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Part III, Attachment III-J

Cost Estimates for Closure and Post-Closure Care

**Part III
Attachment III-J**

COST ESTIMATES FOR CLOSURE AND POST-CLOSURE CARE

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

PESCADITO
ENVIRONMENTAL RESOURCE CENTER

Initial Submittal March 2015
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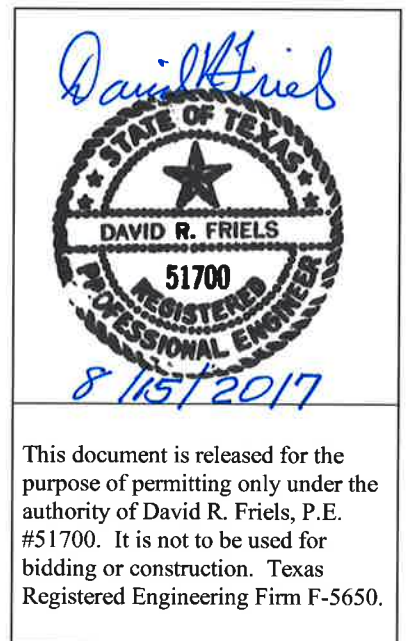
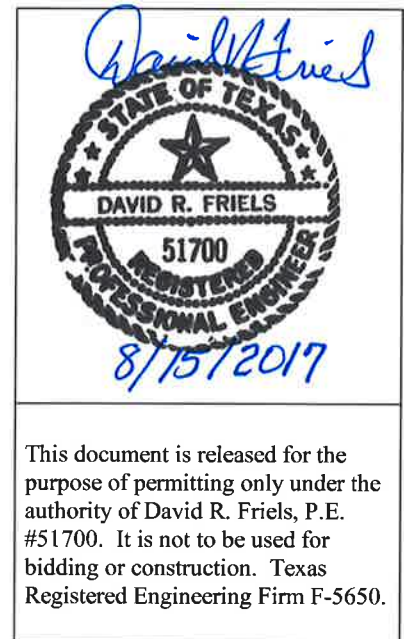


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APPENDIX III-J.1

Closure and Post-Closure Care Cost Estimates



This document is released for the purpose of permitting only under the authority of David R. Friels, P.E. #51700. It is not to be used for bidding or construction. Texas Registered Engineering Firm F-5650.

1.0 INTRODUCTION

The cost estimate for closure and post-closure care of the Pescadito Environmental Resource Center (PERC) has been prepared consistent with the requirements of Title 30, Chapter 330, Subchapter L. The purpose of this attachment is to provide written cost estimates for a third party to close the largest waste area of the landfill that could potentially be open and to conduct post-closure care activities in accordance with the facilities approved Closure and Post-Closure Care Plans and consistent with §330.503 and 507. Additionally, costs are included for closure of the liquid waste solidification unit and the citizen convenience center in accordance with §330.505. Costs are also provided for decommissioning and closure of the contaminated water storage facility once it is no longer required. A copy of the approved Attachment III-J, Closure and Post-Closure Care Cost Estimates will be placed in the Site Operating Record prior to receipt of waste.

The total permitted waste disposal area is 72.33 acres and permitted solid waste volume is 14,306,484 cubic yards (solid waste and daily cover). The projected solid waste capacity is 12,553,940 tons. The facility is located in an arid climate and has a permitted alternate final cover consisting of the following (from top down):

Final Cover Layer	Class 1 Cells	Non-Class 1 Cells
Topsoil/vegetation	7 inches	7 inches
Soil evapotranspiration (storage)	30 inches	30 inches
Geosynthetic drain	Required	Not required
40 mil LLDPE geomembrane	Required	Not required
Intermediate cover soil	12 inches	12 inches

The liquid solidification unit and citizen convenience center will require closure but will not impact post-closure care costs.

3.0 CLOSURE AND POST-CLOSURE CARE COST ESTIMATES

Closure and Post-Closure Care Cost Estimates were prepared consistent with §330.503, §330.505, and §330.507 and are presented in Appendix A. The cost estimates are based closing the maximum area of 72.33 acres of waste fill (i.e., the projected maximum area with waste in place that has not received final cover). Additionally, costs are included to close the liquid waste solidification unit, citizen convenience center, and contaminated water storage facility. The landfill is assumed to be closed using the approved alternate final cover system with LLDPE geomembrane for the closure cost estimate.

The cost estimates include the assumption that all the required groundwater monitoring wells and the landfill gas monitoring probes have been installed. The total number of groundwater monitoring wells required is 16, and landfill gas management plan includes 10 landfill gas monitoring probes. It is assumed that leachate may be generated during the first five years of post-closure; therefore, leachate collection and treatment for 5 years is included in the cost estimate. At the end of the 5-year period or once no longer needed, the contaminated water storage facility will be closed and decommissioned. Items have also been included for surveying, engineering, and contingency.

The post-closure care costs include projected costs to provide the required maintenance and monitoring for the entire facility for the specified post-closure care period of 30 years.

APPENDIX III-J.1

CLOSURE AND POST-CLOSURE CARE COST ESTIMATES

INITIAL SUBMITTAL MARCH 2015

REVISED SEPTEMBER 2015

TECHNICALLY COMPLETE MARCH 11, 2016

REVISED AUGUST 2016

REVISED AUGUST 2017

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TOTAL CLOSURE AND POST-CLOSURE CARE COSTS			
	Closure	Post-Closure	Total
Landfill Unit	\$7,752,367	\$4,125,000	\$11,877,367
Liquid Solidification Unit and Citizens Convenience Center	\$40,994		
TOTAL:	\$7,793,361	\$4,125,000	\$11,918,361

Note: All calculations are carried to full decimal values but numbers are shown rounded.

Closure Costs

Pescadito Environmental Resource Center

Permitted Waste Area: Acres = 72.33 Square Feet = 3,150,695

Largest Area to be closed: Acres = 72.33 Square Feet = 3,150,695

Item Description	Unit	Unit Cost	Quantity	Cost
Engineering				
Surveying Permitted Area, 72.33 Acres	acre	\$ 45.00	72.33	\$ 3,255
Evaluations, Plans, and Specifications	acre	\$ 310	72.33	\$ 22,422
CQA (survey, inspection & testing)	acre	\$ 5,500	72.33	\$ 397,815
Closure Certification, per event	LS	\$ 9,500	1	\$ 9,500
Total Engineering Costs				\$ 432,992
Construction				
7" Erosion Layer, complete in place	cy	\$ 5.00	68,071	\$ 340,353
30" Infiltration Layer, complete in place	cy	\$ 3.00	291,731	\$ 875,193
40 Mil LLDPE Textured	SF	\$ 0.50	3,150,695	\$ 1,575,347
Geosynthetic Drainage Layer	SF	\$ 0.60	3,150,695	\$ 1,890,417
General Fill, 1 foot, complete in place	cy	\$ 3.00	116,692	\$ 350,077
Seeding & Vegetation	acre	\$ 1,750.00	72.33	\$ 126,578
Drainage and Storm Water Control	acre	\$ 2,600.00	72.33	\$ 188,058
LFG Control System	acre	\$ 15,000.00	72.33	\$ 1,084,950
Liquid Solidification & Transport	cy	\$ 18.50	1,800	\$ 33,300
Backfill Liquid Solidification Unit	cy	\$ 3.00	1,800	\$ 5,400
Loading & Disposing Materials from Convenience Center at Landfill	Trip	\$ 165.00	10	\$ 1,650
Steam Cleaning Convenience Center	LS	\$ 1,000.00	1	\$ 1,000
Close Contaminated Water Storage	LS	\$ 5,000.00	1	\$ 5,000
Sub-Total Construction Costs				\$ 6,477,323
Contingency		10%		\$ 647,732
Contract Performance Bond		2%		\$ 129,546
TCEQ Contract Admin/Legal Fees		1%		\$ 64,773
Sub-Total Contingency & Admin Costs				\$ 842,052
Total Construction Costs				\$ 7,319,375
TOTAL CLOSURE COSTS:				\$ 7,752,367

Notes:

1. Surveying is based on permit area which is equal to largest closure area.
2. Geomembrane and geosynthetic drain will be used only over Class 1 cells. Cover will utilize onsite soil
3. Vegetation includes watering until vegetation is established.
4. Storm Water Control includes construction of storm water storage pond.
5. Assume materials from liquid stabilization and citizen convenience center will be disposed in landfill.
6. Contaminated water storage will be closed and decommissioned during post-closure period.

Post-Closure Care Cost Estimate
Pescadito Environmental Resource Center

Assume Closed Area = Permit Area:	72.33 Acres
Post-Closure Care Period Will Be:	30 Years
Number of GW Monitoring Wells:	16 Wells

No.	Item Description	Unit	Unit Cost	Quantity	Cost (30 yr)
1	Site Inspections by Engineer	Each	\$ 3,000	45	\$ 135,000
2	Engineering - Review of Monitoring Results and Correctional Plans	yr	\$ 7,650	30	\$ 229,500
3	Maintain Slopes	yr	\$ 24,200	30	\$ 726,000
4	Re-establish surface vegetation/cover	yr	\$ 35,000	30	\$ 1,050,000
5	GW Sampling & Analysis	well-event	\$ 1,200	960	\$ 1,152,000
6	Methane Monitoring	yr	\$ 4,000	30	\$ 120,000
7	Leachate Treatment for 5 years	gal/yr	\$ 0.10	50,000	\$ 25,000
	Sub-total				\$ 3,437,500
	Contingency		10%		\$ 343,750
	Administration		10%		\$ 343,750
	Post-Closure Care Costs				\$ 4,125,000

Assumptions:

- 1 Site Inspections - quarterly for 5 years and annually thereafter at an average cost of \$3000 per trip
- 2 An engineer will review inspection and monitoring reports & prepare corrective action plans
- 3 Maintain slopes includes minor filling and grading for 10 acres per year at \$2420 per acre
- 4 Approximately 20 acres of vegetation will be re-established each year at \$1750 per Acre
- 5 GW sampling and analysis will be conducted semi-annually at \$1200 per well per event
16 wells x 2 events per year x 30 years = 960 well-events
- 6 Methane monitoring will be conducted quarterly at \$1,000-per event, \$4000 per year
- 7 Leachate treatment will include treating an average of 50,000 gal/yr for 5 years

Closure Cost Estimate
Liquid Stabilization Unit and Citizen's Convenience Center
Pescadito Environmental Resource Center

Facility Area, Acres: 1.1 Liquid Volume: 354,600 Gallons

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	COST
Surveying	LS	\$ 1,000.00	1	\$ 1,000
Engineering	LS	\$ 1,000.00	1	\$ 1,000
Loading and hauling soil for processing	cy	\$ 1.00	800	\$ 800
Processing liquid waste	hr	\$ 60.00	24	\$ 1,440
Loading and hauling solidified Waste	cy	\$ 1.00	800	\$ 800
Steam Cleaning of Concrete	LS	\$ 500.00	1	\$ 500
Excavating, filling and grading	cy	\$ 1.60	18,000	\$ 28,800
Seeding	acre	\$ 731.82	4.0	\$ 2,927
Sub-total				\$ 37,267.28
Contingency			10%	\$ 3,726.73
TOTAL CLOSURE COSTS:				\$ 40,994

Assumptions:

1. Processing soil requirement is approximately one-half of liquid capacity.
2. Approximately one-half of capacity will be processed and hauled to active disposal area.
3. Average cuts and fills for final grading will be approximately 3 feet.