

Facility ID #440177
Gunnison Energy LLC - Spadfora Water Storage Facility
Estimate of Probable Closure Cost
Date: 05/15/15 Rev 001
By: WPM - Western Project Management



Cost Estimate Summary

Item	Description	Quantity	Unit	Direct Unit Cost	Direct Total Cost	Contingency (15-25%)	Subtotal	Payment & Performance Bonds (1.5%)	Subtotal	Contractor Overhead & Profit (15%)	Total
A.	Construction Contractor Costs										
1	Mobilization / Demobilization	2	Lump Sum	\$ 18,500.00	\$ 37,000.00	\$ 7,400.00	\$ 44,400.00	\$ 666.00	\$ 45,066.00	\$ 6,759.90	\$ 51,825.90
2	Soil Sampling for Contamination	20	Locations	\$ 375.35	\$ 7,507.00	\$ 1,876.75	\$ 9,383.75	\$ 140.76	\$ 9,524.51	\$ 1,428.68	\$ 10,953.18
3	Surface Water Sampling for Contamination	15	Samples	\$ 546.04	\$ 8,190.60	\$ 1,638.12	\$ 9,828.72	\$ 147.43	\$ 9,976.15	\$ 1,496.42	\$ 11,472.57
4	Monitoring well Abandonment	4	Wells	\$ 597.25	\$ 2,389.00	\$ 477.80	\$ 2,866.80	\$ 43.00	\$ 2,909.80	\$ 436.47	\$ 3,346.27
5	Disposal of Pond Fluids (Assumed to be non-hazardous)	24,315,305	Gallons	\$ 0.02	\$ 534,346.29	\$ 106,869.26	\$ 641,215.55	\$ 9,618.23	\$ 650,833.78	\$ 97,625.07	\$ 748,458.85
6	Remove & Dispose of Operating Equipment	1	Lump Sum	\$ 118,602.29	\$ 118,602.29	\$ 23,720.46	\$ 142,322.75	\$ 2,134.84	\$ 144,457.59	\$ 21,668.64	\$ 166,126.23
6.5	Removal & Disposal of storm and fench drain, collection piping	1	Lump Sum	\$ 149,198.34	\$ 149,198.34	\$ 29,839.67	\$ 179,038.00	\$ 2,685.57	\$ 181,723.57	\$ 27,258.54	\$ 208,982.11
7	Remove & Dispose of Pond Liners	1,064,250.00	Square feet	\$ 0.25	\$ 262,144.84	\$ 52,428.97	\$ 314,573.81	\$ 4,718.61	\$ 319,292.42	\$ 47,893.86	\$ 367,186.28
8	Backfill, Compact, & Restore Site	315,000.00	Cubic yards	\$ 3.40	\$ 1,070,372.63	\$ 214,074.53	\$ 1,284,447.16	\$ 19,266.71	\$ 1,303,713.87	\$ 195,557.08	\$ 1,499,270.95
9	Site Management Costs	40	Weeks	\$ 5,405.07	\$ 216,202.91	\$ 43,240.58	\$ 259,443.49	\$ 3,891.65	\$ 263,335.14	\$ 39,500.27	\$ 302,835.42
	Subtotal Construction				\$ 2,405,953.90	\$ 481,566.13	\$ 2,887,520.03	\$ 43,312.80	\$ 2,930,832.83	\$ 439,624.92	\$ 3,370,457.75
B.	Administrative and Engineering Costs										
1	Construction Management Fee (5% of Construction)										\$ 168,522.89
2	Work plans, Engineering Design, and Bid Documents (15% of Construction)										\$ 505,568.66
Grand Total											\$ 4,044,549

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Soil Sampling for Contamination -		20 Locations			
Labor					
		Quantity	Unit	Unit Price	Total
	Soils Technician	60	hrs	\$ 65.00	\$ 3,900.00
					\$ 3,900.00
Equipment					
	Hand Auger - for testing at perimeter of pits	8	days	\$ 85.00	\$ 637.50
					\$ 637.50
Expenses					
	Transportation (180 mi. r/t from Grand Junction)	1350	mi	\$ 0.57	\$ 769.50
	Misc. supplies (gloves, cleaners, containers etc.)	1	ls	\$ 500.00	\$ 500.00
					\$ 1,269.50
Laboratory Cost					
	BTEX (8015B)	20	ea	\$ 60.00	\$ 1,200.00
	Chlorides	20	ea	\$ 25.00	\$ 500.00
					\$ 1,700.00
	Soil Testing:				\$ 7,507.00
	Cost per location				\$ 375.35

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Surface and Ground Water Well Testing for Contamination - 15 samples (5 - wells, 1 domestic, 3 seeps/springs, 6 surface)						
Labor						
	Quantity	Unit	Unit Price		Total	
Soils Technician	60	hrs	\$	60.00	\$	3,600.00
					\$	3,600.00
Expenses						
Transportation (180 mi. r/t from Grand Junction)	1080	mi	\$	0.57	\$	615.60
Misc. supplies and shipping of samples	3	ls	\$	350.00	\$	1,050.00
					\$	1,665.60
Laboratory Cost						
BTEX (8015B)	15	ea	\$	60.00	\$	900.00
Chlorides	15	ea	\$	25.00	\$	375.00
					\$	1,275.00
Stored water samples		3 ea		550		1650
Water Testing:					\$	8,190.60
Cost per location					\$	546.04

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Monitoring well abandonment		4 Wells			
Mobilization & Demobilization from Grand Junction (4 hrs each way)					
	Quantity	Unit	Unit Price		Total
Transportation (90 mi. r/t from Grand Junction)	180	mi	\$	0.55	\$ 99.00
Soils Technician	12	hrs	\$	60.00	\$ 720.00
Abandonment					
Abandonment of monitoring well (4 x 50' wells)	200	ft	\$	7.85	\$ 1,570.00
					\$ 1,570.00
Total cost:					\$ 2,389.00
	Cost per locations				\$ 597.25

-Rates taken from the OPS EPS 2009

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Remove & Dispose of Operating Equipment

Crew Rate				
	Qty.	Unit	Rate	Total
Electrician	1	ea	\$ 56.05	\$ 56.05
Pipefitter	1	ea	\$ 54.02	\$ 54.02
Labor - Foreman	1	ea	\$ 31.53	\$ 31.53
Laborer - Common	2	ea	\$ 28.72	\$ 57.45
Equipment Operator - Level 2	2	ea	\$ 34.50	\$ 69.00
				\$ 268.06
Equipment & Fee Rates (Quantities are by the hour)				
	Qty.	Unit	Rate	Total
Work Truck - Crew Cab	2	ea	\$ 13.50	\$ 27.00
Reach Fork	1	ea	\$ 150.00	\$ 150.00
Backhoe -446B	1	ea	\$ 140.00	\$ 140.00
Crane	1	ea	\$ 400.00	\$ 400.00
Dump Truck & Driver	2	ea	\$ 150.00	\$ 300.00
	60	hrs	\$ 28.00	\$ 1,680.00
Disposal (300 Tons estimated with an average of 84 Tons per day)				\$ 2,697.00
				\$ 2,965.06
Hourly Rate				\$ 2,965.06
Daily Rate				\$ 23,720.46
Weekly Rate				\$ 118,602.29

Assumptions:

- All metal items such as fencing & tanks will be recycled if available
- Disposal includes (pipes, culverts, bird netting, concrete post cases, equipment, etc.)
- Disposal cost reduced due to recycling of steel

- 21 tons per truck load of waste

Operating Equipment Disposal	
Pumphouse and valving removal	40 hours
	\$2,965.06 per hour
total	\$ 118,602.29

Demolition Items

Equipment & Tanks (including labor)

Equipment	150 tons	
Fencing	30 tons	
Piping	46 tons	Pipe Crew / hour
Concrete	50 tons	\$ 212.00
	276	Pipe equip / hr
		\$ 617.00
total crew and equip per hour		\$ 829.00

Demo - other total labor and equip summary					
Pipe	Size	Matl	total Lineal Feet	prod/day	Cost
French Dn	6"	Perf	1668.48	500	\$ 22,130.85
Riser pipr	6"	S40 PVC	300	300	\$ 6,632.04
Collection	2-6"	Steel	2695.38	500	\$ 35,751.73
18" culv	18"	Galv.	1055.98	450	\$ 15,562.89
Fence					
Chain link	8'0	galv mesh	10422.26	1000	\$ 69,120.83
TK-353	0	0	0	3.86	\$ -
TK-360	0	0	0	3.86	\$ -
MISC	0	0	0	3.86	\$ -
					\$ 149,198.34

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Disposal of Pond Fluids (Assumed to be non-hazardous)

Assumed water elevation in the pit (ft)	N/A
Volume of pit fluid at elevation (bbl)	643,262
Volume in gallons (factored) (90% capacity)	24,315,304

Description	Qty.	Unit	Trips	Time	Unit	Time	Unit	Rate	Total
Pump fluid into local injection wells (97% of factored volume)	23,585,844	gallons	4320	ea	900	hrs	90	days	\$ 2,927.12 \$ 263,425.47
Fuel for Pumps	1	ls					90	days	\$ 220.00 \$ 19,798.86
Pump, fill, and dispose of pit fluid at treatment plant (3% of factored volume)	729,459	gallons	134	ea	351	hrs	44	days	\$ 2,566.85 \$ 112,524.73
Total Gallons removed	24,315,305	gallons							
Disposal at permitted facility fee (\$0.19/gallon - 7.98/bbl)	729,459	gallons						0.19	\$ 138,597.23
Total cost estimated to remove all fluids									\$ 534,346.29
Cost per gallon to dispose of fluids (\$/gallon)									\$ 0.0220

Crew Rate - For pit fluid returned to local wells.

Laborer - Common	1	ea	\$ 26.82	\$ 26.82
Laborer - Foreman	1	ea	\$ 31.53	\$ 31.53
Truck Driver	2	ea	\$ 35.27	\$ 70.54
				\$ 128.89
Equipment & Fee Rates				
Work Truck - Crew Cab	2	ea	\$ 13.50	\$ 27.00
Water Truck - 130 barrel vac. Truck	2	ea	\$ 105.00	\$ 210.00
				\$ 237.00
Hourly Rate				\$ 365.89
Daily Rate				\$ 2,927.12

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729,459 gallons total to haul
5.25 hours per trip per (130 bbls = 5460 gallons)
134 trips with 130 bbls
351 hours
44 days

Crew Rate (2 trucks) - Disposal at a municipal facility

	Qty.	Unit	Rate	Total
Laborer - Common	1	ea	\$ 26.82	\$ 26.82
Truck Driver	2	ea	\$ 35.27	\$ 70.54
				Subtotal \$ 97.36
Equipment & Fee Rates				
Water Truck - 130 barrel vac. Truck	2	ea	\$ 105.00	\$ 210.00
Work Truck - Crew Cab	1	ea	\$ 13.50	\$ 13.50
				Subtotal \$ 223.50
				Total Hourly Rate \$ 320.86
Daily Rate				\$ 2,566.85

Estimate Cycle Time

Fill Water Truck	20 minutes
Travel time to disposal facility	120 minutes
Empty Water Truck at Well or facility	30 minutes
Return to Pit	120 minutes
Avg. down time for items such as fuel	25 minutes
Total Cycle time per truck	315 minutes

5.25 hours per trip
2 trips per day

260 bbl/trk/day
520 bbl/day

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Remove & Dispose of Pond Liners (2 -60 mil HDPE, 1- Geonet, 1-Geonet subdrain, and 1-16oz Geotextile fabric)							
5 layers of liners and associated membranes							
Description	Qty.	Unit	Production	Unit	Days	Unit Cost	Total
Cut and remove liner	1,064,250.00	sf	28,200	sf/day	37.7	\$ 6,353.29	\$ 239,773.26
(2) Flatbed Truck, Trailer, & Driver	24	hrs	2	trips/day	2.0	\$ 182.74	\$ 4,385.76
Disposal*	346	tons				\$ 52.00	\$ 17,985.83
Subtotal							\$ 262,144.84
Unit Price (Remove & Dispose per sf)							<u>\$ 0.2463</u>
Liner Demolition & Loading							

* Assumes 0.5 lbs/sf for the membranes and a 30% increase amount in contaminant (such as sludge or clay) waste.

Crew Rate (3 cut & roll crews)				
	Qty.	Unit	Rate	Total
Laborer - Common	5	ea	\$ 28.72	\$ 143.62
Laborer - Foreman	1	ea	\$ 31.53	\$ 31.53
Equipment Operator - Level 2	2	ea	\$ 34.50	\$ 69.00
Equipment & Fee Rates				
Reach Fork	1	ea	\$ 500.00	\$ 500.00
Compressor, hose, & tools	1	ea	\$ 50.00	\$ 50.00
Subtotal				<u>\$ 794.16</u>
Daily Rate (8hrs)				<u>\$ 6,353.29</u>

Liner Cutting	
1 Laborer to cut, 2 to roll, 1 to assist with load & 1 Equip. Operator to operate the Backhoe or Reach Fork	
Liner (per layer with 3 layers)	212850 sf
Length of Liner (square root of area)	612 lf
LF of cutting per liner	18115.2 lf
Cutting rate per hour	300 lf/hr
Cutting time per liner	60.38 hrs
	2 cutters
Removal rate per hour (sf/hr)	3525 (Assumes 208' of a 20' wide roll)
Number of liners per pond	3
Total hours for all liners	181.15
Total weeks for the removal	4.5

Disposal Sites	
	<u>109.5</u> mi
	<u>2.97</u>
Round to the nearest full hour to include unload time	3 hrs
Round Trip	6 hrs
Total Trips to dispose of liner waste (65 tons) at 15-20 tons per load	21.1 trips
Round up to the next whole total trip value	4 trips

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Backfill, Compact Site, & Restore Site								
Description	Qty.	Unit	Production	Unit	Days	Unit Cost	Cost	
Rip Clay Layer	60	hrs	175,000	sf	1	\$ 388.01	\$	23,280.44
Push Soil (Dozer Crew 150ft max) (20% of placed)	63000.00	cy	2,500	cy/day	25.2	\$ 8,843.66	\$	222,860.13
Excavate, Place Soils and Compact**	315000.00	cy	3,000	cy/day	105.0	\$ 6,315.02	\$	663,077.06
Finish work (21 Acres)	21.00	Acres			2.0	\$ 1,750.00	\$	36,750.00
Disc, Seed & Mulch	21.00	Acres			1.0	\$ 3,055.00	\$	64,155.00
Post Closure Weed Control (4days of spraying)	1.00	ls				\$ 13,000.00	\$	13,000.00
Compaction Tests (6 per day)	6	tests			105.0	\$ 75.00	\$	47,250.00
Subtotal - Backfill & Compaction							\$	1,070,372.63
Unit Price (Backfill & Compact per cubic yard)							\$	3.40

Bulldozer & Scraper Crew				
# of Dozers 1				
Crew Rate	Qty.	Unit	Rate	Total
Laborer - Common	2	ea	\$ 28.72	\$ 57.45
Equipment Operator - Level 2	4	ea	\$ 34.50	\$ 138.01
Equipment & Fee Rates				
Scraper (627G)	3	ea	\$ 220.00	\$ 660.00
Bulldozer (D8T)	1	ea	\$ 250.00	\$ 250.00
Subtotal				\$ 1,105.46
Daily Rate (8hrs)				\$ 8,843.66

Crew Rate (Spread & Compact)				
# of S&C teams 2				
	Qty.	Unit	Rate	Total
Truck Driver	1	ea	\$ 25.37	\$ 25.37
Equipment Operator - Level 2	5	ea	\$ 34.50	\$ 172.51
Equipment & Fee Rates				
Water Truck - 2500 gallon (1,250 gals/hr usage)	1	ea	\$ 67.50	\$ 67.50
Bulldozer (D8T)	2	ea	\$ 162.00	\$ 324.00
Compactor, Vibratory (815F)	2	ea	\$ 100.00	\$ 200.00
Subtotal				\$ 789.38
Daily Rate (8hrs)				\$ 6,315.02

**6 in lift with (3 passes per lift), @ 1,000 cy/hr w/6 hrs per day = 3000 cy/day (for 1 crew)
 *** Road base and Type L Riprap to be mixed in with soils and compacted.

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