Appendix B-7

Closure Plan

Revised March 2016

SCHEDULED CLOSURE PLAN

US ECOLOGY NEVADA

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SECHULED CLOSURE PLAN

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APPENDIX

Appendix 15-A Closure Cost Estimate

15.0 SCHEDULED CLOSURE PLAN

This Scheduled Closure Plan has been prepared by US Ecology Nevada (USEN) to comply with the requirements of (1) 40 CFR §§264.111, 264.112 (a) to (c) and 40 CFR §270.14 (b)(13), as adopted by the Nevada Division of Environmental Protection (NDEP), and (2) the Approval for Commercial Storage and Disposal of Polychlorinated Biphenyls (PCBs) issued by the United States Environmental Protection Agency (US EPA). This plan describes the procedures USEN will follow to perform a scheduled partial and/or final closure at any point during the active life of the facility. Scheduled final closure of individual units or the entire facility are planned activities and are expected to take place as part of normal operations.

USEN will implement this plan for the following existing units at time of closure:

- Hazardous Waste Land Disposal Trench 12
- Hazardous Waste Land Disposal Trench 13
- Polychlorinated Biphenyl (PCB) Processing and RCRA Storage Building/PCB Tank Farm/Truck Loading Pad
- Batch Stabilization Units
- Bin Storage Area
- Evaporation Tank (Truck Wash Pad)
- Dry Hazardous Waste Storage Areas 2 and 3
- Container Management/Stabilization Building/Satellite Laboratory/Truck Unloading Docks

15.1.0 CLOSURE PERFORMANCE STANDARD

Closure:

- Minimizes the need for further maintenance,
- Minimizes the potential for post-closure escape of hazardous waste or constituents to the surrounding environment, and
- Complies with the closure requirements in 40 CFR Part 264 for each unit.

15.2.0 PARTIAL CLOSURE

Closure of certain hazardous waste management units may be necessary prior to final closure of the entire facility. Circumstances that may prompt partial closure are:

- Completion of filling in Hazardous Waste Land Disposal Trench 12
- Completion of filing Phases of Hazardous Waste Land Disposal Trench 13
- Replacement of units beyond useful service life

- Unanticipated failure of units/structures

Partial closure of any unit will be completed within 180 days after final receipt of hazardous waste in that unit following the same procedures described for final closure with regards to removal of waste and residues, unit decontamination, dismantling and disposal.

If partial closure is required for Phases of Hazardous Waste Land Disposal Trench 13, USEN will notify the NDEP Administrator and USEPA Region IX RCRA Facilities Management Office at least 60 days prior to beginning closure.

15.3.0 MAXIMUM WASTE INVENTORY

The maximum potential inventory of hazardous waste expected to be at the facility at any time over the active life of the facility is identified in Table 15-1. This maximum was derived by reviewing historical inventory records and projecting the historical maximum percentage for permitted and proposed unit inventories. However, waste inventory at a time of scheduled closure should be minimal. The only waste requiring off-site disposal after all units are closed should be that generated during closure.

15.4.0 SCHEDULE FOR CLOSURE

A closure schedule with the projected activities and required closure time is included in Table 15-2.

15.4.1 Time Allowed for Closure

Treatment and storage unit closure activities are expected to be completed within 180 days after receiving the final volume of hazardous waste at the facility (or at the individual unit when partial closure is anticipated). Within 90 days after receiving the final volume of hazardous waste, waste inventory in storage or treatment units will be treated on-site and disposed of in the Landfill, or removed for off-site disposal. The units will be dismantled and disposed of or decontaminated, in accordance with the procedures described in Sections 15.6.2 and 15.7.0.

Landfill closure activities are expected to be completed in one year following final waste placement. Remaining portions of the Landfill will be backfilled and a final cover placed as described in Section 15.6.1.

Final inspections and certifications should be performed within 30 days following unit closure completion. Should additional time be necessary, USEN will submit a permit modification requesting a longer period.

15.4.2 Closure Time Extension

If treatment, removal or disposal of the final volume of hazardous waste and completion of closure activities require a longer time, USEN may request modification of the approved closure plan, or otherwise petition the NDEP for approval of a closure time extension. The extension request will include a demonstration that:

- Closure activities require longer than the days allowed,
- The unit has capacity to receive additional waste,
- There is a reasonable likelihood that a party other than USEN will commence operation of the facility within one year, or
- Closure will interfere with continued operation.

15.5.0 AMENDMENTS TO SCHEDULED CLOSURE PLAN

USEN will submit a written request to the NDEP and to the Permits Section, Land Division, US EPA Region IX for a modification of the approved Scheduled Closure Plan, as necessary, whenever the following occurs:

- Changes in operating plans or facility design materially affect the Scheduled Closure Plan
- In conducting partial or final closure activities, unexpected events require a modification to the approved Scheduled Closure Plan.

15.6.0 CLOSURE PROCEDURES

15.6.1 Closure of Landfill

It is assumed that Landfill closure will occur after design capacity has been achieved. If closure occurs prior to reaching design capacity and prior to completion of below-grade filling, available air space should be backfilled from facility stockpiles. Backfill should continue until outer above-grade slopes are 20H:1V minimum, and up to 3H:1V on all faces. At no point shall the waste exceed an elevation of 2860 feet above the North American Vertical Datum of 1988 (ft NAVD88).

If Landfill closure occurs after below-grade filling is complete, but prior to achieving final design grades, use of soil stockpiles might be necessary to create manageable above-grade side slopes and contours, acceptable for final cover placement. As previously stated, above-grade slopes should be at least 20H:1V and up to 3H:1V on all faces, and at no point shall waste exceed an elevation of 2857 ft NAVD88.

When waste and backfill are completed in accordance with the prior criteria or when final design waste elevations are reached, the final cover will be installed. The final cover will consist of a layered soil system.

It is assumed that the contractor will install the approved cover system, and will follow the specified quality assurance and quality control procedures.

Control of percolation into a closed trench will be provided by constructing a cover that holds infiltrated water in the evaporative zone of the cover until it is returned to the atmosphere or sheds water to final cover and ultimately site drainages. The cover has been designed to virtually eliminate percolation into the trench.

The final Landfill cover for USEN Trenches 12 and 13 satisfy the regulatory requirements for final closure of a Landfill cell and are fully consistent with the provisions of 40 CFR 264.110, the performance standards of 40 CFR 264.111, and the following requirements of 40 CFR 264.310(a) dealing with Landfill closure:

- Provide long-term minimization of migration of liquids through the closed Landfill;
- Function with minimum maintenance;
- Promote drainage and minimize erosion or abrasion of the cover; and
- Accommodate settling and subsidence so that cover integrity is maintained.

15.6.1.1 Evaporative Cover Characteristics

The cover is appropriate for an arid region, and uses the moisture retention properties of native soils to contain and store infiltrating moisture (precipitation) until the natural processes of evaporation and plant transpiration remove the stored moisture and release it to the atmosphere. The cover is protective of human health and the environment, and offers long-term benefits when compared to conventional landfill cover types that incorporate compacted clay or synthetic materials as low-permeability components. These benefits include, but are not limited to:

- use of easily obtained construction materials,
- relative simplicity of construction,
- reduced complexity of quality assurance/quality control programs, and
- long-term cover integrity and stability.

From bottom to top, the components of the arid region cover to be used for Trenches 12 and 13 are as follows.

Interim Cover Soil Layer. The lower layer of the final cover is a lightly compacted native soil layer at least 12-inches (1.0 foot) thick and extending across the cover to the natural ground surface on all sides of the trenches.

Final Cover Soil Layer. The upper layer of the final cover is a lightly compacted soil layer at least 24-inches (2.0 feet) thick and extending across the cover to the natural ground surface on all sides of the trenches. In conjunction with the Interim Cover Layer, it retards the downward movement of

infiltrating water by providing temporary water-storage, and allowing stored water to be returned to the atmosphere by evaporation and plant transpiration.

Mathematical models predicted that a three-feet (36-inch) thick monolithic cover will prevent significant percolation of fluids through the cover and into waste. The results also indicate that nearly all of the precipitation that enters returns to the atmosphere through the combination of evaporation and transpiration rather than infiltrating deeply into the cover and percolating into waste. These results likely are conservative because no vegetation was considered in the models, so the evaluation of "evapotranspiration" (the combined effect of evaporation and plant transpiration) actually was limited to consideration of evaporation only.

Drainage Features. The final cover design includes a series of lateral drainages and down-drains (flumes) that shed precipitation that does not infiltrate. The goal of the drainages is to collect sheet flow prior to development of concentrated flow. On 3H:1V sideslopes, this is accomplished with lateral drainages at a maximum spacing of 100 feet, over waste. On the 20V:1V upper deck this is accomplished with surface berms. Down-drains are protected flumes that are designed to remove water, once concentrated with lateral drainages and berms, without causing erosion.

15.6.1.2 Evaporative Cover Specifications

Soil materials for final cover construction will consist of natural soil obtained from USEN stockpiles and/or from future trench excavations, supplemented as needed with imported soil materials. Native and imported materials will be screened and mixed, as needed, to obtain material of satisfactory grain size.

The interim soil layer will be a low density layer; this is important to the moisture holding capacity and vegetation establishment properties of the cover. Care must be taken to minimize over-compaction that could lead to reduced cover effectiveness. The interim layer should not be less than 12 inches thick and should be comprised of natural soil materials that contain no grain sizes larger than 6.0 inches. There is no compaction specification for this material, which will be placed as above-grade waste disposal proceeds.

The upper component of the final trench cover will be a lightly compacted soil layer that varies in thickness to allow the cover to be shaped according to the approved design; however, the layer everywhere should be at least 24-inches (2.0 feet) thick. This layer should extend across the cover to the natural ground surface on all sides of Trenches 12 and 13.

The gradation specifications for the final cover layer are as follow:

- no materials larger than 6.0 inches[1],
- 90 percent smaller than 1.0 inch, and
- not less than 5.0 percent passing the #200 sieve.

The goal of final cover placement is to achieve a minimal in-place density. Experience from final cover placement on Trench 11 indicates that maximum dry density (MDD) by ASTM D 1557 is feasible at approximately 80 percent (plus or minus approximately 5%) and a moisture content between 2.0 and 4.0 percent less than the OMC. The low density compaction requirement of the soil cover is important for the moisture holding capacity of the soil. Over-compaction during initial construction could lead to reduced moisture holding effectiveness and inhibit establishment of vegetation, and should be prevented. Areas of the final cover layer that became overly compacted, such as from repeated vehicle or equipment passage, must be loosened by shallow ripping. Over time, material in the final cover will reach a density similar to those of native materials.

Soil materials for final cover construction shall consist of sand and gravel soils obtained from USEN stockpiles and the Trench 13 excavation area. Natural soil materials, typical of all previous disposal cell excavations at the facility, are relatively coarse grained, alluvial valley-fill sands and gravels, with variably abundant clay and silt-size particles, common cobble-size particles (i.e., particles larger than 3.0 inches in dimension), and rare boulders (i.e., particles larger than 12 inches in dimension). Sand-size particles (i.e., particles between 0.003 and 0.2 inches in dimension) and gravel-size particles (i.e., particles between 0.2 and 3.0 inches in dimension) comprise the vast majority of almost any sample of soil materials from the uppermost 75 feet of the valley-fill deposits, and thus make up the majority of natural materials determined to be acceptable for final cover construction. It is these materials, and particularly those ranging in the sand and silt grain sizes, that provide most of the moisture-holding capacity that is needed for the proper long-term functioning of a water-balance type landfill cover. The coarser-grained components – gravels, cobbles, and even rare boulders – do not enhance the moisture holding capacity of the final cover, but do contribute to overall cover stability and capacity to resist erosion by wind and water. Thus, when in proper proportions, all textural components of the final cover soils contribute to the long-term performance of the landfill cover.

Cover soil placement should be done using low-ground pressure equipment, such as a wide-tracked bulldozer, instead of heavy wheeled equipment that could cause linear surface depressions. Over-compaction (i.e., areas exceeding the density specification for cover materials) could reduce the water-holding characteristics of the cover and the ability of the cover to support

[1] Materials of 6.0 inch and larger dimension might be judged acceptable in the final cover layer by the design or quality assurance engineer, if '*de minimis*' (or minimal) by visual observation and rarely, if ever, in grain-to-grain contact.

establishment of vegetation. Once the cover is completed, vehicular traffic on the soil cover should be limited. Also, construction materials and equipment should not be stored on the cover during or after construction. Areas that become over-compacted because of initial cover soil placement or equipment traffic must be loosened by ripping. Ultimately, such ripping to achieve acceptable soil density might be required over the final cover surface.

15.6.1.3 Post Closure Performance Verification

Verification of post-closure performance of the final cover will be provided by the combination of leachate monitoring (quality and quantity), Lysimeter monitoring, and groundwater monitoring.

Leachate monitoring will use Trench 11, Trench 12, and Trench 13 sumps to remove leachate from the Landfill units. Records of leachate removal will be tabulated and evaluated to determine whether leachate production rates decline following facility closure. Leachate depth measurements will be recorded in spreadsheets in order to verify that fluid heads are below one foot on the primary liner, as required by the 40 CFR §264.301(a)(2).

A drainage Lysimeter was constructed during the closure of Trench 11. The Lysimeter provides performance monitoring of the alternate final cover system. The drainage Lysimeter is used to verify that unacceptable infiltration of moisture does not penetrate the landfill cover. A second lysimeter is planned for installation following the first phase of Trench 13 closure.

Performance monitoring of the final covers for Trench 11 and Trench 12 shall be conducted in accordance with the "Final Cover Performance Monitoring and Protocol, Disposal Trenches 11 and 12, US Ecology Nevada, Inc., November 2009".

A Final Cover Performance Monitoring System and Protocol Plan (Performance Monitoring Plan) for Trench 13 shall be submitted to EPA and NDEP at least 180 calendar days prior to the anticipated beginning of closure activities for Phase A of Trench 13. The Performance Monitoring Plan shall be revised in accordance with comments from EPA and NDEP, and shall be implemented upon receipt of written approval from these agencies.

Closure of the landfill cells will be considered complete when the final covers are completed in accordance with design specifications and following completion of closure certification, as discussed in Section 15.11.0. Post-closure inspection and maintenance will be performed in the same manner as for other closed Landfill units at the facility. The Landfill final covers are expected to provide long-term, low maintenance protection to the environment.

Construction of the final cover for Trench 13 will be conducted in accordance with cell specifications included in the Landfill Engineering Design Report of the 2016 Permit Renewal Application. A

detailed evaluation of the proposed final cover performance is presented in the following reports, which have been previously presented to the NDEP, and are included herein by reference.

- The design of the proposed final cover is described in detail in the *Trench 11 Above-Grade Disposal Facility Design and Construction Quality Assurance Plan*, revised May 6, 1999, by AquAeTer, Inc.
- *Erosion Calculations for Above Grade Disposal Cell*, dated July 28, 1987, prepared by Dr. James L. Grant and Associates.
- *Cell 10 Cap Design Analysis Using Wind Erosion Equation* prepared by US Ecology in March 1991.
- *Supplement – Landfill Report for Trench 12, October 2007,* AquAeTer, Inc.
- *Design Basis and Construction Specifications for Trenches 11 and 12 Final Covers, April 2008,* AquAeTer, Inc.
- Landfill Engineering Report for Trench 13, March 2016, AquAeTer, Inc., Section 19, RCRA Part B Permit Application.

15.6.2 Closure of Treatment and Storage Units

For purposes of the closure procedures discussion, treatment and storage units are grouped according to their location, as follows:

- PCB Processing and RCRA Storage Building/PCB Tank Farm/Truck Loading Pad
- Staging area-portion of the former LTTD concrete pad (non-storage, support area for PCB Processing Building)
- Batch Stabilization Units
- Bin Storage Area
- Evaporation Tank (Truck Wash Pad)
- Dry Hazardous Waste Storage Areas 2 and 3
- Container Management/Stabilization Building/Satellite Laboratory/Truck Unloading Docks

15.6.2.1 PCB Processing and RCRA Storage Building Area (CMU #1)/PCB Tank Farm (T-4 to T-7)/Truck Loading Pad

All liquid PCBs in storage at the time of scheduled closure will be transported to a Toxic Substance Control Act (TSCA) authorized disposal facility. PCB solid materials will be removed and disposed of in the on-site Landfill cell. All RCRA waste inventory in storage will be treated as needed and disposed of on-site, or transported to a RCRA-authorized off-site facility for treatment and/or disposal.

The steel building walls and any contaminated equipment will be dismantled and disposed of in the PCB portion of the on-site Landfill disposal cell. The entire PCB processing facility, including the building's concrete floor and underlying liner system, PCB Tank Farm secondary containment and Truck Loading Pad, will be excavated and disposed of in the PCB portion of the on-site Landfill disposal cell. The concrete will be broken up into manageable pieces using appropriate equipment. The containment system drainage material will be removed and transferred to the PCB portion of the on-site Landfill disposal cell. The underlying liner system will be cut and folded for disposal in the on-site Landfill disposal cell.

Sampling will be performed in accordance with 40 CFR 761.283(b). Samples will be obtained from the soil underlying the building containment system, PCB Tank Farm and Truck Loading Pad to demonstrate clean closure. The area to be sampled will be marked out in 1.5 m x 1.5 m grids; PCB samples will be taken from locations within each grid which show signs of visible staining or where inspection of the liner indicates possible deterioration. If no staining/deterioration is evident, simple random location selection should be performed. Metal and VOC samples will be collected from locations with the highest probability for contamination (i.e., areas with visible staining or where visual inspection of the liner indicates possible deterioration). If no staining/deterioration is evident, simple random location selection should be performed. The estimated number of samples required to demonstrate clean closure is identified in Table 15-3. Samples will be analyzed for the parameters specified in Table 15-4 following U.S. Environmental Protection Agency (EPA) SW-846 methods. The most current version analytical methods will be used at the time of sampling and analyses. At this time, the methods are 3540C (Soxhlet Extraction) and 8082 (PCB Arochlor analysis). Soil will be removed from the site stockpile and sampled to obtain background levels. Soil samples that have (1) concentrations of metals and VOCs that are statistically at or below background levels, and (2) concentrations of total PCBs below 1 mg/kg will be considered to have met the clean closure performance standard. Because of the presence of a liner system, no soil contamination is anticipated.

Soil removal will be initiated should any of the samples not meet the clean closure performance standards listed above. Soil removal will be conducted in three-inch increments followed by confirmatory testing until clean closure is obtained. Additional testing will be limited to those constituents exceeding background concentrations.

15.6.2.2 Bin Storage Area (CMU #7)

Waste inventory in the Bin Storage area will be treated and disposed of on-site, or transported to a RCRA-authorized hazardous waste management facility. The concrete pad will be decontaminated and left in place, or removed to the on-site Landfill disposal cell.

If removal of the pad is determined necessary, the procedures described in Section 15.6.2.1 will be followed for removal of the concrete pad, removal of contaminated soil (if any) and demonstration of clean closure.

If the decontamination option is selected, decontamination of the unit will follow the procedures described in Section 15.7.0, as applicable.

15.6.2.3 Batch Stabilization Units (T-1, T-2, T-3, T-18 & T-19)

Waste inventory in the stabilization units will be treated and placed in the on-site Landfill disposal cell or transported to an authorized off-site facility for treatment and/or disposal.

The stabilization vessels will be decontaminated and left in place, or washed, dismantled and placed in the on-site Landfill disposal cell. The concrete silo foundation will be removed for off-site treatment and disposal. The procedures described in Section 15.6.2.1 will be followed for removal of the foundation, containment system, and any contaminated soil, and demonstration of clean closure.

If the decontamination option is selected, decontamination of the unit will follow the procedures described in Section 15.7.0, as applicable.

15.6.2.4 Evaporation Tank (Truck Wash Pad (T-11))

Liquid waste inventory in the unit will be removed and sent off site to an authorized disposal facility. Should partial closure be necessary for this unit, the waste inventory will be removed and solidified/stabilized in the Batch Stabilization Unit.

The concrete pad will be removed for off-site treatment and disposal. The procedure described in Section 15.6.2.1 will be followed for removal of the liner system, removal of contaminated soil (if any), and demonstration of clean closure.

15.6.2.5 Dry Hazardous Waste Storage Areas 2 and 3 (CMU #6 & CMU #17)

Waste inventory in the Dry Hazardous Waste Storage Area will be treated and disposed of in the on-site Landfill cell, or transported to a RCRA-authorized hazardous waste management facility. The pad area will be excavated and removed to the on-site Landfill disposal cell.

Samples will be obtained to demonstrate clean closure. Sample locations will be selected in areas with the highest probability for contamination (i.e., areas where visible staining is present). If no visible staining is present, samples will be chosen at random. The estimated number of samples required to demonstrate clean closure is identified in Table 15-3. Samples will be analyzed for the parameters specified in Table 15-4 following U.S. Environmental Protection Agency SW-846

methods, and the results statistically compared to background concentrations. Samples where background concentrations are obtained within a statistically acceptable margin will be considered to have met the clean closure performance standard. Soil removal will be initiated should any of the samples indicate a statistically significant increase over background values for any constituent. Soil removal will be conducted in three-inch increments followed by confirmatory testing until clean closure is obtained. Additional testing will be limited to those constituents exceeding background concentrations.

15.6.2.6 Container Management/Stabilization Building (CMU #16)/Satellite Laboratory/Truck Unloading Docks

All wastes in storage at the time of a scheduled closure will be treated and disposed on-site or transported to an appropriately authorized TSDF.

The steel building walls and any contaminated equipment will be decontaminated or dismantled and disposed of in the appropriately permitted Landfill cell. If structure removal is required, the entire building including the floor shall be excavated and disposed of as described below. The Truck Unloading Docks and the awning over the west Truck Unloading Dock will also be removed and disposed in the on-site Landfill cell.

Sampling will be performed in accordance with 40 CFR 761.283(b). Samples will be obtained from the soil underlying the Building containment system, Satellite Laboratory, and Truck Unloading Docks to demonstrate clean closure. The area to be sampled will be marked out in 1.5 m x 1.5 m grids; PCB samples will be taken from locations within each grid which show signs of visible staining or where inspection of the liner indicates possible deterioration. If no staining/deterioration is evident, simple random location selection should be performed. Metal and VOC samples will be collected from locations with the highest probability for contamination (i.e., areas with visible staining or where visual inspection of the liner indicates possible deterioration). If no staining/deterioration is evident, simple random location selection should be performed. The estimated number of samples required to demonstrate clean closure is specified in Table 15-3. Samples will be analyzed for the parameters specified in Table 15-4 following U.S. Environmental Protection Agency (EPA) SW-846 methods, and as specified in Section 15.6.2.1. Soil will be removed from the site stockpile and sampled to obtain background levels. Soil samples that have (1) concentrations of metals and VOCs that are statistically at or below background levels, and (2) concentrations of total PCBs below 1 mg/kg will be considered to have met the clean closure performance standard. Because of the presence of secondary containment, no soil contamination is anticipated.

Soil removal will be initiated should any of the samples not meet the clean closure performance standards listed above. Soil removal will be conducted in three-inch increments followed by

confirmatory testing until clean closure is obtained. Additional testing will be limited to those constituents exceeding background concentrations.

If the decontamination option is selected, decontamination of the unit will follow the procedures described in Section 15.7.0, as applicable.

Waste inventory in the Stabilization Units will be treated and placed in the on-site Landfill cell or transported to an authorized off-site facility for treatment and/or disposal.

The stabilization vessels will be decontaminated and left in place, or washed, dismantled and placed in the on-site Landfill disposal cell. The procedures described in this section will be followed for removal of the foundation, containment system, and any contaminated soil, and demonstration of clean closure.

All accumulated wastes present in the Satellite Laboratory at the time of scheduled closure will be treated and disposed on-site or sent off site to an authorized TSDF. If structure removal is required, the entire building including the floor shall be excavated and disposed of as described above.

Samples will be obtained from the soil underlying the Satellite Laboratory to demonstrate clean closure, as described above. No PCB samples will be collected since the laboratory does not handle PCBs.

15.7.0 DECONTAMINATION OF EQUIPMENT AND STRUCTURES

At the time of closure, USEN will evaluate the economic feasibility of conducting clean closure of treatment/storage units and structures. In addition to the economic feasibility of decontamination, USEN will evaluate the condition of each unit or structure to determine the presence of significantly deteriorated areas, which could dictate the need for unit removal and disposal. Should the decontamination option be selected, the following steps will be taken.

- The interior surfaces of piping, valves, pumps and other ancillary equipment associated with tank systems will be cleaned by flushing with a detergent wash and rinsing with tap water. If the facility determines that a detergent wash is not adequate, other appropriate decontamination methods may be employed (e.g., solvent wash, steam cleaning). Wash waters will be drained to the tank for subsequent removal.
- Interior tank surfaces will be pressure washed using water and cleaning agents followed by triple rinsing with tap water. Wash waters will be collected from the bottom of the tank and removed using vacuum equipment or by pumping to a tanker truck for off-site disposal.

- Tank surfaces will be visually inspected to determine whether residues have been completely removed. If residues are visually detected, Step 2 will be repeated.
- Concrete floors and structures will be cleaned with an industrial floor scrubber. The floors will be pressure washed and triple rinsed. The entire surface will be visually inspected to ensure removal of visually detectable residues. Wash waters generated during decontamination will be removed with vacuum equipment or by pumping to a container or tanker truck for off-site disposal.
- Following decontamination and visual inspection of all tanks and structures, a final rinse with clean tap water will be performed. Decontamination will be verified by collecting and submitting one rinsate sample from each unit/structure for analysis. Sampling and analysis will be conducted following procedures recommended by the version of EPA SW-846 that is applicable at the time of closure. Decontamination verification samples will be analyzed for the parameters identified in Table 15-4. For structures handling PCBs, an appropriate number of wipe samples will be collected from the walls, floor, and pans (if applicable) to demonstrate that PCB levels are below 10 µg/100 cm^2. For unsealed concrete surfaces, concrete core samples should be collected instead of wipe samples to demonstrate that PCBs meet the 1 mg/kg closure limit. If core samples are required, contact US EPA Region IX for the latest guidance on collecting concrete core samples.
- Heavy equipment and unloading docks used for handling waste shall be cleaned with a high-pressure water cleaner until all visible contamination has been removed. If such cleaning is physically impossible or economically unfeasible, the equipment or applicable parts thereof will be properly disposed of in the Landfill cell.

Decontamination rinse water will be statistically compared to a background sample of tap water (metals and VOCs only). If statistically significant parameters are detected in the rinse water, the decontamination steps described above will be repeated until the statistical comparison is met.

15.8.0 GROUNDWATER MONITORING

For purposes of developing the cost estimate it has been assumed that one groundwater monitoring event will take place during the closure period, and be conducted following permitted procedures in place just prior to closure.

15.9.0 LEACHATE COLLECTION

The leachate generated during the closure period will be transported to an off-site disposal facility.

15.10.0 RUN-ON AND RUN-OFF CONTROLS

The existing perimeter ditches around the facility will continue to provide run-on protection during the closure period. Run-off control mechanisms in place during the active life will remain in place throughout the closure period. Rainfall coming in contact with waste in the active cell will be collected in the cell and treated as leachate. Rainfall contacting capped portions of the cell will be considered clean and allowed to run off into natural drainage courses. The facility Stormwater Management Plan addresses all procedures taken to prevent run-on and run-off at the USEN facility during construction and closure of Trenches 12 and 13.

15.11.0 CERTIFICATION OF CLOSURE

USEN will submit a certification of closure to the NDEP Administrator within 60 days of completion of partial closure activities of any of the land disposal cells, or completion of scheduled final closure. USEN will certify that the hazardous waste management unit or facility, as applicable, was closed in accordance with the specifications of the approved Scheduled Closure Plan. The certification will be signed by a company representative and by an independent professional engineer registered in the State of Nevada.

TABLE 15-1: ESTIMATE OF MAXIMUM WASTE INVENTORY

UNIT DESCRIPTION	AMOUNT * (Expressed as Percentage of Total Design Capacity)	WASTE TYPE
Batch Stabilization Units (T1, T-2, T-3, T-18 & T-19)	**100%**	**RCRA Liquids, Sludges or Solids Amenable to Stabilization**
PCB Tanks (T-4 , T-5, T-6, and T-7)	90%	PCB Liquids
Evaporation Tank (Truck Wash Pad (T-11))	100%	Wastewater and Sludge
PCB/RCRA Storage Building (CMU #1)	90%	RCRA Waste and PCB Materials
Dry Hazardous Waste Storage Areas #2 and #3 (CMU #6 and CMU #17)	100%	Stabilization Waste
Bin Storage Area (CMU #7)	100%	Stabilization Waste
Container Management/Stabilization Building (CMU #16)	100%	Stabilization Waste

* Based on historical inventory records

TABLE 15-2: ESTIMATED SCHEDULE FOR CLOSURE AT USEN FACILITY

TASK	ESTIMATED TIME PERIOD
Final Waste Receipt	Day 0
Notification of Intent to Close	Day 30
Complete Treatment or Disposal of Waste Inventory	Day 90
Complete Closure of Treatment and Storage Units	
* Truck Parking Area (CMU #7)/Container Management/Stabilization Building (CMU #16)/ Satellite Laboratory/ Truck Unloading Docks	Day 101
* Dry Hazardous Waste Storage Area (CMU #6 and CMU #17)	Day 123
* PCB Building (CMU #1)/PCB Tank Farm/ Tank Truck Loading Pad	Day 134
* Batch Stabilization Units (T-1, 2, 3, 18, 19)	Day 152
* Evaporation Pad (T-11)	Day 170
Final Inspection of Treatment and Storage Units and Certification of Compliance with Closure Plan by Registered Professional Engineer (P.E.)	Day 240
Complete Closure of Landfill	Day 360
Final Inspection of Landfill Closure and Certification of Compliance with Closure Plan by Registered Professional Engineer (P.E.)	Day 390

Note:

* Schedule only applies to units in existence at time of closure.

TABLE 15-3: ESTIMATED NUMBER OF SAMPLES REQUIRED TO DEMONSTRATE CLEAN CLOSURE

Unit Name	Dimensions	Approximate Area (ft²)	PCB Sampling		VOCs and Metals Sampling	
			Initial Sample No.	Re-Sample No.	Initial Sample No.	Re-Sample No.
PCB Processing and RCRA Storage Building	48'x100'	4,800	202	50	10	2
PCB Tank Farm*	45'x48'	2,160	91	23	4	1
PCB Truck Loading Pad**	56'x15.5'	868	37	9	2	1
Container Management/ Stabilization Building	175'x146'	24,868	1,046	262	50	12
Bin Storage Area	56'x136'	7,616	320	80	15	4
Pan 1 (T-1)***	14'x50'	700	29	7	1	1
Pan 2 (T-2)	30'x31'	930	39	10	2	1
Pan 3 (T-3	30'x31'	930	39	10	2	1
Pan 4 (T-18)	22'x15.5'	341	14	4	1	1
Pan 5 (T-19)	22'x15.5'	341	14	4	1	1
Evaporation Tank (Truck Wash Pad (T-11))	40'x52'	2,080	88	22	4	1
Satellite Laboratory	12'x24'	288	0	0	2	1
DHWSA #2	260'x61.1'	15,886	0	0	32	8
DHWSA #3	100'x440'	44,000	0	0	88	22
	Totals	105,808	1,919	481	214	57

PCB samples scheduled for collection on 1.5m x 1.5m grid

VOC and Metals samples scheduled for collection on 1 per 500 ft² frequency

Re-Samples based on assumption that 25% of samples fail

*Includes 3' wide aisle of packed soil between building and tank farm containment

**Includes soil between building and Tank Truck Loading Pad

***Includes 24' wide process area around outside of pan

TABLE 15-4: CLEAN CLOSURE DEMONSTRATION PARAMETERS

UNIT	PARAMETERS
PCB Processing Building (CMU #1)/ PCB Tank Farm/Truck Loading Pad	PCBs, VOCs and Eight RCRA Metals
Batch Stabilization Units (T-1, 2, 3, 18, 19)	PCB's, VOCs and Eight RCRA Metals
Evaporation Tank (Truck Wash Pad (T-11))	PCB's, VOCs and Eight RCRA Metals
Dry Hazardous Waste Storage Areas 2 and 3 (CMU#6 &17)	Eight RCRA Metals
Bin Storage Area (CMU #7)/Container Management/Stabilization Building (CMU #16)/Truck Unloading Docks	PCB's, VOCs and Eight RCRA Metals
Satellite Laboratory	VOC's and Eight RCRA Metals

APPENDIX 15-A

CLOSURE COST ESTIMATE

Cost estimate for scheduled closure is provided using the NDEP's CostPro cost estimating program.

Yearly Comparison
Financial Assurance Cost Estimate
USEN
Beatty, NV

Unit	2012 Estimate	2013 Estimate	2014 Estimate	2015 Estimate
Containment Buildings	$394,164	$366,663	$548,903	$546,177
Container Storage Area	$2,368,248	$2,365,495	$2,400,194	$2,388,646
Landfills	$1,616,527	$1,590,808	$1,162,111	$631,536
Post Closure Care	$4,810,481	$4,853,484	$4,849,747	$5,136,092
Tank Systems	$326,779	$330,286	$380,750	$336,792
Total Estimated Cost	$9,516,202	$9,506,736	$9,341,705	$9,039,243

Landfills Summary (LF_02-1)

Installation of Undifferentiated Fill (LF-03)	$0.00	
Installation of Clay Layer (LF-04)	$0.00	
Installation of Geomembrane (LF-05)	$0.00	
Installation of Drainage Layer (LF-06)	$0.00	
Installation of Earthen Layer (LF-07)	$0.00	
Installation of Topsoil (LF-08)	$0.00	
Establishment of Vegetative Cover (LF-09)	$0.00	
Installation of Colloid Clay Liner (LF-10)	$0.00	
Installation of Asphalt Cover (LF-11)	$0.00	
Installation of a Gas Collection System (LF-12)	$0.00	
Installation of Flares and Support Equipment (LF-13)	$0.00	
Installation of Storm Water Control (LF-14)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$0.00	
Percentage for Engineering Expenses	8.0	%
Engineering Expenses	$0.00	
Survey Plat (LF-15)	$0.00	
Certification of Closure (LF-16)	$0.00	
Subtotal	$0.00	
Percentage for Contingency	15.0	%
Contingency Allowance	$0.00	
TOTAL COST OF CLOSURE	$0.00	

USEN Facility
NVT330010000

Address: P.O. Box 578
Beatty
NEVADA
89003

Contact: Bob Marchand
800.239.3943

Comments: Chris Bolin of AquAeTer, Inc. (303-771-9150) prepared this closure cost estimate on behalf of US Ecology to address, and include, issues identified by NDEP with the prior sumbitted closure cost estimates for the Beatty facility.

NOTES:
1. An Engineering Expense factor of 8% and a Contingency factor of 15% have been utilized in this cost estimate, as negotiated at the October 14, 2010 meeting between NDEP and US Ecology.
2. For additional reference and explanation of how specific elements were treated within this cost estimate, see the "Summary Notes-CostPro Modeling" document provided by AquAeTer with this CostPro estimate.
3. This cost estimate will be subject to annual reviews and respective updates at every 5-year RCRA Permit renewal and any interim Permit modifications.

Activity	Units	Closure Cost
Containment Buildings	4	$546,176.71
Container Storage Area	5	$2,388,645.84
Landfills	2	$631,536.35
Post Closure Care	4	$5,136,091.93
Tank Systems	3	$336,791.79
		$9,039,242.62

Additional Costs $0.00

Total Estimated Cost **$9,039,242.62**

Facility: USEN Facility **Unit:** CMU 1 PCB/RCRA Storage Building 11/30/2015

Containment Buildings Summary (CB_02-1)

Removal of Waste (CB-03)	$0.00	
Demolition and Removal of Building (CB-04)	$737.37	
Demolition and Removal of Concrete Structures (CB-05)	$19,879.98	
Removal of Containment System Components (CB-06)	$24,756.95	
Removal of Soil (CB-07)	$0.00	
Backfill and Grading (BF-01)	$1,867.75	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$24,416.76	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$71,658.81	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$5,732.70	
Certification of Closure (CB-08)	$4,047.99	
Subtotal	$81,439.50	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$12,215.92	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$93,655.42	

Facility: USEN Facility **Unit:** CMU 16 Container & Tank Mgmt Bld 11/30/2015

Containment Buildings Summary (CB_02-1)

Removal of Waste (CB-03)	$0.00	
Demolition and Removal of Building (CB-04)	$983.24	
Demolition and Removal of Concrete Structures (CB-05)	$105,169.00	
Removal of Containment System Components (CB-06)	$0.00	
Removal of Soil (CB-07)	$2,821.98	
Backfill and Grading (BF-01)	$3,226.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$126,646.04	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$238,846.26	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$19,107.70	
Certification of Closure (CB-08)	$4,047.99	
Subtotal	$262,001.95	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$39,300.29	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$301,302.24	

Containment Buildings Summary (CB_02-1)

Removal of Waste (CB-03)	$0.00	
Demolition and Removal of Building (CB-04)	$0.00	
Demolition and Removal of Concrete Structures (CB-05)	$0.00	
Removal of Containment System Components (CB-06)	$0.00	
Removal of Soil (CB-07)	$0.00	
Backfill and Grading (BF-01)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$112,250.00	
Subtotal of Closure Costs	$112,250.00	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$8,980.00	
Certification of Closure (CB-08)	$0.00	
Subtotal	$121,230.00	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$18,184.50	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$139,414.50	

Containment Buildings Summary (CB_02-1)

Removal of Waste (CB-03)	$0.00	
Demolition and Removal of Building (CB-04)	$2,183.66	
Demolition and Removal of Concrete Structures (CB-05)	$1,771.09	
Removal of Containment System Components (CB-06)	$0.00	
Removal of Soil (CB-07)	$0.00	
Backfill and Grading (BF-01)	$519.62	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$1,281.96	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$5,756.33	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$460.51	
Certification of Closure (CB-08)	$4,047.99	
Subtotal	$10,264.83	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$1,539.72	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$11,804.55	

Facility: USEN Facility **Unit:** CMU 1 PCB/RCRA Storage Building 11/30/2015

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$6,511.95	
Demolition and Removal of Pads (CS-04)	$0.00	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$0.00	
Backfill and Grading (BF-01)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$29,779.20	
Treatment and Disposal (TD-01)	$113,336.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$149,627.15	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$11,970.17	
Certification of Closure (CS-07)	$0.00	
Subtotal	$161,597.32	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$24,239.60	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$185,836.92	

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$7,330.31	
Demolition and Removal of Pads (CS-04)	$29,025.05	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$1,175.44	
Backfill and Grading (BF-01)	$776.25	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$38,818.26	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$32,148.00	
Treatment and Disposal (TD-01)	$132,210.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$241,483.31	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$19,318.66	
Certification of Closure (CS-07)	$4,047.99	
Subtotal	$264,849.96	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$39,727.49	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$304,577.45	

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$3,512.03	
Demolition and Removal of Pads (CS-04)	$0.00	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$7,207.32	
Backfill and Grading (BF-01)	$2,756.25	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$4,071.96	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$177,660.00	
Treatment and Disposal (TD-01)	$119,607.58	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$314,815.14	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$25,185.21	
Certification of Closure (CS-07)	$4,047.99	
Subtotal	$344,048.34	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$51,607.25	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$395,655.59	

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$9,729.54	
Demolition and Removal of Pads (CS-04)	$0.00	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$19,073.63	
Backfill and Grading (BF-01)	$7,690.88	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$4,071.96	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$485,040.00	
Treatment and Disposal (TD-01)	$331,354.44	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$856,960.45	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$68,556.84	
Certification of Closure (CS-07)	$4,047.99	
Subtotal	$929,565.28	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$139,434.79	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$1,069,000.07	

Facility: USEN Facility **Unit:** CMU 16 Container & Tank Mgmt Bldg 11/30/2015

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$23,034.85	
Demolition and Removal of Pads (CS-04)	$0.00	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$0.00	
Backfill and Grading (BF-01)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$85,728.00	
Treatment and Disposal (TD-01)	$238,656.00	
User Defined Cost (UD-01)	$1,676.00	
Subtotal of Closure Costs	$349,094.85	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$27,927.59	
Certification of Closure (CS-07)	$0.00	
Subtotal	$377,022.44	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$56,553.37	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$433,575.81	

Facility: USEN Facility **Unit:** Trench 11 and Facility 11/30/2015

Post-Closure Care Summary (PC_01-1)

Removal of Leachate (PC-02)	$56,430.00	
Site Security (PC-03)	$66,360.00	
Maintenance of Vegetative Cover (PC-04)	$0.00	
Maintenance and Inspection (PC-05)	$72,392.20	
Groundwater Monitoring(PC-06)	$3,363,023.76	
Deed Notation (PC-07)	$6,684.40	
Maintenance and Inspection of Asphalt Cover (PC-8)	$0.00	
Surface Emission Monitoring (PC-09)	$0.00	
Gas Extraction System and Perimeter Probe Monitoring (PC-10)	$0.00	
User Defined Cost (UD-01)	$379,880.00	
Subtotal of Post-Closure Costs	$3,944,770.36	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$315,581.63	
Certification of Post-Closure (PC-11)	$4,875.68	
Subtotal	$4,265,227.67	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$639,784.15	
TOTAL COST OF POST-CLOSURE CARE	$4,905,011.82	

Landfills Summary (LF_02-1)

Installation of Undifferentiated Fill (LF-03)	$0.00	
Installation of Clay Layer (LF-04)	$0.00	
Installation of Geomembrane (LF-05)	$0.00	
Installation of Drainage Layer (LF-06)	$0.00	
Installation of Earthen Layer (LF-07)	$462,853.75	
Installation of Topsoil (LF-08)	$0.00	
Establishment of Vegetative Cover (LF-09)	$0.00	
Installation of Colloid Clay Liner (LF-10)	$0.00	
Installation of Asphalt Cover (LF-11)	$0.00	
Installation of a Gas Collection System (LF-12)	$0.00	
Installation of Flares and Support Equipment (LF-13)	$0.00	
Installation of Storm Water Control (LF-14)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$25,570.96	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$488,424.71	
Percentage for Engineering Expenses	8.0	%
Engineering Expenses	$39,073.98	
Survey Plat (LF-15)	$17,615.36	
Certification of Closure (LF-16)	$4,047.99	
Subtotal	$549,162.04	
Percentage for Contingency	15.0	%
Contingency Allowance	$82,374.31	
TOTAL COST OF CLOSURE	$631,536.35	

Landfills Summary (LF_02-1)

Installation of Undifferentiated Fill (LF-03)	$0.00	
Installation of Clay Layer (LF-04)	$0.00	
Installation of Geomembrane (LF-05)	$0.00	
Installation of Drainage Layer (LF-06)	$0.00	
Installation of Earthen Layer (LF-07)	$0.00	
Installation of Topsoil (LF-08)	$0.00	
Establishment of Vegetative Cover (LF-09)	$0.00	
Installation of Colloid Clay Liner (LF-10)	$0.00	
Installation of Asphalt Cover (LF-11)	$0.00	
Installation of a Gas Collection System (LF-12)	$0.00	
Installation of Flares and Support Equipment (LF-13)	$0.00	
Installation of Storm Water Control (LF-14)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$0.00	
Percentage for Engineering Expenses	8.0	%
Engineering Expenses	$0.00	
Survey Plat (LF-15)	$0.00	
Certification of Closure (LF-16)	$0.00	
Subtotal	$0.00	
Percentage for Contingency	15.0	%
Contingency Allowance	$0.00	
TOTAL COST OF CLOSURE	$0.00	

Facility: USEN Facility **Unit:** T-4, T-5, T-6, T-7 (PCB Tanks) 11/30/2015

Tank Systems Summary (TS_02-1)

Removal of Waste (TS-03)	$1,812.68	
Tank System Purging (ignitable waste only) (TS-04)	$0.00	
Flushing the Tank and Piping (TS-05)	$0.00	
Excavation, Disassembly, and Loading (TS-06)	$6,864.21	
Demolition and Removal of Containment System (TS-07)	$13,571.97	
Removal of Soil (TS-08)	$673.83	
Backfill and Grading (BF-01)	$800.12	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$15,620.80	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$9,926.40	
Treatment and Disposal (TD-01)	$62,500.00	
User Defined Cost (UD-01)	$8,000.00	
Subtotal of Closure Costs	$119,770.01	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$9,581.60	
Certification of Closure (TS-09)	$4,047.99	
Subtotal	$133,399.60	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$20,009.94	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$153,409.54	

Facility: USEN Facility **Unit:** T-11 Evaporation Tank (Truck Wash Pad) 11/30/2015

Tank Systems Summary (TS_02-1)

Removal of Waste (TS-03)	$725.07	
Tank System Purging (ignitable waste only) (TS-04)	$0.00	
Flushing the Tank and Piping (TS-05)	$0.00	
Excavation, Disassembly, and Loading (TS-06)	$0.00	
Demolition and Removal of Containment System (TS-07)	$11,305.53	
Removal of Soil (TS-08)	$3,262.59	
Backfill and Grading (BF-01)	$1,141.38	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$10,496.30	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$20,304.00	
Treatment and Disposal (TD-01)	$13,835.56	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$61,070.43	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$4,885.63	
Certification of Closure (TS-09)	$4,047.99	
Subtotal	$70,004.05	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$10,500.61	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$80,504.66	

Facility: USEN Facility **Unit:** T-1, T-2, T-3, T-18, & T-19 Batch Stabalization 11/30/2015

Tank Systems Summary (TS_02-1)

Removal of Waste (TS-03)	$0.00	
Tank System Purging (ignitable waste only) (TS-04)	$0.00	
Flushing the Tank and Piping (TS-05)	$0.00	
Excavation, Disassembly, and Loading (TS-06)	$25,845.06	
Demolition and Removal of Containment System (TS-07)	$21,503.20	
Removal of Soil (TS-08)	$658.70	
Backfill and Grading (BF-01)	$3,307.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$17,770.10	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$10,000.00	
Subtotal of Closure Costs	$79,084.06	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$6,326.72	
Certification of Closure (TS-09)	$4,047.99	
Subtotal	$89,458.77	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$13,418.82	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$102,877.59	

UNSCHEDULED CLOSURE PLAN

Basis for Closure Cost Estimate

US ECOLOGY NEVADA

March 2010

Revised March 2016

UNSCHEDULED CLOSURE PLAN

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APPENDICES

Appendix 16-A Closure Cost Estimate

16.0 UNSCHEDULED CLOSURE PLAN

This Unscheduled Closure Plan has been prepared by US Ecology Nevada (USEN) to comply with the requirements of (1) 40 CFR 264.142 (a), as adopted by the Nevada Division of Environmental Protection (NDEP) and (2) the Approval for Commercial Storage and Disposal of Polychlorinated Biphenyls (PCBs) issued by the United States Environmental Protection Agency (US EPA). This plan describes the activities included in developing the cost estimate for final closure of existing units. In each case, a worst-case closure scenario has been used to develop a conservative cost estimate, and assumes that USEN is no longer in control of the facility and that closure must be performed by an outside contractor.

The procedures described in this plan were used to calculate the worst-case closure cost estimates for the following existing units:

- Hazardous Waste Land Disposal Trench 12
- Hazardous Waste Land Disposal Trench 13
- Polychlorinated Biphenyl (PCB) Processing and RCRA Storage Building/PCB Tank Farm/Truck Loading Pad
- Batch Stabilization Units
- Bin Storage Area
- Evaporation Tank (Truck Wash Pad)
- Dry Hazardous Waste Storage Areas 2 and 3
- Container Management/Stabilization Building/Satellite Laboratory/Truck Unloading Docks

16.1.0 CLOSURE PERFORMANCE STANDARD

Closure minimizes the need for further maintenance and the potential for post-closure escape of hazardous waste or constituents to the surrounding environment.

16.2.0 MAXIMUM WASTE INVENTORY

The maximum potential inventory of hazardous waste expected to be at the facility at any time and considered in an unscheduled closure scenario is identified in Table 16-1, and is estimated to be the sum of the design capacity for each treatment and storage unit included in this permit application.

For the purpose of developing the cost estimate, most of the facility hazardous waste inventory will be transported to an off-site treatment, storage or disposal facility permitted under RCRA (and/or Toxic Substance Control Act for PCB waste inventory). An outside contractor may elect to bring portable stabilization equipment to the facility to treat waste inventories at the facility prior to on-site Landfill

disposal if airspace permits. For the worst-case estimate however, all waste that cannot be directly landfilled is assumed to be sent off site for treatment and disposal. The procedures assumed to be employed for waste removal and final disposition of each unit's waste inventory in the worst-case scenario are further described in Section 16.5.0.

16.3.0 SCHEDULE FOR CLOSURE

A closure schedule with the projected activities and required closure time is included as Table 16-2.

Closure activities should be completed within 240 days from initiation of closure of the facility.

16.4.0 AMENDMENTS TO UNSCHEDULED CLOSURE PLAN

USEN will submit a written request to the NDEP and to the Permits Section, Land Division, US EPA Region IX for a modification of the approved Unscheduled Closure Plan whenever the following occurs:

- Changes in operating plans or facility design materially affect the Unscheduled Closure Plan,
- In conducting closure activities, unexpected events require a modification to the approved Unscheduled Closure Plan.

16.5.0 CLOSURE PROCEDURES

16.5.1 Closure of Landfills

If unscheduled landfill closure occurs prior to reaching design capacity and prior to completion of below-grade filling, available air space should be backfilled from facility stockpiles. Backfill should continue until outer above-grade slopes are 20H:1V minimum, and up to 3H:1V on all faces. At no point shall waste exceed an elevation of 2857 feet above the North American Vertical Datum of 1988 (ft NAVD88).

If unscheduled landfill closure occurs after below-grade filling is complete, but prior to achieving final design grades, use of soil stockpiles might be necessary to create manageable above-grade side slopes and contours, acceptable for final cover placement. As previously stated, above-grade slopes should be at least 20H:1V and up to 3H:1V on all faces, and at no point should waste exceed an elevation of 2857 ft NAVD88.

When waste and backfill are completed in accordance with the prior criteria or when final design waste elevations are reached, the final cover will be installed. The final cover will consist of a layered soil system. It is assumed that the contractor will install the approved cover system, and will follow the specified quality assurance and quality control procedures.

Control of percolation into the closed trench will be provided by constructing a cover that holds infiltrated water in the evaporative zone of the cover until it is returned to the atmosphere or sheds water to final cover and ultimately site drainages. The cover has been designed to virtually eliminate percolation into the trench.

The final landfill cover for USEN Trench 12 and 13 satisfy the regulatory requirements for final closure of a Landfill cell and is fully consistent with the provisions of 40 CFR 264.110, the performance standards of 40 CFR 264.111, and the following requirements of 40 CFR 264.310(a) dealing with landfill closure:

- Provide long-term minimization of migration of liquids through the closed Landfill;
- Function with minimum maintenance;
- Promote drainage and minimize erosion or abrasion of the cover; and
- Accommodate settling and subsidence so that cover integrity is maintained.

16.5.1.1 Evaporative Cover Characteristics

The cover is appropriate for an arid region, and uses the moisture retention properties of native soils to contain and store infiltrating moisture (precipitation) until the natural processes of evaporation and plant transpiration remove the stored moisture and release it to the atmosphere. The cover is protective of human health and the environment, and offers long-term benefits when compared to conventional landfill cover types that incorporate compacted clay or synthetic materials as low-permeability components. These benefits include, but are not limited to:

- use of easily obtained construction materials,
- relative simplicity of construction,
- reduced complexity of quality assurance/quality control programs, and
- long-term cover integrity and stability.

From bottom to top, the components of the arid region cover to be used for Trenches 12 and 13 are as follows.

Interim Cover Soil Layer. The lower layer of the final cover is a lightly compacted native soil layer at least 12-inches (1.0 foot) thick and extending across the cover to the natural ground surface on all sides of the trenches.

Final Cover Soil Layer. The upper layer of the final cover is a lightly compacted soil layer at least 24-inches (2.0 feet) thick and extending across the cover to the natural ground surface on all sides of the trenches. In conjunction with the Interim Cover Layer, it retards the downward movement of infiltrating water by providing temporary water-storage, and allowing stored water to be returned to the atmosphere by evaporation and plant transpiration.

Mathematical models predicted that a three-foot (36-inch) thick monolithic cover will prevent significant percolation of fluids through the cover and into waste. The results also indicate that nearly all of the precipitation that enters returns to the atmosphere through the combination of evaporation and transpiration rather than infiltrating deeply into the cover and percolating into waste. These results likely are conservative because no vegetation was considered in the models, so the evaluation of "evapotranspiration" (the combined effect of evaporation and plant transpiration) actually was limited to consideration of evaporation only.

Drainage Features. The final cover design includes a series of lateral drainages and down-drains (flumes) that shed precipitation that does not infiltrate. The goal of the drainages is to collect sheet flow prior to development of concentrated flow. On 3H:1V sideslopes, this is accomplished with lateral drainages at a maximum spacing of 100 feet, over waste. On the 20V:1V upper deck this is accomplished with surface berms. Down-drains are protected flumes that are designed to remove water, once concentrated with lateral drainages and berms, without causing erosion.

16.5.1.2 Evaporative Cover Specifications

Soil materials for final cover construction will consist of natural soil obtained from USEN stockpiles and/or from future trench excavations, supplemented as needed with imported soil materials. Native and imported materials will be screened and mixed, as needed, to obtain material of satisfactory grain size.

The interim soil layer will be a low density layer; this is important to the moisture holding capacity and vegetation establishment properties of the cover. Care must be taken to minimize over-compaction that could lead to reduced cover effectiveness. The interim layer should not be less than 12 inches thick and should be comprised of natural soil materials that contain no grain sizes larger than 6.0 inches. There is no compaction specification for this material, which will be placed as above-grade waste disposal proceeds.

The upper component of the final trench cover will be a lightly compacted soil layer that varies in thickness to allow the cover to be shaped according to the approved design; however, the layer everywhere should be at least 24-inches (2.0 feet) thick. This layer should extend across the cover to the natural ground surface on all sides of Trenches 12 and 13.

The gradation specifications for the final cover layer are as follow:

- no materials larger than 6.0 inches[1],

[1] Materials of 6.0 inch and larger dimension might be judged acceptable in the final cover layer by the design or quality assurance engineer, if '*de minimis*' (or minimal) by visual observation and rarely, if ever, in grain-to-grain contact.

- 90 percent smaller than 1.0 inch, and
- not less than 5.0 percent passing the #200 sieve.

The goal of final cover placement is to achieve a minimal in-place density. Experience from final cover placement on Trench 11 indicates that maximum dry density (MDD) by ASTM D 1557 is feasible at approximately 80 percent (plus or minus approximately 5%) and a moisture content between 2.0 and 4.0 percent less than the OMC. The low density compaction requirement of the soil cover is important for the moisture holding capacity of the soil. Over-compaction during initial construction could lead to reduced moisture holding effectiveness and inhibit establishment of vegetation, and should be prevented. Areas of the final cover layer that became overly compacted, such as from repeated vehicle or equipment passage, must be loosened by shallow ripping. Over time, material in the final cover will reach a density similar to those of native materials.

Soil materials for final cover construction shall consist of sand and gravel soils obtained from USEN stockpiles and the Trench 13 excavation area. Natural soil materials, typical of all previous disposal cell excavations at the facility, are relatively coarse grained, alluvial valley-fill sands and gravels, with variably abundant clay and silt-size particles, common cobble-size particles (i.e., particles larger than 3.0 inches in dimension), and rare boulders (i.e., particles larger than 12 inches in dimension). Sand-size particles (i.e., particles between 0.003 and 0.2 inches in dimension) and gravel-size particles (i.e., particles between 0.2 and 3.0 inches in dimension) comprise the vast majority of almost any sample of soil materials from the uppermost 75 feet of the valley-fill deposits, and thus make up the majority of natural materials determined to be acceptable for final cover construction. It is these materials, and particularly those ranging in the sand and silt grain sizes, that provide most of the moisture-holding capacity that is needed for the proper long-term functioning of a water-balance type landfill cover. The coarser-grained components – gravels, cobbles, and even rare boulders – do not enhance the moisture holding capacity of the final cover, but do contribute to overall cover stability and capacity to resist erosion by wind and water. Thus, when in proper proportions, all textural components of the final cover soils contribute to the long-term performance of the landfill cover.

Cover soil placement should be done using low-ground pressure equipment, such as a wide-tracked bulldozer, instead of heavy wheeled equipment that could cause linear surface depressions. Over-compaction (i.e., areas exceeding the density specification for cover materials) could reduce the water-holding characteristics of the cover and the ability of the cover to support establishment of vegetation. Once the cover is completed, vehicular traffic on the soil cover should be limited. Also, construction materials and equipment should not be stored on the cover during or after construction. Areas that become over-compacted because of initial cover

soil placement or equipment traffic must be loosened by ripping. Ultimately, such ripping to achieve acceptable soil density might be required over the final cover surface.

16.5.1.3 Post Closure Performance Verification

Verification of post-closure performance of the final cover will be provided by the combination of leachate monitoring (quality and quantity), Lysimeter monitoring, and groundwater monitoring.

Leachate monitoring will use Trench 11, Trench 12, and Trench 13 sumps to remove leachate from the Landfill units. Records of leachate removal will be tabulated and evaluated to determine whether leachate production rates decline following facility closure. Leachate depth measurements will be recorded in spreadsheets in order to verify that fluid heads are below one foot on the primary liner, as required by the 40 CFR §264.301(a)(2).

A drainage Lysimeter was constructed during the closure of Trench 11. The Lysimeter provides performance monitoring of the alternate final cover system. The drainage Lysimeter is used to verify that unacceptable infiltration of moisture does not penetrate the Landfill cover. A second lysimeter is planned for installation following the first phase of Trench 13 closure.

Performance monitoring of the final covers for Trench 11 and Trench 12 shall be conducted in accordance with the "Final Cover Performance Monitoring and Protocol, Disposal Trenches 11 and 12, US Ecology Nevada, Inc., November 2009".

Closure of the Landfill cells will be considered complete when the final covers are completed in accordance with design specifications and after completion of closure certification, as discussed in Section 16.10.0. Post-closure inspection and maintenance will be performed in the same manner as for other closed Landfill units at the facility. The Landfill final covers are expected to provide long-term, low maintenance protection to the environment.

Construction of the final cover will be conducted in accordance with cell specifications included in the Landfill Report of the Permit Renewal Application. A detailed evaluation of the proposed final cover performance is presented in the following reports, which have been previously presented to the NDEP, and are included herein by reference.

- *The design of the proposed final cover is described in detail in the Trench 11 Above-Grade Disposal Facility Design and Construction Quality Assurance Plan, revised May 6, 1999, by AquAeTer, Inc.*
- *Erosion Calculations for Above Grade Disposal Cell, dated July 28, 1987, prepared by Dr. James L. Grant and Associates.*

- *Cell 10 Cap Design Analysis Using Wind Erosion Equation prepared by US Ecology in March 1991.*
- *Supplement – Landfill Report for Trench 12, October 2007, AquAeTer, Inc.*
- *Design Basis and Construction Specifications for Trenches 11 and 12 Final Covers, April 2008, AquAeTer, Inc.*
- *Landfill Engineering Report for Trench 13, October 2015, AquAeTer, Inc., Section 19, RCRA Part B Permit Application.*

16.5.2 Closure of Treatment and Storage Units

For purposes of the closure activity discussion, treatment and storage units are grouped according to their location, as follows:

- PCB Processing and RCRA Storage Building/PCB Tank Farm/Truck Loading Pad
- Staging area-portion of the former LTTD concrete pad (non-storage, support area for PCB Processing Building)
- BIn Storage Area
- Batch Stabilization Units
- Evaporation Tank (Truck Wash Pad)
- Dry Hazardous Waste Storage Areas 2 and 3
- Container Management/Stabilization Building/Satellite Laboratory/Truck Unloading Docks

16.5.2.1 PCB Processing and RCRA Storage Building Area (CMU #1)/PCB Tank Farm (T-4 – T-7)/Truck Loading Pad

All liquid PCBs in storage at the time of an unscheduled closure will be transported to a TSCA authorized disposal facility. PCB solid materials will be removed and disposed of in the on-site Landfill cell. All RCRA waste inventory in storage will be removed and transported to a RCRA authorized off-site facility for treatment and/or disposal.

The steel building shell will be dismantled and disposed of in the Landfill cell. The PCB Tank System will also be removed and disposed of in the Landfill cell. Removal of the building's concrete floor and underlying liner system, and the Tank Farm/Truck Loading Pad will proceed as follows:

- Wash the concrete floor of the building and Tank Farm/Truck Loading Pad secondary containment and break into manageable pieces using appropriate equipment.
- Remove the concrete and dispose in the on-site Landfill cell.

- Remove the containment system drainage material and transfer to the on-site Landfill disposal cell.
- Remove, cut and fold the underlying liner system for disposal in the on-site Landfill disposal cell.
- Sampling will be performed in accordance with 40 CFR 761.283(b). Obtain samples from the soil underlying the building containment system, PCB Tank Farm and Tank Truck Loading Pad to demonstrate clean closure. The area to be sampled will be marked out in 1.5 m x 1.5 m grids and PCB samples will be taken from each grid; PCB samples will be collected from locations which show signs of visible staining or where inspection of the liner indicates possible deterioration. If no staining/deterioration is evident, simple random location selection should be performed. Metal and VOC samples will be collected from locations with the highest probability for contamination (i.e., areas with visible staining or where visual inspection of the liner indicates possible deterioration). If no staining/deterioration is evident, simple random location selection should be performed. The estimated number of samples required to demonstrate clean closure is specified in Table 16-3.
- Analyze samples for the parameters specified in Table 16-4 following U.S. Environmental Protection Agency (EPA) SW-846 methods, and compare the results statistically to background concentrations. The most current version analytical methods will be used at the time of sampling and analyses. At this time, the methods are 3540C (Soxhlet Extraction) and 8082 (PCB Arochlor analysis). Soil will be removed from the site stockpile and sampled to obtain background levels. Soil samples that have (1) concentrations of metals and VOCs that are statistically at or below background levels, and (2) concentrations of total PCBs below 1 mg/kg, will be considered to have met the clean closure performance standard. Because of the presence of a liner system, no soil contamination is anticipated. If soil contamination is found, 3 inches of soil will be removed and the area will be resampled. The process will be repeated until clean closure is achieved.

16.5.2.2 Bin Storage Area (CMU #7)

- Transport waste inventory in the Truck Parking Storage Area to a RCRA-authorized hazardous waste management facility.
- Wash the unit's concrete slab prior to on-site Landfill disposal.
- Obtain samples from the soil underlying the storage area containment system to demonstrate clean closure. The area to be sampled will be marked out in 1.5 m x 1.5 m grids and PCB samples will be taken from each grid; PCB samples will be collected from locations which show signs of visible staining or where inspection of the liner indicates possible deterioration. If no staining/deterioration is evident, simple random location selection should be performed.

Metal and VOC samples will be collected from locations with the highest probability for contamination (i.e., areas with visible staining or where visual inspection of the liner indicates possible deterioration). If no staining/deterioration is evident, simple random location selection should be performed. The estimated number of samples required to demonstrate clean closure is specified in Table 16-3.

- Analyze samples for the parameters specified in Table 16-4 following U.S. Environmental Protection Agency (EPA) SW-846 methods, and compare the results statistically to background concentrations. Soil will be removed from the site stockpile and sampled to obtain background levels. Soil samples that have (1) concentrations of metals and VOCs that are statistically at or below background levels, and (2) concentrations of total PCBs below 1 mg/kg, will be considered to have met the clean closure performance standard. Because of the presence of secondary containment, no soil contamination is anticipated. If soil contamination is found, 3 inches of soil will be removed and the area will be resampled. The process will be repeated until clean closure is achieved.
- Remove three inches of soil and dispose of in the on-site Landfill.

16.5.2.3 Batch Stabilization Units (T-1, T-2, T-3, T-18, &T-19)

- Remove the waste inventory in the stabilization units to an authorized off-site facility for treatment and disposal.
- Wash and dismantle the stabilization vessels, and dispose of in Landfill cell.
- Remove the concrete silo foundation and send off site for treatment and disposal.
- Follow the procedures described in Section 16.5.2.1 for removal of the containment system, removal of any contaminated soil, and for demonstration of clean closure.

16.5.2.4 Evaporation Tank (Truck Wash Pad (T-11))

The Evaporation Pad will be the last unit to undergo closure, because the unit will be used to decontaminate any small equipment (e.g., shovels, hand tools, etc.) remaining after completion of closure of other units.

- Remove the liquid waste inventory in the unit for off-site disposal at an authorized facility.
- Remove the concrete pad and send off-site for treatment and disposal.
- Follow the activities described in Section 16.5.2.1 for removal of the liner system and for demonstration of clean closure.

16.5.2.5 Dry Hazardous Waste Storage Areas 2 and 3 (CMU #6 and #17)

Waste inventory in the Dry Hazardous Waste Storage Area will be treated and disposed of on-site, or transported to a RCRA-authorized hazardous waste management facility. The pad area will be excavated and removed to the disposal cell.

Obtain four samples from the soil underlying the storage pad to demonstrate clean closure. Select sample locations in areas with the highest probability for contamination (i.e., any areas where the pad surface has been stained by waste materials). If no staining is evident, simple random location selection should be performed.

Analyze samples for the parameters specified in Table 16-3 following EPA SW-846 methods, and compare the results statistically to background concentrations.

Remove three inches of soil and dispose of in the on-site Landfill.

16.5.2.6 Container Management/Stabilization Building (CMU #16)/Satellite Laboratory/Truck Unloading Docks

Waste inventory in the Container Management Building and any waste in the satellite accumulation area associated with the Satellite Laboratory will be treated and disposed of on-site, or transported to a RCRA-authorized hazardous waste management facility.

The steel building walls, awning over the west Truck Unloading Dock, and any contaminated equipment will be dismantled and disposed of in the Landfill cell. Removal of the building's concrete floor and underlying liner system will proceed as follows:

- Wash the concrete floor, including the Truck Unloading Docks, of the building and break into manageable pieces using appropriate equipment.
- Remove the Building's concrete floor, including the Truck Unloading Docks and dispose in Landfill cell.
- Obtain samples from the soil underlying the Building containment system and Truck Unloading Docks to demonstrate clean closure. The area to be sampled will be marked out in 1.5 m x 1.5 m grids and PCB samples will be taken from each grid; PCB samples will be collected from locations which show signs of visible staining or where inspection of the liner indicates possible deterioration. If no staining/deterioration is evident, simple random location selection should be performed. Metal and VOC samples will be collected from locations with the highest probability for contamination (i.e., areas with visible staining or where visual inspection of the liner indicates possible deterioration). If no staining/deterioration is evident, simple random location selection should be performed. The

estimated number of samples required to demonstrate clean closure is specified in Table 16-3.

- Analyze samples for the parameters specified in Table 16-4 following U.S. Environmental Protection Agency (EPA) SW-846 methods, and compare the results statistically to background concentrations, and as specified in Section 16.5.2.1. Soil will be removed from the site stockpile and sampled to obtain background levels. Soil samples that have (1) concentrations of metals and VOCs that are statistically at or below background levels, and (2) concentrations of total PCBs below 1 mg/kg, will be considered to have met the clean closure performance standard. If soil contamination is found, 3 inches of soil will be removed and the area will be resampled. The process will be repeated until clean closure is achieved.
- The Satellite Laboratory will be dismantled and disposed using the method described above. No PCB sampling will be required for the laboratory since PCB materials will not be handled in the laboratory.

16.6.0 CLEANING AND DECONTAMINATION OF EQUIPMENT

In developing the cost estimate for decontaminating any equipment or structures at the facility, the following was assumed:

- High pressure/steam clean all accessible surfaces of piping, valves, pumps and other ancillary equipment associated with tank systems.
- Drain all wash waters for subsequent removal. Pressure wash accessible tank surfaces.
- Collect wash waters from the bottom of the tank and remove for off-site disposal.
- Pressure wash the concrete floors and structures.
- Visually inspect the entire surface to ensure removal of visually detectable residues.
- Remove wash waters generated during decontamination for off-site disposal.
- Clean heavy equipment used for handling waste with a high pressure steam cleaner until all visible contamination has been removed. Cleaning may be supplemented with detergents and/or solvents, as necessary. Perform a final rinse with clean tap water following decontamination and visual inspection of all equipment.
- Collect and submit one rinsate sample from each piece of equipment for analysis of metals and VOCs, to verify decontamination. Conduct sampling and analysis following procedures recommended by the current version of EPA SW-846 at the time of closure. Analyze decontamination verification samples for the parameters identified in Table 16-4.
- Collect and submit PCB wipe samples from equipment used in PCB areas where the decontamination option is chosen.

NOTE: Decontamination verification is only required for clean closure of equipment. If decontamination is intended to comply with the Land Disposal Restriction (LDR) treatment standards for debris, no verification will be performed.

16.7.0 GROUNDWATER MONITORING

For purposes of developing the cost estimate it has been assumed that one groundwater monitoring event will take place during the closure period, and be conducted following permitted procedures in place just prior to closure.

16.8.0 LEACHATE COLLECTION

Closure of the on-site Landfill cells is estimated at 240 days or less. Estimates for disposal of the leachate generated during the closure period are based on off-site disposal.

16.9.0 RUN-ON AND RUN-OFF CONTROLS

The existing perimeter ditches around the facility will continue to provide run-on protection during the closure period. Run-off control mechanisms in place during the active life will remain in place throughout the closure period. Rainfall coming in contact with waste in the active cell will be collected in the cell and treated as leachate. Rainfall contacting capped portions of the cell is considered clean and allowed to run off into natural drainage courses. The facility Stormwater Management Plan addresses all procedures taken to prevent run-on and run-off at the USEN facility during construction and closure of Trenches 12 and 13.

16.10.0 CERTIFICATION OF CLOSURE

A certification of closure shall be submitted to the NDEP Administrator within 60 days of completion of closure activities. A professional engineer will certify that the hazardous waste management unit or facility, as applicable, was closed in accordance with the specifications of the approved Unscheduled Closure Plan. The certification will be signed by an independent professional engineer registered in the State of Nevada.

16.11.0 CLOSURE COST ESTIMATE

The cost estimate for the unscheduled closure of the facility is included in Appendix 16-A. This cost estimate considers a worst-case scenario, and is based on the assumption of unexpected closure

prompted by company bankruptcy at a point in the facility's operating life when the extent and means of operation would make closure most expensive. The worst-case closure scenario considers that USEN is no longer in control of the facility and that closure must be performed by an outside contractor. The cost estimate and cost assumptions are detailed in Appendix 16-A.

In accordance with the requirements of 40 CFR 264.142(c), the closure cost estimate will be modified within 30 days after a revision to the Closure Plan has been authorized which increases the closure cost. The total closure cost estimate will be updated for inflation annually, according to the guidelines in 40 CFR 264.142(b).

Table 16-1: Estimate of Maximum Waste Inventory

UNIT DESCRIPTION	AMOUNT	UNITS	WASTE TYPE
Batch Stabilization Units (T-1, T-2, T-3, T-18, & T-19)	140	cubic yards	Stabilization Waste
PCB Tanks (T-4, T-5, T-6, and T-7)	25,000	gallons	PCB Liquids
Evaporation Tank (Truck Wash Pad (T-11))	10,000	gallons	Wastewater and Sludge
PCB/RCRA Storage Building (CMU #1)	102,960	gallons	RCRA Waste and PCB Materials
Dry Hazardous Waste Storage Areas #2 and #3 (CMU #6 & CMU #17)	495/100,083	cubic yards/gallons	RCRA and non-RCRA Waste
Bin Storage Area (CMU #7)	400	cubic yards	Stabilization Waste
Container Management/Stabilization Building (CMU #16)	2,430/481,250	cubic yards/gallons	RCRA and non-RCRA Waste
Satellite Laboratory	425	gallons	Lab Wastewater

Table 16-2: Estimated Schedule for Closure at USEN

TASK	ESTIMATED TIME PERIOD
Contractor and Equipment Arrive at Facility	Day 0
Complete Treatment or Disposal of Waste Inventory	Day 90
Complete Closure of Treatment & Storage Units (all units except the Evaporation Pad)	Day 178 *
Complete Closure of Landfill	Day 180 *
Complete Equipment Decontamination and Evaporation Pad Closure	Day 180
Final Inspection and Certification of Compliance with Closure Plan by Registered Professional Engineer (P.E.)	Day 240

* Closure of units, as considered in the cost estimate, will proceed simultaneously because an outside contractor will perform closure. The only unit that is addressed separately is the Evaporation Pad, which will be the last unit to be dismantled to allow the third party performing closure to use it for equipment decontamination.

Table 16-3: Estimated Number of Samples Required to Demonstrate Clean Closure

Unit Name	Dimensions	Approximate Area (ft²)	PCB Sampling		VOCs and Metals Sampling	
			Initial Sample No.	Re-Sample No.	Initial Sample No.	Re-Sample No.
PCB Processing and RCRA Storage Building	48'x100'	4,800	202	50	10	2
PCB Tank Farm*	45'x48'	2160	91	23	4	1
PCB Truck Loading Pad**	56'x15.5'	868	37	9	2	1
Container Management/ Stabilization Building	175'x146'	24,868	1,046	262	50	12
Bin Storage Area	56'x136'	7616	320	80	15	4
Pan 1 (T-1)***	14'x50'	700	29	7	1	1
Pan 2 (T-2)	30'x31'	930	39	10	2	1
Pan 3 (T-3	30'x31'	930	39	10	2	1
Pan 4 (T-18)	22'x15.5'	341	14	4	1	1
Pan 5 (T-19)	22'x15.5'	341	14	4	1	1
Evaporation Tank (Truck Wash Pad (T-11))	40'x52'	2,080	88	22	4	1
Satellite Laboratory	12'x24'	288	0	0	2	1
DHWSA #2	260'x61.1'	15,886	0	0	32	8
DHWSA #3	100'x440'	44,000	0	0	88	22
	Totals	105,808	1,919	481	214	57

PCB samples scheduled for collection on 1.5m x 1.5m grid

VOC and Metals samples scheduled for collection on 1 per 500 ft² frequency

Re-Samples based on assumption that 25% of samples fail

*Includes 3' wide aisle of packed soil between building and tank farm containment

**Includes soil between building and Tank Truck Loading Pad

***Includes 24' wide process area around outside of pan

Table 16-4: Clean Closure Demonstration Parameters

UNIT	PARAMETERS
PCB Processing Building (CMU #1)/ PCB Tank Farm/Truck Loading Pad	PCBs, VOCs and Eight RCRA Metals
Batch Stabilization Units (T-1, 2, 3, 18, 19)	PCBs, VOCs and Eight RCRA Metals
Evaporation Tank (Truck Wash Pad (T-11))	PCBs, VOCs and Eight RCRA Metals
Dry Hazardous Waste Storage Areas 2 and 3 (CMU#6 &17)	Eight RCRA Metals
Bin Storage Area (CMU #7)/Container Management/Stabilization Building (CMU #16)/Truck Unloading Docks	PCBs, VOCs and Eight RCRA Metals
Satellite Laboratory	VOCs and Eight RCRA Metals

APPENDIX 16-A

CLOSURE COST ESTIMATE

Cost estimate for unscheduled closure is provided using the NDEP's CostPro cost estimating program.

Landfills Summary (LF_02-1)

Installation of Undifferentiated Fill (LF-03)	$0.00	
Installation of Clay Layer (LF-04)	$0.00	
Installation of Geomembrane (LF-05)	$0.00	
Installation of Drainage Layer (LF-06)	$0.00	
Installation of Earthen Layer (LF-07)	$0.00	
Installation of Topsoil (LF-08)	$0.00	
Establishment of Vegetative Cover (LF-09)	$0.00	
Installation of Colloid Clay Liner (LF-10)	$0.00	
Installation of Asphalt Cover (LF-11)	$0.00	
Installation of a Gas Collection System (LF-12)	$0.00	
Installation of Flares and Support Equipment (LF-13)	$0.00	
Installation of Storm Water Control (LF-14)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$0.00	
Percentage for Engineering Expenses	8.0	%
Engineering Expenses	$0.00	
Survey Plat (LF-15)	$0.00	
Certification of Closure (LF-16)	$0.00	
Subtotal	$0.00	
Percentage for Contingency	15.0	%
Contingency Allowance	$0.00	
TOTAL COST OF CLOSURE	$0.00	

Yearly Comparison
Financial Assurance Cost Estimate
USEN
Beatty, NV

Unit	2012 Estimate	2013 Estimate	2014 Estimate	2015 Estimate
Containment Buildings	$394,164	$366,663	$548,903	$546,177
Container Storage Area	$2,368,248	$2,365,495	$2,400,194	$2,388,646
Landfills	$1,616,527	$1,590,808	$1,162,111	$631,536
Post Closure Care	$4,810,481	$4,853,484	$4,849,747	$5,136,092
Tank Systems	$326,779	$330,286	$380,750	$336,792
Total Estimated Cost	$9,516,202	$9,506,736	$9,341,705	$9,039,243

Yearly Comparison
Financial Assurance Cost Estimate
USEN
Beatty, NV

Unit	2012 Estimate	2013 Estimate	2014 Estimate	2015 Estimate
Containment Buildings	$394,164	$366,663	$548,903	$546,177
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Post Closure Care	$4,810,481	$4,853,484	$4,849,747	$5,136,092
Tank Systems	$326,779	$330,286	$380,750	$336,792
Total Estimated Cost	$9,516,202	$9,506,736	$9,341,705	$9,039,243

USEN Facility
NVT330010000

Address: P.O. Box 578
Beatty
NEVADA
89003

Contact: Bob Marchand
800.239.3943

Comments: Chris Bolin of AquAeTer, Inc. (303-771-9150) prepared this closure cost estimate on behalf of US Ecology to address, and include, issues identified by NDEP with the prior sumbitted closure cost estimates for the Beatty facility.

NOTES:

1. An Engineering Expense factor of 8% and a Contingency factor of 15% have been utilized in this cost estimate, as negotiated at the October 14, 2010 meeting between NDEP and US Ecology.
2. For additional reference and explanation of how specific elements were treated within this cost estimate, see the "Summary Notes-CostPro Modeling" document provided by AquAeTer with this CostPro estimate.
3. This cost estimate will be subject to annual reviews and respective updates at every 5-year RCRA Permit renewal and any interim Permit modifications.

Activity	Units	Closure Cost
Containment Buildings	4	$546,176.71
Container Storage Area	5	$2,388,645.84
Landfills	2	$631,536.35
Post Closure Care	4	$5,136,091.93
Tank Systems	3	$336,791.79
		$9,039,242.62
Additional Costs		$0.00
Total Estimated Cost		**$9,039,242.62**

Facility: USEN Facility **Unit:** CMU 1 PCB/RCRA Storage Building 11/30/2015

Containment Buildings Summary (CB_02-1)

Removal of Waste (CB-03)	$0.00	
Demolition and Removal of Building (CB-04)	$737.37	
Demolition and Removal of Concrete Structures (CB-05)	$19,879.98	
Removal of Containment System Components (CB-06)	$24,756.95	
Removal of Soil (CB-07)	$0.00	
Backfill and Grading (BF-01)	$1,867.75	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$24,416.76	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$71,658.81	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$5,732.70	
Certification of Closure (CB-08)	$4,047.99	
Subtotal	$81,439.50	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$12,215.92	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$93,655.42	

Facility: USEN Facility **Unit:** CMU 16 Container & Tank Mgmt Bld 11/30/2015

Containment Buildings Summary (CB_02-1)

Removal of Waste (CB-03)	$0.00	
Demolition and Removal of Building (CB-04)	$983.24	
Demolition and Removal of Concrete Structures (CB-05)	$105,169.00	
Removal of Containment System Components (CB-06)	$0.00	
Removal of Soil (CB-07)	$2,821.98	
Backfill and Grading (BF-01)	$3,226.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$126,646.04	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$238,846.26	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$19,107.70	
Certification of Closure (CB-08)	$4,047.99	
Subtotal	$262,001.95	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$39,300.29	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$301,302.24	

Containment Buildings Summary (CB_02-1)

Removal of Waste (CB-03)	$0.00	
Demolition and Removal of Building (CB-04)	$0.00	
Demolition and Removal of Concrete Structures (CB-05)	$0.00	
Removal of Containment System Components (CB-06)	$0.00	
Removal of Soil (CB-07)	$0.00	
Backfill and Grading (BF-01)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$112,250.00	
Subtotal of Closure Costs	$112,250.00	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$8,980.00	
Certification of Closure (CB-08)	$0.00	
Subtotal	$121,230.00	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$18,184.50	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$139,414.50	

Containment Buildings Summary (CB_02-1)

Removal of Waste (CB-03)	$0.00	
Demolition and Removal of Building (CB-04)	$2,183.66	
Demolition and Removal of Concrete Structures (CB-05)	$1,771.09	
Removal of Containment System Components (CB-06)	$0.00	
Removal of Soil (CB-07)	$0.00	
Backfill and Grading (BF-01)	$519.62	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$1,281.96	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$5,756.33	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$460.51	
Certification of Closure (CB-08)	$4,047.99	
Subtotal	$10,264.83	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$1,539.72	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$11,804.55	

Facility: USEN Facility **Unit:** CMU 1 PCB/RCRA Storage Building 11/30/2015

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$6,511.95	
Demolition and Removal of Pads (CS-04)	$0.00	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$0.00	
Backfill and Grading (BF-01)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$29,779.20	
Treatment and Disposal (TD-01)	$113,336.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$149,627.15	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$11,970.17	
Certification of Closure (CS-07)	$0.00	
Subtotal	$161,597.32	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$24,239.60	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$185,836.92	

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$7,330.31	
Demolition and Removal of Pads (CS-04)	$29,025.05	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$1,175.44	
Backfill and Grading (BF-01)	$776.25	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$38,818.26	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$32,148.00	
Treatment and Disposal (TD-01)	$132,210.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$241,483.31	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$19,318.66	
Certification of Closure (CS-07)	$4,047.99	
Subtotal	$264,849.96	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$39,727.49	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$304,577.45	

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$3,512.03	
Demolition and Removal of Pads (CS-04)	$0.00	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$7,207.32	
Backfill and Grading (BF-01)	$2,756.25	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$4,071.96	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$177,660.00	
Treatment and Disposal (TD-01)	$119,607.58	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$314,815.14	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$25,185.21	
Certification of Closure (CS-07)	$4,047.99	
Subtotal	$344,048.34	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$51,607.25	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$395,655.59	

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$9,729.54	
Demolition and Removal of Pads (CS-04)	$0.00	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$19,073.63	
Backfill and Grading (BF-01)	$7,690.88	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$4,071.96	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$485,040.00	
Treatment and Disposal (TD-01)	$331,354.44	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$856,960.45	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$68,556.84	
Certification of Closure (CS-07)	$4,047.99	
Subtotal	$929,565.28	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$139,434.79	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$1,069,000.07	

Facility: USEN Facility **Unit:** CMU 16 Container & Tank Mgmt Bldg 11/30/2015

Container Storage Areas Summary (CS_02-1)

Removal of Waste (CS-03)	$23,034.85	
Demolition and Removal of Pads (CS-04)	$0.00	
Removal of Process Equipment (CS-05)	$0.00	
Removal of Soil (CS-06)	$0.00	
Backfill and Grading (BF-01)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$85,728.00	
Treatment and Disposal (TD-01)	$238,656.00	
User Defined Cost (UD-01)	$1,676.00	
Subtotal of Closure Costs	$349,094.85	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$27,927.59	
Certification of Closure (CS-07)	$0.00	
Subtotal	$377,022.44	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$56,553.37	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$433,575.81	

Landfills Summary (LF_02-1)

Installation of Undifferentiated Fill (LF-03)	$0.00	
Installation of Clay Layer (LF-04)	$0.00	
Installation of Geomembrane (LF-05)	$0.00	
Installation of Drainage Layer (LF-06)	$0.00	
Installation of Earthen Layer (LF-07)	$462,853.75	
Installation of Topsoil (LF-08)	$0.00	
Establishment of Vegetative Cover (LF-09)	$0.00	
Installation of Colloid Clay Liner (LF-10)	$0.00	
Installation of Asphalt Cover (LF-11)	$0.00	
Installation of a Gas Collection System (LF-12)	$0.00	
Installation of Flares and Support Equipment (LF-13)	$0.00	
Installation of Storm Water Control (LF-14)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$25,570.96	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$488,424.71	
Percentage for Engineering Expenses	8.0	%
Engineering Expenses	$39,073.98	
Survey Plat (LF-15)	$17,615.36	
Certification of Closure (LF-16)	$4,047.99	
Subtotal	$549,162.04	
Percentage for Contingency	15.0	%
Contingency Allowance	$82,374.31	
TOTAL COST OF CLOSURE	$631,536.35	

Post-Closure Care Summary (PC_01-1)

Removal of Leachate (PC-02)	$56,430.00	
Site Security (PC-03)	$66,360.00	
Maintenance of Vegetative Cover (PC-04)	$0.00	
Maintenance and Inspection (PC-05)	$72,392.20	
Groundwater Monitoring(PC-06)	$3,363,023.76	
Deed Notation (PC-07)	$6,684.40	
Maintenance and Inspection of Asphalt Cover (PC-8)	$0.00	
Surface Emission Monitoring (PC-09)	$0.00	
Gas Extraction System and Perimeter Probe Monitoring (PC-10)	$0.00	
User Defined Cost (UD-01)	$379,880.00	
Subtotal of Post-Closure Costs	$3,944,770.36	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$315,581.63	
Certification of Post-Closure (PC-11)	$4,875.68	
Subtotal	$4,265,227.67	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$639,784.15	
TOTAL COST OF POST-CLOSURE CARE	$4,905,011.82	

Landfills Summary (LF_02-1)

Installation of Undifferentiated Fill (LF-03)	$0.00	
Installation of Clay Layer (LF-04)	$0.00	
Installation of Geomembrane (LF-05)	$0.00	
Installation of Drainage Layer (LF-06)	$0.00	
Installation of Earthen Layer (LF-07)	$0.00	
Installation of Topsoil (LF-08)	$0.00	
Establishment of Vegetative Cover (LF-09)	$0.00	
Installation of Colloid Clay Liner (LF-10)	$0.00	
Installation of Asphalt Cover (LF-11)	$0.00	
Installation of a Gas Collection System (LF-12)	$0.00	
Installation of Flares and Support Equipment (LF-13)	$0.00	
Installation of Storm Water Control (LF-14)	$0.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$0.00	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$0.00	
Percentage for Engineering Expenses	8.0	%
Engineering Expenses	$0.00	
Survey Plat (LF-15)	$0.00	
Certification of Closure (LF-16)	$0.00	
Subtotal	$0.00	
Percentage for Contingency	15.0	%
Contingency Allowance	$0.00	
TOTAL COST OF CLOSURE	$0.00	

Facility: USEN Facility **Unit:** T-4, T-5, T-6, T-7 (PCB Tanks) 11/30/2015

Tank Systems Summary (TS_02-1)

Removal of Waste (TS-03)	$1,812.68	
Tank System Purging (ignitable waste only) (TS-04)	$0.00	
Flushing the Tank and Piping (TS-05)	$0.00	
Excavation, Disassembly, and Loading (TS-06)	$6,864.21	
Demolition and Removal of Containment System (TS-07)	$13,571.97	
Removal of Soil (TS-08)	$673.83	
Backfill and Grading (BF-01)	$800.12	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$15,620.80	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$9,926.40	
Treatment and Disposal (TD-01)	$62,500.00	
User Defined Cost (UD-01)	$8,000.00	
Subtotal of Closure Costs	$119,770.01	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$9,581.60	
Certification of Closure (TS-09)	$4,047.99	
Subtotal	$133,399.60	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$20,009.94	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$153,409.54	

Facility: USEN Facility **Unit:** T-11 Evaporation Tank (Truck Wash Pad) 11/30/2015

Tank Systems Summary (TS_02-1)

Removal of Waste (TS-03)	$725.07	
Tank System Purging (ignitable waste only) (TS-04)	$0.00	
Flushing the Tank and Piping (TS-05)	$0.00	
Excavation, Disassembly, and Loading (TS-06)	$0.00	
Demolition and Removal of Containment System (TS-07)	$11,305.53	
Removal of Soil (TS-08)	$3,262.59	
Backfill and Grading (BF-01)	$1,141.38	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$10,496.30	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$20,304.00	
Treatment and Disposal (TD-01)	$13,835.56	
User Defined Cost (UD-01)	$0.00	
Subtotal of Closure Costs	$61,070.43	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$4,885.63	
Certification of Closure (TS-09)	$4,047.99	
Subtotal	$70,004.05	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$10,500.61	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$80,504.66	

Facility: USEN Facility **Unit:** T-1, T-2, T-3, T-18, & T-19 Batch Stabalization 11/30/2015

Tank Systems Summary (TS_02-1)

Removal of Waste (TS-03)	$0.00	
Tank System Purging (ignitable waste only) (TS-04)	$0.00	
Flushing the Tank and Piping (TS-05)	$0.00	
Excavation, Disassembly, and Loading (TS-06)	$25,845.06	
Demolition and Removal of Containment System (TS-07)	$21,503.20	
Removal of Soil (TS-08)	$658.70	
Backfill and Grading (BF-01)	$3,307.00	
Decontamination (DC-01)	$0.00	
Sampling and Analysis (SA-02)	$17,770.10	
Monitoring Well Installation (MW-01)	$0.00	
Transportation (TR-01)	$0.00	
Treatment and Disposal (TD-01)	$0.00	
User Defined Cost (UD-01)	$10,000.00	
Subtotal of Closure Costs	$79,084.06	
Percentage of Engineering Expenses	8.0	%
Engineering Expenses	$6,326.72	
Certification of Closure (TS-09)	$4,047.99	
Subtotal	$89,458.77	
Percentage of Contingency Allowance	15.0	%
Contingency Allowance	$13,418.82	
Landfill Closure (Cover Installation) (CI-02)	$0.00	
TOTAL COST OF CLOSURE	$102,877.59	