

MUNICIPAL SOLID WASTE PERMIT MAJOR AMENDMENT

PART III-ATTACHMENT J COST ESTIMATES FOR CLOSURE AND POST-CLOSURE



NAME OF PROJECT: Beck Landfill

MSW PERMIT APPLICATION NO.: 1848A

OWNER: Nido, LTD (CN603075011)

OPERATOR: Beck Landfill (RN102310968)

CITY, COUNTY: Schertz, Guadalupe County

Major Amendment: September 2022

Prepared by:



Civil & Environmental Consultants, Inc.

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1.0 INTRODUCTION

These cost estimates for closure and post-closure care have been prepared for Beck Landfill and are consistent with 30 TAC §§330.501 through 330.507. The worst-case closure estimate to show the largest area of final cover that could be required to be installed at the facility has been provided in Appendix J-1, as required in 30 TAC§330.503(a). This estimate will be used to determine required financial assurance for closure upon approval of this permit amendment. Annual updates to this closure estimate will be provided as required in 30 TAC§330.503(a)(1).

2.0 CLOSURE COST ESTIMATE

Consistent with 30 TAC 330.503, these cost estimates provide the cost of hiring a third party to close the largest area of the landfill ever requiring closure at any time during the active life of the facility (worst-case closure estimate). The largest area ever requiring final cover is 155 acres and is shown on Drawing J.1 – Worst Case Area Requiring Final Closure. The closure cost estimate includes the cost for evaluation, design, construction, and contract administration, bonds.

Closure activities are described in Part III, Attachment H - Closure Plan. This cost estimate, in current dollars, generally follows the outline presented in the TCEQ "Cost Estimate Handbook for Closure and Post-Closure Care," Version 1. A summary of the estimated closure costs is presented on Table J-1. Calculations and supporting data for the closure cost estimate are included in Appendix J 1. The cost will be adjusted annually as indicated in Section 4.

3.0 POST-CLOSURE CARE COST ESTIMATE

Consistent with 30 TAC §330.507, the post-closure care period is 30 years for a Type IV municipal solid waste facility. During this period, maintenance is required to assure the integrity and effectiveness of the final cover system and monitoring systems, erosion protection, and the stormwater drainage systems. The estimated post-closure care cost is presented on Table J-2.

The post-closure care cost estimates are based on Part III, Attachment I- Post-Closure Plan and provide a cost for the routine operation, maintenance and monitoring of the final cover system, gas monitoring system, groundwater monitoring system, and stormwater drainage systems. This estimate for routine maintenance and monitoring predicts the cumulative cost throughout the 30-year post-closure care period. Calculations and supporting data for the post-closure care cost estimate are included in Appendix J2. The costs will be adjusted annually as indicated in Section 4.

4.0 COST ESTIMATE ADJUSTMENTS

Consistent with 30 TAC §330.503 and §330.507, during the active life of the unit, Beck Landfill will adjust the cost estimates annually for inflation at least 60 days prior to the anniversary date of the establishment of the financial instrument(s). The adjustment may be made by recalculating the maximum costs of closure in current dollars, or by using an inflation factor derived from the most recent *Implicit Price Deflator for Gross National Product* published by the United States Department of Commerce in its Survey of Current Business. The inflation factor is the result of dividing the latest published annual deflator by the deflator for the previous year. The first adjustment is made by multiplying the closure cost estimate by the inflation factor. The result is the adjusted closure cost estimate. Subsequent adjustments are made by multiplying the latest adjusted closure estimate by the latest inflation factor.

If changes to the final closure or post-closure care plan or the landfill conditions increase the maximum cost, the closure or post-closure care cost estimate and the amount of financial assurance will be revised to reflect the changes. A request for an increase in the cost estimates and financial assurance will be submitted as a permit modification. The closure and post-closure care cost will be evaluated annually, to determine if an increase in the closure or post-closure care cost is required as a result of continued landfill development.

A reduction in the closure or post-closure care cost estimate and the amount of financial assurance may be requested if the cost estimate exceeds the maximum costs of closure at any time during the remaining life of the unit or post-closure care remaining over the post-closure care period. Beck Landfill will submit written notice to the executive director of the detailed justification for the reduction of the cost estimates and the amount of financial assurance. A request for reduction in the cost estimates and financial assurance will be submitted as a permit modification.

5.0 FINANCIAL ASSURANCE

Consistent with 30 TAC §330.503 and §330.507, financial assurance for facility closure and post-closure care will be established, in accordance with 30 TAC Chapter 37, Subchapter R (Financial Assurance for Municipal Solid Waste Facilities). In accordance with 30 TAC §330.630, Beck Landfill will submit a copy of the required documentation at least 60 days prior to the initial receipt of waste. Information regarding evidence of financial assurance for the facility is provided in Appendix J3 - Evidence of Financial Assurance.

FIGURES



NORTH

REVISION RECORD	
NO	DESCRIPTION

SCALE IN FEET

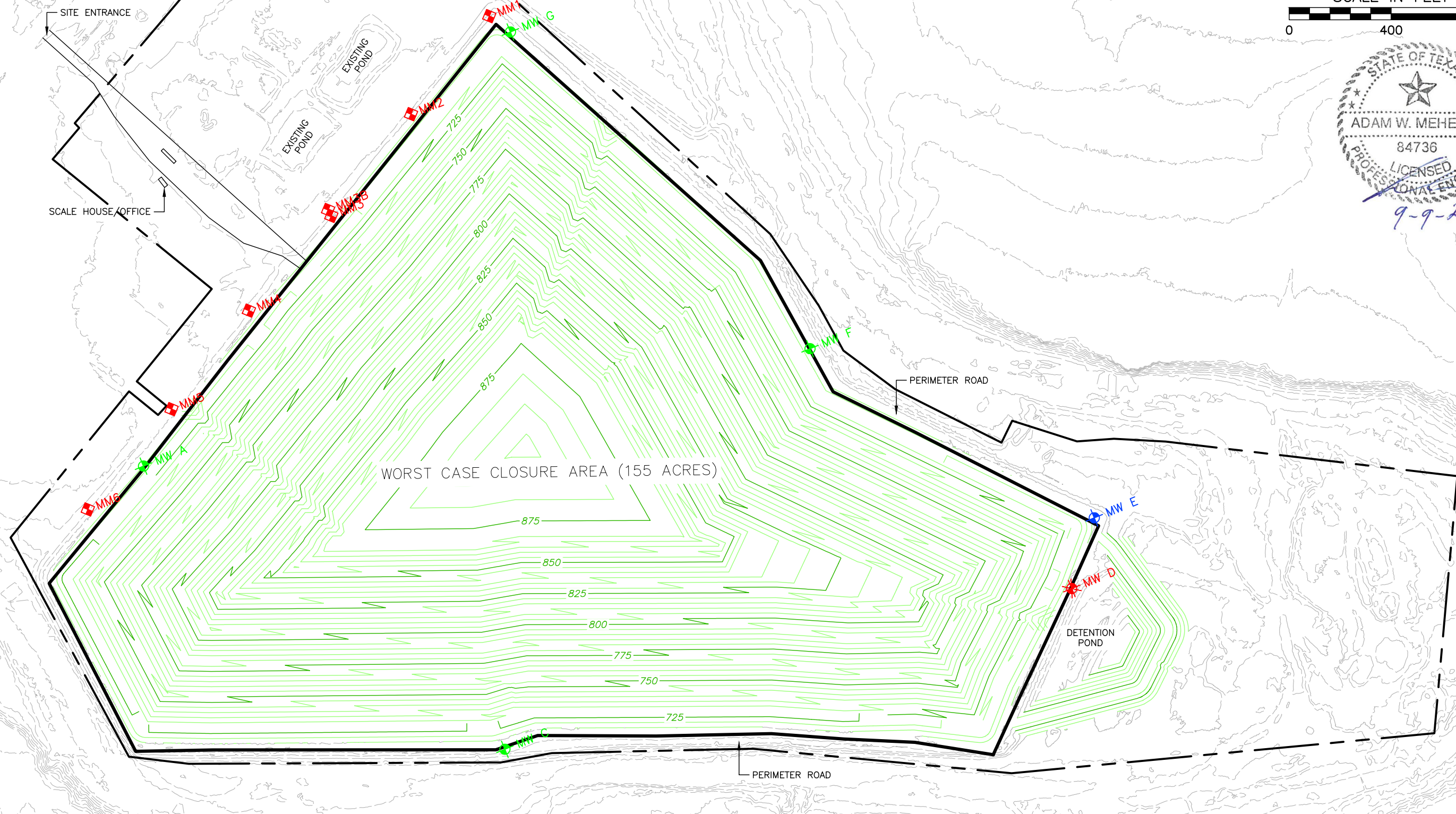


SITE ENTRANCE

SCALE HOUSE/OFFICE

EXISTING POND

EXISTING POND



WORST CASE CLOSURE AREA (155 ACRES)

PERIMETER ROAD

PERIMETER ROAD

DETENTION POND

REFERENCE

TOPOGRAPHIC INFORMATION FROM AERIAL SURVEY BY FIRMATEK: (SEPTEMBER 15, 2021) AUGMENTED WITH A PORTION OF THE EXISTING GROUND SURFACE PREPARED BY CEC.

NOTES

1. INSTALL FINAL COVER IN ACCORDANCE WITH ATTACHMENT DB.

LEGEND

- EXISTING MONITOR WELL
- EXISTING GAS PROBE
- LANDFILL PERMIT BOUNDARY
- LANDFILL FOOTPRINT BOUNDARY
- CONSTRUCT FINAL LAND FILL COVER: ±155 ACRES



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BECK LANDFILL
BEXAR COUNTY, TEXAS

WORST-CASE CLOSURE AREA

DRAWN BY:	MFV	CHECKED BY:	AWM	APPROVED BY:	AWM	FIGURE NO.:	J-1
DATE:	08/2022	DWG SCALE:	1" = 400'	PROJECT NO:	311-653		

P:\310-000\311-653\CADD\Drawg\SW0\311653-J1 WORST CASE CLOSURE.dwg\11 LS:(B/28/2022 - amhevec) - LP: 9/9/2022 5:41 PM

TABLES

**TABLE ATT J-1
WORST-CASE CLOSURE COST ESTIMATE BECK LANDFILL**

Item No.	Cost Items	Estimated Quantities	Units	Approx. Unit Cost	2019 Extended Cost	Comments
1.0 Engineering Subtotal					\$ 737,070	
1.1	Topographic Survey	1	Is	\$ 8,000	\$ 8,000	Survey of waste disposal areas
1.2	Boundary Survey for Affidavit	1	Is	\$ 3,500	\$ 3,500	Metes and bounds description
1.3	Site Evaluation	1	Is	\$ 9,000	\$ 9,000	Site visit and letter report
1.4	Development of Plans	2	Is	\$ 27,500	\$ 55,000	Final cover design and specifications, grading and drainage plans, revegetation
1.5	Contract Administration	3	Is	\$ 26,350	\$ 79,050	
1.6	Closure Inspection and Testing	154.6	acre	\$ 3,700	\$ 572,020	Project Management: CQA
1.7	TPDES and other Permits	1	Is	\$ 10,500	\$ 10,500	
1.8	Additional Engineering Cost Items				\$ -	
2.0 Construction Subtotal					\$ 3,418,449	
2.1	Site Mobilization	1.00	Is	\$ 10,540	\$ 10,540	
2.2	Final Cover Installation				\$ 2,726,629	
	Infiltration Layer	374,132.0	cy	\$ 5.50	\$ 2,057,726	1.5 Feet Thick Compacted Clay
	Topsoil Layer	124,710.7	cy	\$ 4.00	\$ 498,843	6" Topsoil Layer
	Vegetation	154.6	acres	\$ 1,100	\$ 170,060	
2.3	Site Grading	124,711	cy	\$ 2.75	\$ 342,954	Assume 0.5' for entire closure area
2.4	Site Fencing and Security	-	ft		\$ -	Fencing already installed
2.5	Landfill Gas Monitoring and Control System				\$ -	
	Completion of LFG Monitoring System				\$ -	All monitor probes are complete
2.6	Groundwater Monitoring System				\$ -	
	Groundwater Monitoring Well Installation	-	each	\$ -	\$ -	All wells are complete
2.7	Leachate Management				\$ -	Not Applicable
2.8	Stormwater Management	2,220	lf	\$ 42	\$ 93,659	Downchutes
2.9	Other Construction Cost Items	155	AC	\$ 1,583	\$ 244,667	As built surveying
3.0 Storage and Processing Subtotal					\$ 50,000	
3.1	Brush Grinding	5,000	cy	\$ 10.00	\$ 50,000	Grind all brush and other wood material and use onsite for erosion control
3.2	Additional Storage and Processing Closure Costs				\$ -	
Totals						
	<i>Closure Cost Subtotal</i>				\$ 4,205,519	
	<i>Contract Performance Bond (2% of Final closure Costs)</i>		2.00%		\$ 84,110	
	<i>Contingency (10% of Final Closure Cost)</i>		10%		\$ 420,552	
	<i>Third Party Administration (2.5% of Final Closure Costs)</i>		2.50%		\$ 105,138	
	Beck Landfill Closure Grand Total				\$ 4,815,319	

Notes: 1) The closure costs are in 2022 \$.

2) Unit costs based on CEC's experience with similar projects

AUGUST 2022



**TABLE J-2
POST-CLOSURE COST ESTIMATE BECK LANDFILL**

Permit Boundary Area=265.1 acres
Footprint Area=154.6 acres

Item No.	Cost Items	Events per Year	Units	2021 Unit Cost	2021 Annual Cost	2021 30 Year Cost	Notes
1.0 Engineering Subtotal					\$ 12,250	\$ 367,500	
1.1	Site Inspection and Recordkeeping	1	event	\$ 5,000	\$ 5,000	\$ 150,000	One event per year
1.2	Correctional Plans and Specifications	1/5	event	\$ 5,000	\$ 1,000	\$ 30,000	Once every five years
1.3	Site Monitoring						
1.3.1	Sampling and Analysis of GW Wells	5	wells	\$ 950	\$ 4,750	\$ 142,500	Five wells
1.3.2	Piezometers/Well Abandonment	0.00	wells	\$ 1,500	\$ -	\$ -	Not Applicable
1.3.3	LFG Quarterly Monitoring	1	quarterly	\$ 1,500	\$ 1,500	\$ 45,000	Six probes
1.3.4	LFG Probe Plugging and Abandonment	0.00	probes	\$ 1,500	\$ -	\$ -	Not Applicable
1.4	Additional Engineering Costs	0	event	\$ 350	\$ -	\$ -	Not Applicable
2.0 Construction and Maintenance Subtotal					\$ 39,200	\$ 1,176,000	
2.1	Caps and Sideslopes Repairs/Revegetation	16	acres	\$ 1,500	\$ 23,250	\$ 697,500	10% of cap each year
2.2	Mowing and Vegetation Management	155	acres	\$ 30	\$ 4,650	\$ 139,500	Mow entire cap each year
2.3	Groundwater Monitoring System Maintenance	5	events	\$ 100	\$ 500	\$ 15,000	Five wells
2.4	LFG Monitoring Probes Maintenance	6	probes	\$ 50	\$ 300	\$ 9,000	Six probes
2.5	LFG Collection System Maintenance	0	acres	\$ 250	\$ -	\$ -	Not Applicable
2.6	Perimeter Fence and Gates Maintenance	1	event	\$ 1,500	\$ 1,500	\$ 45,000	One event per year
2.7	Access Roads Maintenance	0.5	events	\$ 10,000	\$ 5,000	\$ 150,000	Event every other year
2.8	Drainage System Cleanout/Repairs	1	events	\$ 4,000	\$ 4,000	\$ 120,000	One event per year
2.9	Additional Construction Costs				\$ -	\$ -	Not Applicable
3.0 Leachate Management Subtotal					\$ -	\$ -	
3.1	Leachate Collection System Maintenance	0	event		\$ -	\$ -	Not Applicable
3.2	Leachate Disposal	0	gallons/yr		\$ -	\$ -	Not Applicable
3.3	Additional Leachate Management Costs	0	event		\$ -	\$ -	Not Applicable
Totals							
	<i>Post-Closure Cost Subtotal</i>				\$ 51,450	\$ 1,543,500	
	<i>Contingency (10% of Subtotal)</i>	10%			\$ 5,145	\$ 154,350	
	<i>Third Party Administration (2.5% of Subtotal)</i>	2.5%			\$ 1,286	\$ 38,588	
	Beck Landfill Post-Closure Grand Total				\$ 57,881	\$ 1,736,438	

Notes: 1)The post-closure costs are in 2022 \$.

2) Costs are based on CEC's experience with similar projects



Aug-22

MUNICIPAL SOLID WASTE PERMIT MAJOR AMENDMENT

PART III-APPENDIX J-1 CLOSURE COST ESTIMATE



NAME OF PROJECT: Beck Landfill
MSW PERMIT APPLICATION NO.: 1848A
OWNER: Nido, LTD (CN603075011)
OPERATOR: Beck Landfill (RN102310968)
CITY, COUNTY: Schertz, Guadalupe County
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1.0 ENGINEERING COSTS

Consistent with 30 TAC §330.503, the engineering costs include surveying and evaluation of the entire permit area. However, the development of construction plans and construction quality assurance testing is limited to the area requiring final cover construction, as indicated by Drawings J.1 and J.2.

1.1 Topographic Survey

A topographic survey will be required to verify the existing elevation and slopes of the landfill to ensure conformance with the final cover system, drainage system, and final grading designs. The cost of the topographic survey is calculated on a per acre basis.

1.2 Boundary Survey

A boundary survey is required for the filing of the affidavit of closure and deed record of any area of the site that has received waste. Other activities include publication of the public notice of closing activities. The cost of the boundary survey is calculated on a per acre basis.

1.3 Site Evaluation

The evaluation includes a site inspection to identify waste disposal areas, analyze drainage and erosion protection needs, and to determine other site operational features that are not in compliance with the permit. The site evaluation also includes verifying the need for new or relocation of existing groundwater monitoring wells and landfill gas monitoring probes, analysis of groundwater samples, and review of site operating record. The third party consultant who performed the site evaluation will prepare and submit an engineering report to the executive director to document the status of the site. The report will identify all areas of work and the associated implementation costs necessary to safely close the landfill operations with recommendations on how to fulfill these needs. The cost of the site evaluation is based on the entire permit area.

1.4 Development of Plans

The final closure, plan the final cover system design and specifications, grading and drainage plans, specification for revegetation, design of any other improvements to bring the site into compliance with the permit, the closure schedule, and coordination with the TCEQ and provision

of closure notice to the public. Construction plans, specifications, and contract documents will be prepared in suitable detail to allow the project to be competitively bid. The cost of development of plans is based on the largest area requiring closure.

1.5 Administration

The consultant will advertise the project, receive the bids, evaluate the bids, award the closure construction contract and administer the contract during construction. The cost of administration is calculated based on the lump sum basis.

1.6 Closure Inspection and Testing

Closure inspection and testing includes observations by the professional of record during closure construction, thickness and permeability verifications, and preparation of a closure certification report. The cost of inspection and testing is based on the largest area requiring closure.

1.7 Groundwater Consultant

The third-party consultant will prepare plans, specifications, and other documents necessary for compliance with applicable federal and state laws and requirements, including the Clean Water Act, for the proper closure of the site.

2.0 CONSTRUCTION COSTS

The largest area that will require closure during the active life of the facility is shown on Drawing J.1. Construction costs include construction of final cover over 155 acres.

2.1 Mobilization

The cost of mobilizing personnel and construction heavy equipment must be included as part of the construction costs.

2.2 Final Cover System

The landfill will be closed with a non-synthetic cover consisting of a minimum 18-inch recompacted cohesive soil cover, exhibiting a minimum hydraulic conductivity of 1.0×10^{-7} cm/sec, overlain by a minimum 6-inch erosion layer consisting of earthen material that is capable of sustaining native plant growth.

The quantity of materials required for the final cover system is based on the largest area requiring closure.

2.3 Site Grading and Drainage

Site grading and drainage includes final grading, drainage structures on the landfill cover and in the perimeter drainage channel, and sedimentation controls. The quantity of grading and drainage is based on the largest area requiring closure.

2.4 Site Fencing and Security

Site fencing and security for the entire landfill will have been installed during site development. The closure estimate assumes that 500 feet of fencing will need to be replaced at closure.

2.5 Landfill Gas Control System

Final installation of the landfill gas monitoring and control systems must include the installation costs of pipes and appurtenances. In the event of a forced closure, the systems may not have been

completed, thus, the estimated costs to complete the landfill gas monitoring and control system must be provided.

2.6 Groundwater Monitoring Well Installation

Upon closure of the site, it may be necessary to relocate the compliance boundary. This requires the installation of new monitor wells. Piezometer or monitor well abandonment is the cost of abandoning (plugging) piezometers or monitor wells that are no longer needed. Determine the number of piezometers or monitor wells to be abandoned and include the total cost.

2.7 Leachate Collection System Completion

There is no leachate collection system at the Beck Landfill.

2.8 Stormwater Management

To reduce the potential long-term impacts of the landfill on surface water quality, drainage features must be incorporated into the final cover design to direct runoff, minimize erosion, control sediments, and avoid ponding of stormwater. The drainage system construction costs must be included.

3.0 STORAGE AND TRANSFER UNITS

All waste and processed and unprocessed materials associated with storage and/or processing units must be removed during the closure process.

3.1 Waste Disposal

The cost of disposal of waste at an authorized facility.

3.2 Material Removal and Disinfection

The cost of removal, including transportation, of any remaining processed and unprocessed materials to an authorized off-site location.

3.3 Waste Disposal

The cost of dismantling and/or disinfection of leachate storage and/or processing units and disposal.

3.4 Additional Storage and Processing Closure Costs

Cost for removal of remaining storage and processing areas.

4.0 ADMINISTRATIVE COSTS

4.1 Contingency

An additional amount equal to ten percent of the total cost of subtotals is added to cover unanticipated events during implementation of closure activities.

4.2 Contract Performance Bond

The cost of a performance bond is two percent of the total cost of subtotals.

4.3 Third Party Administration and Project Management Costs

Two and a half percent of the total cost of engineering and construction has been included to account for TCEQ administration of contracts.

In accordance with §330.630, Beck Landfill will submit a copy of the documentation required to demonstrate financial assurance as specified in Chapter 37, Subchapter R of this title (relating to Financial Assurance for Municipal Solid Waste Facilities) at least 60 days prior to the initial receipt of waste.

MUNICIPAL SOLID WASTE PERMIT MAJOR AMENDMENT

PART III-APPENDIX J-2 POST-CLOSURE CARE COST ESTIMATE



NAME OF PROJECT: Beck Landfill
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2.0 CONSTRUCTION/MAINTENANCE COSTS.....3

3.0 ADMINISTRATIVE COSTS.....4



POST-CLOSURE CARE COST ESTIMATE CALCULATIONS

Consistent with 30 TAC §330.63(j) and §330.507, the post-closure care period is 30 years for a Type IV municipal solid waste facility. Post-closure cost estimates were developed for the area with final cover in place and largest area ever requiring closure, combined, as shown on Drawing J.1. The post-closure care cost estimate is based on the Part III, Attachment I – Post-Closure Plan. The following sections describe the line items in the cost estimate calculations.

1.0 ENGINEERING COSTS

1.1 Site Inspection and Recordkeeping

Regularly scheduled and event-driven site inspection must be performed to identify areas experiencing settlement, subsidence, erosion, or other drainage related problems, and note the conditions of the environmental control and monitoring systems, including groundwater monitoring, and landfill gas monitoring systems.

1.2 Correctional Plans and Specifications

The cost for an engineering consultant to prepare corrective measure construction plans and specifications to correct problems identified during site inspections.

1.3 Site Monitoring

The cost of performing semiannual groundwater (including costs for sampling and analyzing parameters, and assessment and reporting) and quarterly landfill gas monitoring (including costs for sampling and reporting) and the monitoring of other site-specific systems at the landfill during the post-closure period.

2.0 CONSTRUCTION/MAINTENANCE COSTS

Post-closure construction/maintenance will be required periodically, to correct problems identified during the site inspections and as specified by the correctional plans and specifications. This item includes site maintenance, cover and drainage maintenance, annual seeding and mowing.

2.1 Cap and Sideslopes Repairs and Revegetation

The cost of repair of the cap and cap drainage control structures due to erosion or structural integrity failures and maintaining final cover vegetation to minimize erosion.

2.2 Mowing and Vegetation Control

The cost of controlling vegetation growth on the final cover and other areas of the landfill.

2.3 Groundwater Monitoring System Maintenance

The cost of repairs/replacement and routine maintenance.

2.4 LFG Monitoring Probes Maintenance

The cost of repairs/replacement and routine maintenance.

2.5 Perimeter Fence and Gates Maintenance

The cost of maintaining perimeter fence and gates to restrict unauthorized access to the closed landfill.

2.6 Access Right of Way Maintenance

The cost of maintaining the access roads and other rights of way to the closed landfill to conduct inspections, environmental sampling, routing maintenance and other post-closure activities.

2.7 Drainage System Cleanout and Repairs

The cost to include costs for maintaining and repairing ditches, conveyance structures, and ponds/basins.

3.0 ADMINISTRATIVE COSTS

3.1 Contingency

An additional amount equal to ten percent of the total cost of subtotals is added to cover unanticipated events during implementation of closure activities.

3.2 Third Party Administration and Project Management Costs

Two and a half percent of the total cost of engineering and construction has been included to account for TCEQ administration of contracts.

MUNICIPAL SOLID WASTE PERMIT MAJOR AMENDMENT

PART III-APPENDIX J-3 FINANCIAL ASSURANCE



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