

March 27, 2013

Mr. James Sher, P.E.  
Project Manager  
Texas Commission on Environmental Quality  
P.O. Box 13087  
Austin, Texas 78711-3087

**Re: Texas Custodial Trust  
Former ASARCO Smelter Site, El Paso, Texas**

**Subject: Cell 4 Operation and Monitoring Procedures**

Dear Mr. Sher:

Pursuant to your request, procedures for Operation and Monitoring (O&M) of Cell 4 at the Former ASARCO Smelter Site in El Paso, Texas are attached for your review and approval. These procedures were prepared consistent with recent discussions with Mr. Arten Avakian, P.G., of the Texas Commission on Environmental Quality (TCEQ), Municipal Solid Waste Permits Division. The procedures will be followed after Cell 4 is constructed and approved to receive Category 1 material. By following these procedures, leachate heads in the Cell 4 sump will be less than the modeled depths from our leakage analysis (one-dimensional leakage analysis dated July 9, 2012 and three-dimensional analysis dated January 22, 2013). Please note that we plan to submit an augmented Post-closure Operations, Monitoring and Maintenance Plan with the final closure design plans and specifications. These procedures will be incorporated into that document.

Please contact us if you have any questions or need additional information.

Very truly yours,

**MALCOLM PIRNIE, INC.**



Scott M. Brown, P.E.  
Project Manager



**FORMER ASARCO EL PASO SMELTER SITE  
CATEGORY 1 LANDFILL - CELL 4  
OPERATION AND MONITORING PROCEDURES  
March 2013**

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This document provides procedures for Operations and Monitoring of Cell 4 at the Former ASARCO Smelter Site. Procedures are described for the filling, closure and post-closure periods anticipated for Cell 4. The filling period is defined as the duration after TCEQ approves the landfill to receive Category I materials until Cell 4 has reached its design capacity. The closure period is defined as the timeframe needed after filling to complete construction of the final cover system. The post-closure period is defined as the long-term timeframe over which Cell 4 will be monitored and maintained after closure. An augmented Post-closure Operations, Monitoring and Maintenance Plan will be prepared and submitted to TCEQ with the final closure design plans and specifications.

To be consistent with leakage evaluations submitted to TCEQ, (Malcolm Pirnie, 2012 and 2013) the heads in the sump will be maintained as follows:

<u>Period</u>	<u>Maximum</u>	<u>Action Level</u>
Filling/Closure	3 ft (0.9m)	1 ft (0.3m)
Post-closure	0.3ft (0.09m)	> 0.3ft (0.09m)

#### **Cell 4 Filling Operations and Monitoring Procedures**

During the anticipated 3-year filling period (shorter duration if filling is completed earlier), Category I materials will be placed in Cell 4 in lifts up to 5-feet thick which will then be compacted. Procedures that will be carried out carefully during the filling period to minimize the generation of leachate and head accumulation on top of the liner system are described below:

- Protective soil cover meeting approved specifications and thicknesses will be placed over the base and side-slopes (about 10 feet high vertically) in advance of placing Category 1 material.
- Category 1 materials will be placed relatively dry; water will only be added to the material to control dust.
- If rain events greater than 0.25 inches/24 hours are forecast, the placement area will be sloped to a low point forming a temporary sump where runoff water will be collected. The temporary sump will be lined with low permeability soil, a geomembrane or other impervious material.
- Ponded water collected in the temporary sump from rain events will be promptly removed and stored in temporary tanks. This water will be used for subsequent dust control in the landfill.
- The leachate collection and removal system (LCRS) sump will be monitored monthly and after significant daily rain events (i.e., 0.5 inch).
- Accumulated leachate will be pumped from the LCRS sump and properly managed (see detailed sump procedures below).
- Clean final soil cover will be placed and compacted on slopes as waste is accumulated to prevent infiltration.
- The final cover system will be installed after Cell 4 has been filled to capacity (closure). The final cover system is designed to prevent surface water infiltration into the waste material.

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**Detailed Sump Procedures (Filling Period)**

The sump will be monitored monthly and operated in a manner that limits the head of leachate in the sump to less than 3 ft (0.9 m). To achieve this, the sump will be pumped if the head is greater than 1 foot (0.3 m).

A 20 gpm (minimum) horizontally-orientated pump placed in the riser pipe on the floor of the sump (e.g., EPG SurePump or equivalent) will be used during the filling period. It is anticipated that only small amounts of leachate will be generated during landfill filling. However, in the event leachate fills the sump during cell operations, the 20 gpm unit would be used to remove leachate as needed. The leachate sump has an approximate storage capacity of 7,000 gallons between the top of the sump (3 ft [0.9 m] sump depth) and the typical minimum leachate depth in the sump required to operate the 20 gpm pump (0.75 ft [0.2 m]). A 20 gpm pump would be capable of removing 7,000 gallons of leachate from the sump in approximately 6 hours.

Power for the pumps will be provided by a portable generator. A back-up pump and generator will be provided if breakdowns occur.

A tank will be provided for temporary (less than 30-day) leachate storage at the facility in the event that leachate is generated.

**Detailed Sump Procedures (Closure/Post Closure Period)**

During the closure/post-closure care period a low flow pump placed at the bottom of the leachate riser along the 3 horizontal:1 vertical side slope (e.g., 2.7 gpm Blackhawk Piston Pump or equivalent) will be used. Head in the sump after the landfill is capped (postclosure period) is expected to be small, but will be monitored monthly. The LCRS sump will be operated until no liquids are observed in the sump for four consecutive quarters after closure. The sump will be monitored thereafter during annual cover inspections.

In the event that leachate levels rise above the minimum operating level of the pump (e.g., 0.3 ft [0.09 m]), the small pump will be used to remove leachate. Assuming the pump has a capacity of 2.7 gpm, it would take approximately 4.5 hours to remove 700 gallons of leachate from the sump and decrease the depth of leachate in the sump from 0.75 ft (0.2 m) to 0.3 ft (0.09 m) head.

The suggested low-flow pump (Black Hawk Technology Company Apollo Model 102) is an electric piston pump that requires zero head to operate at the bottom of pump intake. The liquid at the bottom of the sump will be removed via piston movement that sucks the liquid up the cylinder through a bottom inlet. The liquid then passes through the piston top, through a pipe and out of a discharge tee at the surface to a tank. A 6-in. long screen, which can be cut to a shorter length if necessary, is provided at the bottom inlet. Since the pump will be installed on a 3:1 (H:V) slope, the bottom of the pump inlet will be 1.9 in. vertically (less if the screen is cut) above the riser pipe bottom [ $6 \times \sin(18.43) = 1.9$ "]. Considering the thickness of the 18 in. dia 32.5 SDR HDPE riser pipe (i.e., 0.6 in.), the pump will be capable of removing liquid to a head of 2.5 in (0.2 ft [0.06m]) above the sump floor, which is less than the minimum sustained head allowed (i.e., 0.3 ft (0.09m)) during the post-closure care period.

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The achievable leachate operating depth for the low flow pump is approximately 0.2 ft (0.06 m). Therefore, the sump can be maintained in the postclosure care period at a leachate operating depth of 0.3 ft (0.09 m). It is noted that based on the leakage analysis performed by Malcolm Pirnie (2012), a substantially higher sustained leachate head in the sump (i.e., greater than 2 ft [0.6 m]) would need to be maintained over a geomembrane hole in the sump liner system for liquids from the landfill to reach groundwater during the presumed 50 year post-closure period for Cell 4.

Power for the pumps will be provided by a portable generator. A back-up pump and generator will be provided if breakdowns occur.

A tank will be provided for temporary (less than 30-day) leachate storage at the facility in the event that leachate is generated.

**Cover Inspection Process (Closure/Post-Closure Period)**

After closure, the cover system and LCRS will also be monitored and inspected after significant rain events (e.g., greater than 1.25-inches of rainfall in 1-hour or the 10-year storm event). Additional inspections may be completed if inclement weather or other events occur that may have caused damage to the containment systems. Necessary repairs to the Cell 4 cover and LCRS monitoring systems will be scheduled and completed. Provisions that require any future owners of Cell 4 to continue the long-term OM&M will be included in deed restrictions.

**References**

Malcolm Pirnie letter to TCEQ dated July 9, 2012, Response to EPA Comments on Category 1 Landfill, Cell 4, Former ASARCO Smelter Site, Design Remediation (including one-dimensional leakage analysis)

Malcolm Pirnie draft letter to TCEQ dated March 27, 2013, ASARCO Landfill Cell #4 -3D Modeling Submittal