = \$36,962,423.82
Waynoka, Oklahoma Closure Costs: \$13,310,781.54 to \$13,549,044.53
Waynoka, Oklahoma Post Closure Costs: \$17,511,984.41 to \$17,825,448.93
Waynoka, Oklahoma Corrective Action: \$3,648,838.35 to 3,714,152.56
Avard, Oklahoma Closure Costs: \$558,828.18 to \$568,831.20
Tulsa, Oklahoma Closure Costs: \$1,281,998.82 to \$1,304,946.60
Current Total Closure Costs: \$15,151,608.54 to \$15,422,822.33
Current Total Post Closure Cost Estimate: \$17,511,984.41 to \$17,825,448.93
Current Corrective Action Costs: \$3,648,838.35 to \$3,714,152.56
Total Penal Sum of Bond: \$36,962,423.82

REASON: Increased bond amount from \$36,312,431.30 to \$36,962,423.82


EFFECTIVE: **March 6, 2014**

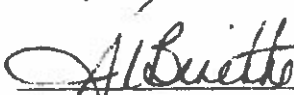
PROVIDED, however that the attached bond shall be subject to all its agreements, limitations, and conditions except as herein expressly modified, and that the liability of the Surety under the attached bond and under the attached bond as changed by this rider shall not be cumulative.

SIGNED, AND SEALED this 16th day of May, 2014.

CLEAN HARBORS LONE MOUNTAIN, LLC
Principal

WESTCHESTER FIRE INSURANCE COMPANY
Surety


Accepted By


Joline L. Binette, Attorney-in-fact

Financial Guarantee Bond

Date bond executed: December 31, 2012
Effective date: December 31, 2012
Principal: CLEAN HARBORS LONE MOUNTAIN, LLC., Route 2, Box 170, Waynoka, OK 73860, TULSA DISPOSAL, LLC., 5324 West 46th Street, South Tulsa, OK 74107
(insert legal name and business address of owner or operator)
Type of Organization: LIMITED LIABILITY CORPORATION [insert ``individual,``
``joint venture,`` ``partnership,`` or ``corporation``]
State of incorporation: OKLAHOMA
Surety(ies): WESTCHESTER FIRE INSURANCE COMPANY, 436 WALNUT STREET, PHILADELPHIA, PA 19106 [name(s) and business address(es)]
EPA Identification Number, name, address and closure and/or post-closure amount(s) for each facility guaranteed by this bond [indicate closure and post-closure amounts separately]:

LONE MOUNTAIN FACILITY, WAYNOKA, OKLAHOMA: EPA ID# OKD 065-438-376
CLOSURE COSTS: \$13,310,781.54
POST CLOSURE: \$17,511,984.41
CORRECTIVE ACTION: \$3,648,838.35

CLEAN HARBORS LONE MOUNTAIN, LLC, AVARD, OKLAHOMA: EPA ID# OK 00000 70136
CLOSURE COSTS: \$558,828.18

TULSA DISPOSAL, LLC., TULSA, OKLAHOMA: EPA ID# OKD 000-632-737
CLOSURE COSTS: \$1,281,998.82

CURRENT TOTAL CLOSURE COSTS: \$15,151,608.54

CURRENT POST-CLOSURE COST ESTIMATE: \$17,511,984.41

CORRECTIVE ACTION: \$3,648,838.35

TOTAL PENAL SUM OF BOND: \$36,312,431.30

SURETY'S BOND NUMBER: #K08644925

Know All Persons By These Presents, That we, the Principal and Surety(ies) hereto are firmly bound to the Oklahoma Department of Environmental Quality (hereinafter called DEQ), in the above penal sum for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally; provided that, where the Surety(ies) are corporations acting as co-sureties, we, the Sureties, bind ourselves in such sum ``jointly and severally`` only for the purpose of allowing a joint action or actions against any or all of us, and for all other purposes each Surety binds itself, jointly and severally with the Principal, for the payment of such sum only as is set forth opposite the name of such Surety, but if no limit of liability is indicated, the limit of liability shall be the full amount of the penal sum.

Whereas said Principal is required, under the Resource Conservation and Recovery Act as amended (RCRA), to have a permit or interim status in order to own or operate each hazardous waste management facility identified above, and

Whereas said Principal is required to provide financial assurance for closure, or closure and post-closure care, as a condition of the permit or interim status, and

Whereas said Principal shall establish a standby trust fund as is required when a surety bond is used to provide such financial assurance;

Now, Therefore, the conditions of the obligation are such that if the Principal shall faithfully, before the beginning of final closure of each facility identified above, fund the standby trust fund in the amount(s) identified above for the facility,

Or, if the Principal shall fund the standby trust fund in such amount(s) within 15 days after a final order to begin closure is issued by the DEQ Executive Director or a U.S. district court or other court of competent jurisdiction,

Or, if the Principal shall provide alternate financial assurance, as specified in subpart H of 40 CFR part 264 or 265, as applicable, and obtain the DEQ Executive Director's written approval of such assurance, within 90 days after the date notice of cancellation is received by both the Principal and the DEQ Executive Director from the Surety(ies), then this obligation shall be null and void; otherwise it is to remain in full force and effect.

The Surety(ies) shall become liable on this bond obligation only when the Principal has failed to fulfill the conditions described above. Upon notification by the DEQ Executive Director that the Principal has failed to perform as guaranteed by this bond, the Surety(ies) shall place funds in the amount guaranteed for the facility(ies) into the standby trust fund as directed by the DEQ Executive Director.

The liability of the Surety(ies) shall not be discharged by any payment or succession of payments hereunder, unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond, but in no event shall the obligation of the Surety(ies) hereunder exceed the amount of said penal sum.

The Surety(ies) may cancel the bond by sending notice of cancellation by certified mail to the Principal and to the DEQ Executive Director, provided, however, that cancellation shall not occur during the 120 days beginning on the date of receipt of the notice of cancellation by both the Principal and the DEQ Executive Director, as evidenced by the return receipts.

The Principal may terminate this bond by sending written notice to the Surety(ies), provided, however, that no such notice shall become effective until the Surety(ies) receive(s) written authorization for termination of the bond by the DEQ Executive Director.

In Witness Whereof, the Principal and Surety(ies) have executed this Financial Guarantee Bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below hereby certify that they are authorized to execute this surety bond on behalf of the Principal and Surety(ies) and that the wording of this surety bond is identical to the wording specified in 40 CFR 264.151(b), the United States Environmental Protection Agency approved amendment, for the State of Oklahoma, as such regulations were constituted on the date this bond was executed.

Principal: CLEAN HARBORS LONE MOUNTAIN, LLC., TULSA DISPOSAL, LLC.

[Signature (s)] _____

[Name (s)] _____

[Title (s)] _____

[Corporate seal] _____

Corporate Surety(ies)

[Name and address] WESTCHESTER FIRE INSURANCE COMPANY
436 WALNUT STREET, PHILADELPHIA, PA 19106

State of incorporation: COMMONWEALTH OF MASSACHUSETTS

Liability limit: \$104,497,000.00

[Signature(s)] 

[Name(s) and title(s)] Robert Shaw, Jr., Attorney-In-Fact

[Corporate seal]

[For every co-surety, provide signature(s), corporate seal, and other information in the same manner as for Surety above.]

Power of Attorney

WESTCHESTER FIRE INSURANCE COMPANY

Know all men by these presents: That WESTCHESTER FIRE INSURANCE COMPANY, a corporation of the Commonwealth of Pennsylvania pursuant to the following Resolution, adopted by the Board of Directors of the said Company on December 11, 2006, to wit:

"RESOLVED, that the following authority originates to the execution, for and on behalf of the Company, of bonds, undertakings, recognizances, contracts and other written commitments of the Company entered into the ordinary course of business (each a "Written Commitment"):

- (1) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise.
- (2) Each duly appointed attorney-in-fact of the Company is hereby authorized to execute any Written Commitment for and on behalf of the Company, under the seal of the Company or otherwise, in the extent that such action is authorized by the grant of powers provided for in such persons written appointment as such attorney-in-fact.
- (3) Each of the Chairman, the President and the Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to appoint in writing any person the attorney-in-fact of the Company with full power and authority to execute, for and on behalf of the Company under the seal of the Company or otherwise, such Written Commitments of the Company as may be specified in such written appointment, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (4) Each of the Chairman, the President and Vice Presidents of the Company is hereby authorized, for and on behalf of the Company, to delegate in writing any other officer of the Company the authority to execute, for and on behalf of the Company, under the Company seal or otherwise, such Written Commitments of the Company as are specified in such written delegation, which specification may be by general type or class of Written Commitments or by specification of one or more particular Written Commitments.
- (5) The signature of any officer or other person executing any Written Commitment in appointment or delegation pursuant to this Resolution, and the seal of the Company, may be affixed by facsimile on such Written Commitment or written appointment or delegation.

FURTHER RESOLVED, that the foregoing Resolution shall not be deemed to be an exclusive statement of the powers and authority of officers, employees and other persons to act for and on behalf of the Company, and such Resolution shall not limit or otherwise affect the exercise of any such power or authority otherwise validly granted or vested.

Does hereby nominate, constitute and appoint Heidi Rodzen, Joline J. Binette, Nancy Castonguay, Robert Shaw, Jr., all of the City of LEWISTON, Maine, each individually if there be more than one named, its true and lawful attorney-in-fact, to make, execute, seal and deliver on its behalf, and as its act and deed any and all bonds, undertakings, recognizances, contracts and other writings in the nature thereof in penalties not exceeding Forty million dollars & zero cents (\$40,000,000.00) and the execution of such writings in pursuance of these presents shall be as binding upon said Company, as fully and amply as if they had been duly executed and acknowledged by the regularly elected officers of the Company at its principal office.

IN WITNESS WHEREOF, the said Stephen M. Haney, Vice-President, has hereunto subscribed his name and affixed the Corporate seal of the said WESTCHESTER FIRE INSURANCE COMPANY this 12 day of October 2012.

WESTCHESTER FIRE INSURANCE COMPANY



Stephen M. Haney
Stephen M. Haney, Vice President

COMMONWEALTH OF PENNSYLVANIA
COUNTY OF PHILADELPHIA

On this 12 day of October, AD 2012 before me, a Notary Public of the Commonwealth of Pennsylvania in and for the County of Philadelphia came Stephen M. Haney, Vice-President of the WESTCHESTER FIRE INSURANCE COMPANY to me personally known to be the individual and officer who executed the preceding instrument, and he acknowledged that he executed the same, and that the seal affixed to the preceding instrument is the corporate seal of said Company; that the said corporate seal and his signature were duly affixed by the authority and direction of the said corporation, and that Resolution, adopted by the Board of Directors of said Company, referred to in the preceding instrument, is now in force.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Philadelphia the day and year first above written.



James E. Shantz
Notary Public

I, the undersigned Assistant Secretary of the WESTCHESTER FIRE INSURANCE COMPANY, do hereby certify that the original POWER OF ATTORNEY, of which the foregoing is a substantially true and correct copy, is in full force and effect.

In witness whereof, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of the Corporation, this 31st day of December 2012.



William L. Kelly
William L. Kelly, Assistant Secretary

THIS POWER OF ATTORNEY MAY NOT BE USED TO EXECUTE ANY BOND WITH AN INCEPTION DATE AFTER October 12, 2013.

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 9

CORRECTIVE MEASURES STUDY

August 26, 1998

Mr. H.A. Caves, Chief
Hazardous Waste Management Service
Department of Environmental Quality
1000 N.E. Tenth Street
Oklahoma City, Oklahoma 73117-1212

Ms. Jane N. Saginaw, Director
U.S. Environmental Protection Agency, Region 6
Hazardous Waste Management Division (6H)
1445 Ross Avenue, Suite 1200
Dallas, Texas 75203-2733

Re: **Laidlaw Environmental Services (Tulsa), Inc.**
5324 West 46th Street South, Tulsa, Oklahoma 74107
EPA ID No. OKD 000632737

Corrective Measures Study (CMS) Report, Laidlaw Environmental Services (Tulsa), Inc., 5354 West 46th Street South, Tulsa, Oklahoma

Dear Mr. Caves and Ms. Saginaw:

Per Mr. Greg Garber of the Oklahoma Department of Environmental Quality (ODEQ), Laidlaw Environmental Service is submitting two hardcopies and one 3.5" disk copy of the referenced document to ODEQ and one hard copy to the USEPA.

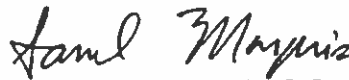
The purpose of the CMS is to identify and evaluate potential remedial options for the groundwater at the Laidlaw Environmental Services (Tulsa), Inc. facility, which has been impacted with volatile organic compounds (VOCs). The CMS presents recommendations for which corrective measures alternatives should be implemented at the facility based on the results of the corrective measures evaluation process.

If you have any questions on the report or any other issues relating to the project, please contact Bill Ross, Manager Regulatory Affairs, at (408) 451-5082.

Sincerely,



Hans M. Daniels
Environmental Engineer



Samuel Marquis, R.G., P.G.
Project Hydrogeologist

enclosure

cc: Bill Ross, San Jose, CA
Sara Brothers, Albuquerque, NM
Ron Robertson, Wichita, KS
Rusty Dunn, Wichita, KS (letter only)
Jim Bratcher, Tulsa, OK

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**CORRECTIVE MEASURES STUDY (CMS) REPORT
LAIDLAW ENVIRONMENTAL SERVICES (TULSA), INC.
5354 WEST 46TH STREET SOUTH
TULSA, OKLAHOMA**

**EPA ID NO. OKD000632737
HWSA PERMIT NO. 3572028**

**Prepared for:
Laidlaw Environmental Services (Tulsa), Inc.
5324 West 46th Street South
Tulsa, Oklahoma 74107**

August 25, 1998

**Prepared by:
Laidlaw Environmental Services
Consulting Services
5665 Flatiron Parkway
Boulder, Colorado, 80301**

TULSA DISPOSAL, LLC

TULSA, OKLAHOMA

ATTACHMENT 10

CORRECTIVE MEASURE OPERATION AND MAINTENANCE

1.0 Corrective Measure Operations and Maintenance

1.1 Biweekly System Inspections

The groundwater remediation system is inspected at least twice per month to insure that the system is in proper working order. The control panel is checked to confirm that the groundwater pumps are moving groundwater to the 500,000-gallon storage tank V-69. If the system is down, due to a tripped breaker or a high level alarm situation in one of the groundwater pumps, the system is re-set. Recovery well floats are checked during this time to insure that they are free to move, not allowing a false high level alarm situation to occur.

The tank level in V-69 is monitored during these inspections to insure that sufficient freeboard is maintained in the tank. Also the secondary containment of the treated groundwater tank V-68 is monitored and if collected precipitation is present, the sump pump is turned on to remove the rainfall into tank V-68.

1.2 Groundwater Treatment System

Groundwater that collects in the two trenches is pumped to the un-treated groundwater tank, V-69, via a 2-inch HDPE pipe that has been encased in a 4-inch PVC outer casing. The underground line is approximately 600 feet in length. The underground line begins at RS-4 and travels south to tank V-69. The depth of this line is approximately 30 inches. The underground line rises above ground level on the east side of V-69 via a transition riser that is connected to a 2-inch PVC line that rises the full length of the tank and spills over into the tank. A 2-inch PVC ball valve is located at the top of the tank where the groundwater enters the tank.

Tank V-69 is approximately 500,000 gallons in volume. It is an open top tank with an outer tank structure that provides secondary containment. The distance between the two tank walls is approximately 3 feet and is sealed at the top to provide a cat walk along the top of the tank. There are four valves around the tank that access the containment space between the walls of the tanks in the event that the primary tank were to leak in any way. The tank is equipped with a Varec float level gauge. Tank V-69 is approximately 31 feet in height.

Groundwater is treated in batches of approximately 250,000 gallons. Throughout the year, 6 to 7 batches of wastewater are treated and discharged; therefore, the frequency of discharge averages about every other month. Once the volume in this tank is 250,000 to 350,000 gallons, a batch is treated.

Collected groundwater in tank V-69 passes through a carbon adsorption unit via a 3-inch pipe approximately 10 inches from the bottom of the tank. The untreated groundwater first passes through a basket strainer with a 250-micron mesh sock filter upstream from the carbon adsorption unit. The water is pumped through a centrifugal pump at the water treatment unit through the carbon adsorption unit, which is approximately 6 feet in height by 5 feet in diameter. The unit holds approximately 2,000 pounds of granular activated carbon, Type 220R (8 x 30). Once the water passes through the unit, it travels via a 3-inch line to tank V-68, which is the treated or “batch” water tank. Treated groundwater enters through the top of the tank. In the event that the water requires further treatment, water from tank V-68 can be pumped back through the activated carbon bed and re-circulated to tank V-68.

The activated carbon used is changed out on an annual basis, usually in the summer months. The system is allowed to drain for several day to remove water and the carbon is then vacuumed out though a portable wet/dry vacuum head that can be placed over a 55-gallon drum. The carbon is then transferred from the drum into a cubic yard bag or “supersack,” labeled as hazardous waste and placed on the Facility’s North Drum Pad. The waste is picked up and transported to the Clean Harbors Kansas, LLC Facility in Wichita, Kansas within 90 days and shipped to a permitted hazardous waste facility for proper disposal. New carbon is placed into the treatment unit through an opening or hatch in the top with the use of a forklift. The cubic yard sacks are lifted over the hatch opening and the draw string at the bottom is untied allowing the activated carbon to flow into the unit.

1.3 Groundwater Discharge to POTW

The Tulsa Disposal Facility has obtained a POTW discharge permit from the City of Tulsa, Pretreatment Section. Permit # 3620 was first obtained in August 1991. The facility has renewed its permit each year since August 1991. The facility is currently operating under the most recent permit issued April 1, 2003.

As required by the City of Tulsa POTW permit, water discharged from tank V-68 is sampled at the designated sample chamber located approximately 75 feet west and 6 feet north of the south double swing gate on Beard Avenue. Water is pumped out of the tank via a centrifugal pump through a 3-inch aboveground line which enters the sewer line approximately 30 feet west of the sample chamber.

The effluent sample is collected at least once per year and analyzed for the following parameters:

<u>Parameter</u>	<u>Analytical Method</u>	<u>Sample Type</u>
pH	150.1	Grab
SGT-HEM Oil & Grease	1664	Grab
Cyanide (T)	335.3	Grab
Arsenic (T)	206.2	Composite

Cadmium (T)	213.1	Composite
Chromium (T)	218.1	Composite
Copper (T)	220.1	Composite
Lead (T)	239.1	Composite
Mercury (T)	245.1	Composite
Molybdenum (T)	246.1	Composite
Nickel (T)	249.1	Composite
Silver (T)	272.1	Composite
Zinc (T)	289.1	Composite

As required, an ODEQ certified laboratory is used for testing samples required by the facility's permit.