

Attachment E

Financial Assurance Documentation

2014 Post Closure Maintenance Cost Estimate for Cedar Hills Regional Landfill

This 2012 estimate was reviewed for 2014. The review was to identify any changes to assumptions, new systems to be maintained, maintenance cost changes unrelated to inflation and other major impacts to the cost estimate. No changes were identified for 2014.

Background

WAC 173-351 requires owners and operators of Municipal Solid Waste Landfills (MSWLF) have a detailed written estimate, in current dollars, of the cost of hiring a third party to conduct post-closure care for the MSWLF unit or all MSWLF units in compliance with the post-closure plan developed under WAC 173-351-500(2).

The Post Closure Maintenance (PCM) estimates have been prepared for Cedar Hills Regional Landfill (CHRLF) for many years. These estimates are prepared based on historical levels of effort required for tasks that will continue through the post closure period and levels of effort required for similar tasks conducted at closed landfills currently maintained by the King County Solid Waste Division (SWD). These estimates are updated annually. The update for 2012 includes a review of the proposed activities and adjusts for activities that have changed based on changes to operation and maintenance practices utilized by SWD.

Purpose

The purpose of this document is to provide the basis for the PCM estimate for 2012. This includes the underlying assumptions and the documented changes from previous years.

Major PCM Elements

All tasks from previous PCM estimates were reviewed to determine that all tasks are still necessary and that all necessary tasks are included. The itemized tasks were reviewed with SWD operations leads and or supervisors.

All tasks were reviewed to determine whether current estimates of levels of effort to complete the task are still current and to determine appropriate level of effort for any new tasks.

The estimate is based on tasks being performed by SWD staff or contractors in the same manner as currently performed. To compensate for the potential that all tasks may be performed by contractors, a project management cost was added to the overall estimate. The underlying assumption is that the cost of performing the work remains constant whether performed by SWD forces or contractors, but SWD would incur increased costs for managing contracts with the contractors.

The cost items in the PCM estimate include:

- Cover Maintenance & General Site Maintenance
 - Vegetation control
 - Geomembrane repair
 - Road maintenance

- Fence Repair
- Litter Control
- Grading
- Well Boot repair
- Leachate System Maintenance
 - Aerator repair and maintenance
 - Pump repair and maintenance
 - Leachate extraction well replacement
 - Periodic line cleaning
 - Air compressor repair and maintenance
- Stormwater System Maintenance
 - Stormwater conveyance system cleaning and maintenance
 - Catch basin cleaning and maintenance
 - Pond cleaning and maintenance
- Landfill Gas System Maintenance
 - Blower repair and maintenance
 - Flare repair and maintenance
 - Stack emissions testing
 - Routine testing and maintenance
- Environmental Monitoring
 - Groundwater and leachate samples
 - Laboratory analysis
- Electrical Utilities
- Permits
 - Operating Permit for Closed Landfill
 - Air Operating Permit
- Wastewater Utility Fees
- Project Management and Reporting
 - Sample collection
 - Data management
 - Reporting
 - Project Management
- Investigation and Remediation
- Project management costs for third party contractor
- Contingency

Key Assumptions for Cost Estimates

Several key assumptions were made regarding the cost estimates. These assumptions are outlined below.

- ❖ The post closure period will be thirty years in length, beginning when the closure is approved by the Seattle King County Department of Public Health.
- ❖ At the time of closure, BEW or equivalent facility will be operating to utilize the landfill gas generated at the site. The facility will have scheduled downtime for maintenance, requiring

use of the flares. The source testing requirement for this minimized use of the flares will be to test all flares once every five years.

- ❖ The closure project at the final closure will leave all systems in full working condition, with no anticipated major repairs.
- ❖ Support facilities and equipment currently located at CHRLF will either be relocated or will be supported through another funding source..
- ❖ Leachate recirculation is not included in the estimate. It is expected that if leachate recirculation is implemented, this will represent a cost savings.
- ❖ Operating and maintenance costs are included in the hourly rates for equipment.
- ❖ Overhead costs for employees include all costs associated with providing resources for employees to perform their tasks, including supervision.
- ❖ Equipment required to perform tasks is included in task budgets, including pickups for supervisors and leads. Equipment costs are based on federal approved rates, as available and California State approved rates otherwise.
- ❖ The Industrial General Stormwater Permit (IGSWP) will no longer be in effect after closure and no surface water sampling will be required.
- ❖ The estimate is based on tasks being performed by SWD staff or contractors in the same manner as currently performed. To compensate for the potential that all tasks may be performed by contractors, a project management cost was added to the overall estimate. The underlying assumption is that the cost of performing the work remains constant whether performed by SWD forces or contractors, but SWD would incur increased costs for managing contracts with the contractors.
- ❖ Contingency – The contingency included in this estimate includes known unknowns such as responses to changes in groundwater quality or need to address landfill gas in native soil. This contingency assumes there will be one major investigation and remediation project during the thirty year closure period. This activity is projected from years 5 through 10. Additional contingency is included to address the management of the risk that the landfill gas and leachate systems may have a failure requiring extensive repair or replacement and is assumed at 25% of the maintenance cost of the leachate and landfill gas systems.
- ❖ Major cost items that have more uncertainty include a 5-10% estimating contingency. These items are maintenance activities that are currently performed and therefore have reliable cost projections to perform the work, but the frequency that will be required is less certain. Higher contingency is applied to systems that have had more variable maintenance costs.
- ❖ Unknown unknowns are not included in the contingency and are assumed to be covered by management reserves. Examples of potential unknown unknowns include remediation due to Queen City Farms, changes to regulations and natural disasters.

Assumptions specific to the tasks are included in the detail tables that provide the supporting documentation for the estimate.

Summary of Costs

The summary of costs is provided in the table below.

Cedar Hills Regional Landfill Post Closure Maintenance Cost Estimate				
Task Group	Annual Costs	Contingency	Annual Amount	Basis
Cover Maintenance	\$443,042	5%	\$461,833	Based on current estimated hours for PCM; updated wage and benefit rates
Leachate System Maintenance	\$168,046	10%	\$178,844	Based on current estimated hours for PCM; updated wage and benefit rates; reduced aerator repair and replacement to reflect historical; adjusted for reduced leachate production in PCM
Stormwater System Maintenance	\$356,431	5%	\$382,209	Based on current estimated hours for PCM; updated wage and benefit rates
Landfill Gas System Maintenance	\$206,050	10%	\$226,655	Based on current estimated hours for PCM; updated wage and benefit rates; assumes BEW or alternative utilizing all LFG; flares operating intermittently requiring source testing every 5 yrs.
Environmental Monitoring	\$143,150	10%	\$144,000	analytical lab, weather station maintenance
Electrical Utilities	\$250,000		\$250,000	Based on current costs
Permits	\$5,000		\$5,000	Based on current permit costs
Project Management and Reporting	\$655,893		\$655,893	Includes project management, field staff for monitoring; database mgmt. contract mgmt.; field equipment
Project management costs for third party contractor	\$199,135		\$206,949	Assumes contractor can complete labor at same cost as KCSWD; KC assumes 9% cost to manage - contingency is inherent to labor tasks
Wastewater utility	\$250,000		\$250,000	Assume reduced to average of 100 MG per year over the 30 years
Base Estimate	\$2,666,748		\$2,761,382	
Contingency	\$260,191		\$268,041	Contingency based on 25% of leachate & LFG system maintenance plus one \$5M project occurring between years 5 and 10
TOTAL	\$2,926,938		\$3,029,424	

Exclusions

This estimate does not include costs of unknown risks. The risks addressed are identifiable and have some probability of occurring based on experiences at other closed sites. The estimate does not address the potential for the PCM period to extend beyond the minimum thirty years prescribed in the WAC 173-351.

Attachments

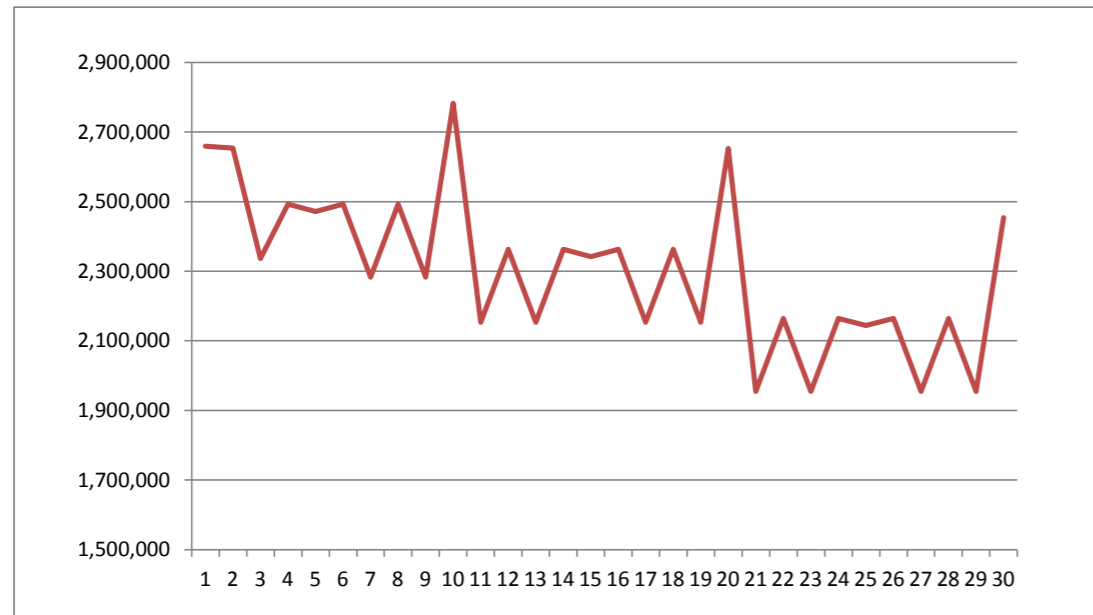
Distribution of Cost by Year
Project Management and Reporting Summary Costs
SWD Labor Costs by Task
Contract Costs by Task
Equipment Costs by Task
Landfill Reserve Fund Cash Flow

DRAFT PCM ESTIMATE FOR CEDAR HILLS REGIONAL LANDFILL

Updated 6/26/2014

Updated by VOO

PCM year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PCM Task Group																
Cover System Maintenance	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528
Leachate System Maintenance	94,111	119,111	94,111	119,111	129,111	119,111	94,111	119,111	94,111	238,111	94,111	119,111	94,111	119,111	129,111	119,111
Stormwater System Maintenance	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622
Landfill Gas System Maintenance	191,495	341,495	191,495	341,495	313,995	341,495	191,495	341,495	191,495	463,995	191,495	341,495	191,495	341,495	313,995	341,495
Environmental Monitoring	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650
Electrical Utilities	331,000	331,000	331,000	331,000	331,000	331,000	331,000	331,000	331,000	331,000	300,000	300,000	300,000	300,000	300,000	300,000
Permits	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Field Engineering	298,700	298,700	298,700	298,700	298,700	298,700	298,700	298,700	298,700	298,700	249,409	249,409	249,409	249,409	249,409	249,409
Project management and Reporting	320,571	320,571	320,571	320,571	320,571	320,571	320,571	320,571	320,571	320,571	271,280	271,280	271,280	271,280	271,280	271,280
Project management costs for third party contractor	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855
Wastewater utility	431,542	216,542	109,042	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292
SUBTOTAL	2,602,073	2,562,073	2,279,573	2,400,823	2,383,323	2,400,823	2,225,823	2,400,823	2,225,823	2,642,323	2,096,241	2,271,241	2,096,241	2,271,241	2,253,741	2,271,241
Contingency	57,121	92,121	57,121	92,121	88,621	92,121	57,121	92,121	57,121	140,421	57,121	92,121	57,121	92,121	88,621	92,121
TOTAL	2,659,194	2,654,194	2,336,694	2,492,944	2,471,944	2,492,944	2,282,944	2,492,944	2,282,944	2,782,744	2,153,362	2,363,362	2,153,362	2,363,362	2,342,362	2,363,362



DRAFT PCM ESTIMATE FOR CEDAR HILLS REGIONAL LANDFILL

Updated 6/26/2014

Updated by VOO

PCM year	17	18	19	20	21	22	23	24	25	26	27	28	29	30
PCM Task Group														
Cover System														
Maintenance	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528	375,528
Leachate System														
Maintenance	94,111	119,111	94,111	238,111	94,111	119,111	94,111	119,111	129,111	119,111	94,111	119,111	94,111	238,111
Stormwater System														
Maintenance	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622	265,622
Landfill Gas System														
Maintenance	191,495	341,495	191,495	463,995	191,495	341,495	191,495	341,495	313,995	341,495	191,495	341,495	191,495	463,995
Environmental Monitoring	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650	134,650
Electrical Utilities	300,000	300,000	300,000	300,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Permits	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Field Engineering	249,409	249,409	249,409	249,409	200,117	200,117	200,117	200,117	200,117	200,117	200,117	200,117	200,117	200,117
Project management and Reporting	271,280	271,280	271,280	271,280	221,989	221,989	221,989	221,989	221,989	221,989	221,989	221,989	221,989	221,989
Project management costs for third party contractor	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855	153,855
Wastewater utility	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292	55,292
SUBTOTAL	2,096,241	2,271,241	2,096,241	2,512,741	1,897,658	2,072,658	1,897,658	2,072,658	2,055,158	2,072,658	1,897,658	2,072,658	1,897,658	2,314,158
Contingency	57,121	92,121	57,121	140,421	57,121	92,121	57,121	92,121	88,621	92,121	57,121	92,121	57,121	140,421
TOTAL	2,153,362	2,363,362	2,153,362	2,653,162	1,954,780	2,164,780	1,954,780	2,164,780	2,143,780	2,164,780	1,954,780	2,164,780	1,954,780	2,454,580

2012 PCM Cost Estimate Project Management and Reporting Costs

Staff	Body of Work		hours	Equip Cost	Labor Rate	OH	Benefit	Load Labor Rate	Base labor cost	Loaded Labor Cost	Total Task
						74.07%	63.70%				
Engineer III	Project management, reporting	O&M projects, Annual reporting	2080		44.88	33.242616	22.44	100.562616	93350.4	209170.2413	
Engineer II	Data mgmt, Contract Mgmt	Database, reporting, lab contract	2080		42.636	31.5804852	27.1591	101.3756172	88682.88	210861.2838	
Project Management Task Total											420031.53
Field Engineering											
Engineer II	Sample collection, surveying	1 FTE for CH	2080		42.636	31.5804852	27.1591	101.3756172	88682.88	210861.2838	
	Repair & Maint - monitoring equip	based on 2012 budget		25000							
Field Engineering Task Total											235861.28
Laboratory Services											
	GW	44 wells x \$479 x 4 x 20 %	101164.8								
	Leachate	1 leachate x \$55 x 24 x 20 %	1452								655892.809
		VOA Trip Blanks	22000								
		no SW monitoring									
		misc samples 20 * 500	10000								
Laboratory Services Total											134616.8
ESS TOTAL											790509.61

Labor Costs by Task

<u>Task</u>	<u>Labor Costs</u>
Access & On Site Road Maintenance	\$11,273.31
Fence Repair & Vegetation Control	\$75,908.06
Litter or Illegal Dumping Pickup	\$2,292.11
Vegetation Control	\$53,297.56
Periodic Line Cleaning	\$60,073.12
Routine Maintenance	\$34,774.99
Stormwater Conveyance System Maintenance	\$86,967.09
Catch Basin and Grate Cleaning	\$19,235.47
Retention Basin Cleaning	\$52,925.51
TOTAL	\$396,747.22

Contract Cost by Task

<u>Task</u>	<u>Annual Cost</u>
Weather Station Maintenance	\$8,500
Grading	\$135,000
Drainage Improvements	\$38,175
Liner Repair	\$5,000
Well Boot Repair	\$7,500
Leachate Well Replacement	\$7,500
Leachate Well Replacement	\$7,500
Annual Pump Repair	\$12,500
Major Pump Replacement	\$7,000
Annual Aerator Repair	\$0
Aerator Replacement	\$12,500
Air Compressor Overhaul	\$900
Major Blower and Motor Replace	\$12,000
Flare Rehabilitation	\$100,000
Actuator Valve Replacement	\$1,000
Well Replacement	\$7,500
Stack Emissions Testing	\$16,000
	\$378,575

Equipment Costs By Task

<u>Task</u>	<u>Amount</u>
Access & On Site Road Maintenance	\$19,232
Fence Repair & Vegetation Control	\$85,350
Litter or Illegal Dumping Pickup	\$835
Vegetation Control	\$13,920
Periodic Line Cleaning	\$8,700
Routine Maintenance	\$16,318
Stormwater Conveyance System Maintenance	\$26,959
Catch Basin and Grate Cleaning	\$12,242
Retention Basin Cleaning	\$28,350
TOTAL	\$211,905

Task Code	PROJECT DESCRIPTION	2014 (1)	2015 (2)	2016 (3)	2017 (4)	2018 (5)	2019	2020 (9)	2021 (10)	2022 (11)	2023 (12)	2024 (13)	2025 (14)	2026	2027	2028	Projected spending 14 - 28	
Low Org 7254 - CLOSURE																		
13332	CH AREA 6 CLOSURE	350,000															350,000	
13335	CH AREA 7 CLOSURE	1,431,284	3,044,012	1,598,057	3,839,663	7,782,414	657,567										18,352,997	
PROPOSED	CH AREA 8 CLOSURE						691,856	4,771,433	4,771,433	4,771,433	4,550,398	2,750,384	28,750	28,750	1,226,112	7,320,109	30,910,658	
PROPOSED	CH AREA 5678 TOP LIFT											9,152,000	9,152,000	9,152,000	9,152,000		36,608,000	
	Contingency (already in constn project d	0	0	0	0	0	0											
	Totals - Closure: 7254	1,781,284	3,044,012	1,598,057	3,839,663	7,782,414	1,349,423	4,771,433	4,771,433	4,771,433	4,550,398	11,902,384	9,180,750	9,180,750	10,378,112	7,320,109	86,221,655	
Low Org 7252 - New Area Development																		
1115992	AREA 8 DEVELOPMENT (15)	2,709,185	\$8,577,084	\$10,507,841	\$11,731,532	\$462,750											33,988,392	
PROPOSED	AREA 5678 DEVELOPMENT										\$50,000						50,000	
	Total NAD	2,709,185	8,577,084	10,507,841	11,731,532	462,750	0	0	0	0	50,000	0	0	0	0	0	34,038,392	
Low Org 7253 - FACILITY IMPRVMENTS																		
	UPGRADE		162,000	1,265,000	120,000												1,547,000	
1033545	CH ENVIRONMENTAL CONTROL SYSTEM IMPROVEMENTS	2,387,300	1,819,450	393,750													4,600,500	
	Total Org 7253	2,387,300	1,981,450	1,858,750	320,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	8,747,500	
Total A, B, C																		
		6,877,769	13,602,546	13,964,648	15,891,195	8,445,164	1,549,423	4,971,433	4,971,433	4,971,433	4,800,398	12,102,384	9,380,750	9,380,750	10,578,112	7,520,109	129,007,547	
Assumptions																		
General Schedule Basis																		
(1) 2014 No construction								Area 7 fills to penultimate lift in 4th qtr 2017										
(2) Area 7 Stage 2 Construction; SSWA Excavation; Area 8 Design								Area 5678 prepared for receiving waste construction inhouse 2023										
(3) 2016 Area 8 Development Construction; Facility relocation								Area 5678 begins receiving waste in 3rd qtr 2023										
(4) 2017 Complete Area 8 construction; Area 7 Stage 3 closure construction								Interim closure Area 7 in 2018										
(5) 2018 Area 7 Top deck interim closure								Interim closure Area 8 in 2024										
(9) 2020 Area 8 Phase 1 Closure								first stage closure A5678 in 2025										
(10) 2021 Area 8 Phase 2 Closure								Area 5678 closure over four years										
(11) 2022 Area 8 Phase 3 Closure								Area 5678 receive waste over about 2 years										
(12) 2023 Area 8 Phase 4 Closure; Top Deck filling design								Final Closure of Site completed in 2028 - two construction seasons after last waste received										
(13) 2024 Area 8 Top deck Interim Closure								General Budget Basis										
(14) 2025 - 2028 Top Deck Closures								Closure for Area 7 - \$325K /acre; plus 8.6% tax, 15% design, 5% CM, 1% KCPM										
								Development for Area 8 - Prepared by HDR using \$460K/acre for construction, refined by MR										
								Closure for Area 8 - Prepared by HDR using \$325K/acre construction, refined by MR										
								Closure for Area 5678 - \$325K/acre using grading plan from HEC for 567 and adding Area 8 acreage										
								Contingency based on original project estimates - not updated to current draft contingency policy guidelines										