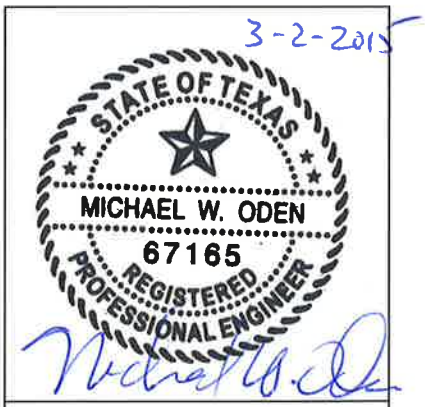
Part III
Attachment III-D

WASTE MANAGEMENT UNIT DESIIGN

Pescadito Environmental Resource Center
MSW No. 2374
Webb County, Texas

PESCADITO
ENVIRONMENTAL RESOURCE CENTER

March 2015



This document is released for the purpose of permitting only under the authority of Michael W. Oden, P.E. #67165. It is not to be used for bidding or construction. Texas Registered Engineering Firm F-5650

Prepared for:
Rancho Viejo Waste Management, LLC
1116 Calle del Norte
Laredo, TX 78041

Prepared by:
CB&I Environmental and Infrastructure, Inc.
12005 Ford Rd, Suite 600
Dallas, TX 75234

Table of Contents

Attachment III-D Appendices:

III-D.1 – Site Layout

III-D.2 – Landfill Cross Sections

III-D.3 – Landfill Design and Details

III-D.4 – Landfill Operation and Site Life

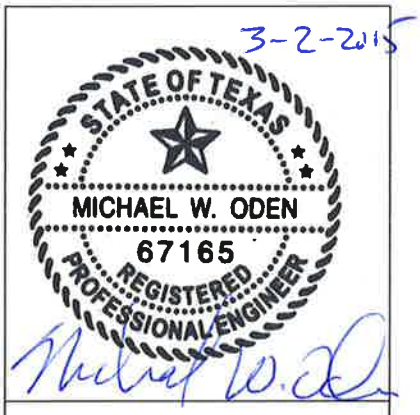
III-D.5 – Geotechnical Analyses

III-D.6 – Leachate and Contaminated Water Plan

III-D.7 – Liner Quality Control Plan

III-D.8 – Alternate Final Cover Demonstration

III-D.9 – Final Cover Quality Control Plan



This document is released for the purpose of permitting only under the authority of Michael W. Oden, P.E. #67165. It is not to be used for bidding or construction. Texas Registered Engineering Firm F-5650

1.0 STORAGE AND TRANSFER UNITS

The storage and transfer units at the Pescadito Environmental Resource Center (PERC) will consist of liquid solidification, a large item and tire storage area, a reusable item storage area, a citizen's convenience area and a leachate storage facility. These units have been designed to facilitate the rapid processing of solid and liquid waste as well as a minimum detention time. Any solid waste that is capable of creating a public health hazard or nuisance condition will be covered immediately with daily cover or will not be accepted at the facility. The design and operating procedures established will also prevent nuisances and health hazards from odors, the breeding or harborage of insects.

The units have been designed to control and contain spills or contaminated water from leaving the facility and will contain the worst-case spill or release. Unenclosed containment areas will contain the worst-case spill as well as precipitation from the 25-year, 24-hour rainfall event of 7.5 inches.

1.1 Liquid Solidification

Liquid wastes to be managed at the facility include waste products that do not pass the paint filter test. These wastes will be mixed with bulking agents to solidify the waste prior to disposal into a landfill unit. The mixing unit will be constructed of steel or concrete with a lined area beneath for secondary protection from seepage. This may be inside the limits of a lined disposal cell or outside of the waste disposal limits with its own FML liner installed beneath the mixing units. Specific details are provided on drawings in Appendix III-B.1.

Using the maximum anticipated acceptance rate of 50,000 gallons per day with a 24-hour mixing and clean out time and assuming on-site soils are used as the bulking agent, a mixing basin with a storage capacity of 14,000 cubic feet would be needed. Other bulking agents may have more absorptive capacity, but on-site soils are considered to be the primary one to be used.

An 85-foot by 85-foot basin, three feet deep would provide the needed capacity for 50,000 gallons while maintaining a foot of free board for the 25-year 24-hour rainfall event of 7.5-inches.

While the calculation above is for the ultimate size, PERC will develop the liquid solidification

facility in stages as the demand for this service increases. Initially, smaller units will be constructed as shown in Appendix III-B.1. In all cases, the required freeboard of one foot for the 25-year 24-hour rainfall event will be maintained.

If the mixing basin(s) are filled to the maximum level, no additional liquids will be accepted until they are emptied. However, PERC may provide a storage tank for a maximum of one day of acceptance (50,000 gallons) to account for temporary delays in the bulking process. Secondary containment will be provided around the tank, if used, by construction of an earthen berm around the tank.

Run-on will be prevented by constructing berms around the facility, or by elevating the basin(s) above the surrounding ground level.

1.2 Large Item and Tire Storage Areas

A storage area for large items, white goods and tires may be provided near the citizen's convenience center or near the active working face for items delivered in enclosed vehicles or in mixed loads. Large items and white goods include ovens, dishwashers, freezers, air conditioners, and other large items, typically containing a large metal content. Should large items, white goods or tires be received in mixed loads, they will be removed from the active face if it is determined to be safe to do so and staged near the active working face, or removed to the designated area near the citizen's convenience center. The large items, white goods and tires will be transferred into roll-off containers, or similar storage device until transported to an off-site recycler. The containers will be covered to prevent the accumulation of rainfall inside the containers and to prevent the generation of contaminated water. The minimization of contaminated water will also limit the potential for generating odors within the storage areas. These items will be recycled to prevent a nuisance and to preclude discharge, but will not be stored in excess of 180 days. Large items and white goods that are not recycled will be disposed of at the working face. Tires will not be disposed unless they are split or quartered prior to disposal.

The procedure for acceptance, storage, processing and ultimate disposal is presented in Part IV – Site Operating Plan for PERC. Specific details regarding these areas can be found on drawings in Appendix III-D.1.

1.3 Reusable Materials Storage Area

Inert materials such as brick, concrete, gravel, manufactured stone, etc., and non-inert materials such as asphalt and asphalt shingles may be stockpiled for use on facility access roads, vehicle staging areas, for erosion control in drainage structures and as an aid in traction during wet weather. However, asphalt-containing material will not be used for erosion control in drainage structures. The reusable materials storage area will be located within the waste disposal footprint and will be relocated periodically as the active working face moves. The size of the stockpiles will vary depending on the amount of materials received and the needs of the facility. Run-on and run-off from rainfall will not need to be controlled in a special manner or segregated from other rainfall for the inert materials. Since asphalt is not an inert material, it will be managed in a manner that will prevent the run-off of contaminated water, the possible discharge of waste materials, or the creation of a nuisance condition. Since these inert and non-inert materials will be continuously accepted and reused for site operations, there is no time limit on their storage.

1.4 Citizen's Convenience Center

A citizen's convenience center for waste and recyclables drop-off will be located within the site entrance facilities, as shown on drawings in Appendix III-D.1. Large capacity (typically thirty-to forty-cubic yard) roll-off-type containers will be provided for the receipt of waste and recyclables from smaller haulers and individuals. Full containers will be emptied at the active working face at the end of each day and containers that are not full will be emptied or covered with a tarp or similar device at the end of the day on each day that rain is expected to prevent the accumulation of rainfall and to minimize the generation of contaminated water. For times when the site is open 24-hours per day, the containers will be emptied when they are full or if the site closes for any reason. Containers holding recyclable materials will be periodically transported to a reuse or recycling facility. However, the containers of recyclable materials will be emptied at least every 180 days. If there is not a sufficient amount of material to haul off economically, the container may be emptied and the material disposed at the working face. Large items, white goods and tires may be stored near the citizen's convenience center in containers that will be periodically transported to an appropriate recycling or reuse facility.

1.5 Leachate Storage Facility

The primary leachate storage for the facility will be provided by the leachate sumps, which are located within each landfill cell. Leachate will be pumped from the sumps through a leachate force main, or hauled via truck to the leachate storage facility. The leachate storage facility will be located as shown in Attachment III-B. The storage facility may consist of two 15,000-gallon storage tanks and/or an evaporation pond. The tanks will be equipped with tops and additional odor control measures will not be required. The secondary containment area provides containment, with 12 inches of freeboard, for the volume from one leachate storage tank and precipitation from the 25-year, 24-hour storm event or 110 percent of the volume from one leachate storage tank. Refer to Appendix III-D.6 for specific details of the facilities and for secondary containment volume calculations. The evaporation pond, if constructed will contain the same composite bottom liner as the class 1 waste cells, if leachate from the class 1 cells will be deposited there. Otherwise it will be the same as the MSW cells. Either option will be constructed in accordance with the Liner Quality Control Plan for the facility. See Appendix III-D.6 for details and the following Section 2.0 for additional discussion.

2.0 SURFACE IMPOUNDMENTS

The PERC facility may utilize an on-site evaporation pond (considered a surface impoundment) for leachate, contaminated water and landfill gas condensate. Detail drawings are provided in Appendix III-B. A minimum of 12-inches of free board will be provided at all times to account for the 25-year, 24-hour rainfall event of 7.5-inches. Leachate, contaminated water and gas condensate will be transported to the pond, or storage tanks, via a force main or hauled via tanker truck. If by force main, the level in the pond will be visually checked prior to activating the pumps to assure the required free board is available. Should there be a need for leachate, contaminated water and gas condensate disposal and the evaporation pond is filled to within 12-inches of the top, alternate disposal methods will be employed such as direct haul off-site to a permitted facility, storage in tanks until the pond is emptied or recirculation back into the waste mass.

3.0 LANDFILL UNITS

There will be two landfill (waste disposal) units at the PERC facility, a north unit and a south unit. Both units have been designed for the acceptance of any waste delivered to the facility and will utilize a composite liner system consisting of a soil liner, flexible membrane liner and a leachate collection system. For any cell to receive class 1 waste, the soil component will be three feet thick and have a hydraulic conductivity no greater than 1×10^{-7} cm/sec. For cells where class 1 waste will not be deposited, the soil layer may be two-feet thick. Class 1 wastes will only be deposited up to the elevation of the perimeter berm and then covered with four feet of clay rich soil prior to adding MSW on top to the final elevations.

3.1 All Weather Operations

Interior roads at the facility will be constructed of native soils, crushed stone, gravel, concrete or masonry rubble, wood chips, sawdust or similar materials that provide access to the disposal area during all weather conditions. Existing roads for oil field traffic are constructed of native soils and have not been a problem for access during times of wet weather. However, to improve operating conditions during periods of wet weather, a disposal area that is close to an all-weather road may be reserved for use. This wet weather area will necessarily move as disposal operations advance.

Facility personnel will be responsible for maintaining the wet-weather landfill road for all-weather access to the disposal area. Stockpiles of material such as crushed stone, gravel, concrete or masonry rubble, wood chips, sawdust or similar material will be kept available for use in maintaining the access roads in a passable condition. Equipment such as motor grader, dozer or other appropriate equipment will be used when needed to control or remove mud from the interior landfill roads, the landfill entrance road and the off-site roads leading to the public roads.

Tracking of mud onto public roads will be minimized by the all-weather surfaces of the interior roads and the landfill entrance road. Additionally, the distance from the landfill entrance to the nearest public road (approximately 2.9 miles) will minimize the possibility of mud being tracked onto public roads. This road has been used for decades by oil and gas companies with no problems regarding the tracking of mud.

The landfill entrance road will be a 30 to 50-foot- wide concrete paved roadway and will provide mud control for waste hauling vehicles prior to exiting the site and returning to the off-site roads. Additional details are provided in Appendix III-D.3.

3.2 Landfilling Method

The method of development of the north and south waste management units will be a combination of area-excavation fill followed by aerial fill. Daily cover will be applied whenever the landfill closes or at the end of each week during 24-hour per day operations as detailed in Part IV – Site Operating Plan. Final cover placement will generally follow the sequence of cell development as shown in Appendix III-D.1 and will occur as portions of the site are filled to capacity. Closure of completed areas will be in accordance with the closure plan provided in Part III, Attachment III-H.

3.3 General Landfill Design and Site Life Calculations

The north waste disposal unit has been designed with a deepest elevation of excavation of 444.7 NGVD which is located in the sump of cell N-8 and assumes a three foot compacted soil liner. The maximum elevation of waste is 855 and the maximum elevation of final cover is 858. The south waste disposal unit has been designed with a deepest elevation of excavation of 431.3 NGVD which is located in the sump of cell S-8 and assumes a three foot compacted soil liner. The maximum elevation of waste is 840 and the maximum elevation of final cover is 843.

For both units, the final excavation side slopes will not be steeper than 3 horizontal to 1 vertical (3H:1V) and the side slopes of the aerial fill component will not be steeper than 4H:1V. The slope of the top domes will be approximately 6 percent.

Together the two units represent approximately 233,316,800 cubic yards for waste and daily cover. Based on a daily waste receipt amount of 10,000 tons per day, 365 days per year of operation and an airspace utilization factor of 0.8775 (65 pounds per cubic foot), the life expectancy is estimated at 53 years. Detailed calculations and assumptions can be found in Appendix III-D.4.

Landfill design cross sections can be found in Appendix III-D.2 and other design details can be found in Appendix III-D.3

3.4 Liner and Final Cover Quality Control Plans

In order to provide instructions to site operations on how to construct the liner and final cover systems so they meet the design intent, construction quality control plans have been developed for each. Details of the liner system can be found in Appendix III-D.3 and the Liner Quality Control Plan (LQCP) can be found in Appendix III-D.7.

An alternate final cover design and demonstration can be found in Appendix III-D.8 and the Final Cover Quality Control Plan is in Appendix III-D.9.