ATTACHMENT C

COST ESTIMATES FOR RECLAMATION OF WHITE MESA FACILITY IN BLANDING, UTAH

Cost Summary

WHITE MESA MILL RECLAMATION COST ESTIMATE
June 2016
Revision 5.1

Mobilization		$553,834
Office Facilities		$106,224
Mill Decommissioning		$2,296,874
Cell 1		$1,009,743
Cell 2		$1,092,353
Cell 3		$2,067,154
Cell 4A		$1,372,956
Cell 4B		$1,499,557
Management/Legal Support		$2,422,560
Miscellaneous		$2,055,680
Subtotal Direct Costs		$14,476,933
Profit Allowance	10.00%	$1,332,260
Contingency	25.00%	$3,325,170
Licensing & Bonding	2.00%	$289,539
UDEQ Contract Administration	4.00%	$579,077
Engineering Design Review	2.25%	$325,731
Contractors Equipment Floater		$82,250
Automobile and General Liability Insurance		$177,500
Long Term Care Fund		$876,425
Total Reclamation		$21,464,885
Revised Bond Amount		$21,464,885

Mill Decommissioning

MILL DECOMMISSIONING

Mill Building Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	640	$10,155
Laborers	hrs	$17.16	320	$5,490
Small Tools	hrs	$1.35	960	$1,296
Cat 770 Haul Truck	hrs	$102.19	640	$65,404
Truck Drivers	hrs	$21.30	640	$13,632
Cat 988 Loader	hrs	$144.84	160	$23,175
Cat 988 Loader Operator	hrs	$26.00	160	$4,160
Cat 365 Excavator	hrs	$139.69	160	$22,351
Cat 365 Excavator Operator	hrs	$28.78	160	$4,604
PC 300 w/metal Shears	hrs	$170.14	160	$27,222
PC 300 Operator	hrs	$28.78	160	$4,604
60 Ton Crane	hrs	$91.90	160	$14,704
60 Ton Crane Operator	hrs	$31.03	160	$4,964
30 Ton Crane	hrs	$58.29	80	$4,664
30 Ton Crane Operator	hrs	$31.03	80	$2,482
Equipment Maintenance (Butler)	hrs	$22.45	1,360	$30,539
Concrete Removal	sf	$3.30	37,500	$123,750

Total Mill Building Demolition **$363,196**

Ore Feed Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	64	$1,015
Laborers	hrs	$17.16	32	$549
Small Tools	hrs	$1.35	96	$130
Cat 770 Haul Truck	hrs	$102.19	64	$6,540
Truck Drivers	hrs	$21.30	64	$1,363
Cat 988 Loader	hrs	$144.84	16	$2,317
Cat 988 Loader Operator	hrs	$26.00	16	$416
Cat 365 Excavator	hrs	$139.69	16	$2,235
Cat 365 Excavator Operator	hrs	$28.78	16	$460
PC 300 w/metal Shears	hrs	$170.14	16	$2,722
PC 300 Operator	hrs	$28.78	16	$460
30 Ton Crane	hrs	$58.29	0	$0
30 Ton Crane Operator	hrs	$31.03	0	$0
Equipment Maintenance (Butler)	hrs	$22.45	112	$2,515

Total Ore Feed Demolition **$20,724**

SX Building Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	320	$5,077
Laborers	hrs	$17.16	160	$2,745
Small Tools	hrs	$1.35	480	$648
Cat 770 Haul Truck	hrs	$102.19	320	$32,702
Truck Drivers	hrs	$23.25	320	$7,440
Cat 988 Loader	hrs	$144.84	80	$11,587
Cat 988 Loader Operator	hrs	$26.00	80	$2,080
Cat 365 Excavator	hrs	$139.69	80	$11,175
Cat 365 Excavator Operator	hrs	$28.78	80	$2,302
PC 300 w/metal Shears	hrs	$170.14	80	$13,611
PC 300 Operator	hrs	$28.78	80	$2,302
60 Ton Crane	hrs	$91.90	0	$0
60 Ton Crane Operator	hrs	$31.03	0	$0
30 Ton Crane	hrs	$58.29	0	$0
30 Ton Crane Operator	hrs	$31.03	0	$0
Equipment Maintenance (Butler)	hrs	$22.45	560	$12,575
Asbestos Removal	sf			
Concrete Removal	sf	$3.30	55,970	$184,701

Total SX Building Demolition **$288,947**

MILL DECOMMISSIONING

CCD Circuit Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	120	$1,904
Laborers	hrs	$17.16	60	$1,029
Small Tools	hrs	$1.35	180	$243
Cat 770 Haul Truck	hrs	$102.19	120	$12,263
Truck Drivers	hrs	$23.25	120	$2,790
Cat 988 Loader	hrs	$144.84	30	$4,345
Cat 988 Loader Operator	hrs	$26.00	30	$780
Cat 365 Excavator	hrs	$139.69	30	$4,191
Cat 365 Excavator Operator	hrs	$28.78	30	$863
PC 300 w/metal Shears	hrs	$170.14	30	$5,104
PC 300 Operator	hrs	$28.78	30	$863
60 Ton Crane	hrs	$91.90	30	$2,757
60 Ton Crane Operator	hrs	$31.03	30	$931
30 Ton Crane	hrs	$58.29	15	$874
30 Ton Crane Operator	hrs	$31.03	15	$465
Equipment Maintenance (Butler)	hrs	$22.45	255	$5,726
Concrete Removal	sf	$3.30	15,000	$49,500

Total CCD Circuit Removal **$94,630**

Sample Plant Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	32	$508
Laborers	hrs	$17.16	16	$275
Small Tools	hrs	$1.35	48	$65
Cat 770 Haul Truck	hrs	$102.19	32	$3,270
Truck Drivers	hrs	$21.30	32	$682
Cat 988 Loader	hrs	$144.84	8	$1,159
Cat 988 Loader Operator	hrs	$26.00	8	$208
Cat 365 Excavator	hrs	$139.69	8	$1,118
Cat 365 Excavator Operator	hrs	$28.78	8	$230
PC 300 w/metal Shears	hrs	$170.14	8	$1,361
PC 300 Operator	hrs	$28.78	8	$230
30 Ton Crane	hrs	$58.29	0	$0
30 Ton Crane Operator	hrs	$31.03	0	$0
Equipment Maintenance (Butler)	hrs	$22.45	56	$1,257
Concrete Removal	sf	$2.15	4,200	$9,030

Total Sample Plant Removal **$19,392**

Temporary Storage Building Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Laborers	hrs	$17.16	8	$137
Small Tools	hrs	$1.35	8	$11
Cat 770 Haul Truck	hrs	$102.19	2	$204
Truck Drivers	hrs	$21.30	2	$43
Cat 988 Loader	hrs	$144.84	2	$290
Cat 988 Loader Operator	hrs	$26.00	2	$52
Equipment Maintenance (Butler)	hrs	$22.45	4	$90
Concrete Removal	sf	$2.15	600	$1,290

Total Temporary Storage Building Removal **$2,117**

MILL DECOMMISSIONING

Truck Shop Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	32	$508
Laborers	hrs	$17.16	16	$275
Small Tools	hrs	$1.35	48	$65
Cat 770 Haul Truck	hrs	$102.19	24	$2,453
Truck Drivers	hrs	$21.30	24	$511
Cat 988 Loader	hrs	$144.84	8	$1,159
Cat 988 Loader Operator	hrs	$26.00	8	$208
Cat 365 Excavator	hrs	$139.69	8	$1,118
Cat 365 Excavator Operator	hrs	$28.78	8	$230
PC 300 w/metal Shears	hrs	$170.14	8	$1,361
PC 300 Operator	hrs	$28.78	8	$230
30 Ton Crane	hrs	$58.29	0	$0
30 Ton Crane Operator	hrs	$31.03	0	$0
Equipment Maintenance (Butler)	hrs	$22.45	48	$1,078
Concrete Removal	sf	$2.15	4,200	$9,030

Total Truck Shop Removal **$18,225**

Boiler Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	160	$2,539
Laborers	hrs	$17.16	80	$1,373
Small Tools	hrs	$1.35	240	$324
Cat 770 Haul Truck	hrs	$102.19	160	$16,351
Truck Drivers	hrs	$21.30	160	$3,408
Cat 988 Loader	hrs	$144.84	40	$5,794
Cat 988 Loader Operator	hrs	$26.00	40	$1,040
Cat 365 Excavator	hrs	$139.69	40	$5,588
Cat 365 Excavator Operator	hrs	$28.78	40	$1,151
PC 300 w/metal Shears	hrs	$170.14	40	$6,805
PC 300 Operator	hrs	$28.78	40	$1,151
60 Ton Crane	hrs	$91.90	0	$0
60 Ton Crane Operator	hrs	$31.03	0	$0
30 Ton Crane	hrs	$58.29	0	$0
30 Ton Crane Operator	hrs	$31.03	0	$0
Equipment Maintenance (Butler)	hrs	$22.45	280	$6,287
Concrete Removal	sf	$3.30	2,900	$9,570

Total Boiler Demolition **$61,381**

Vanadium Oxidation Circuit Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	64	$1,015
Laborers	hrs	$17.16	32	$549
Small Tools	hrs	$1.35	96	$130
Cat 770 Haul Truck	hrs	$102.19	64	$6,540
Truck Drivers	hrs	$21.30	64	$1,363
Cat 988 Loader	hrs	$144.84	16	$2,317
Cat 988 Loader Operator	hrs	$26.00	16	$416
Cat 365 Excavator	hrs	$139.69	16	$2,235
Cat 365 Excavator Operator	hrs	$28.78	16	$460
PC 300 w/metal Shears	hrs	$170.14	16	$2,722
PC 300 Operator	hrs	$28.78	16	$460
60 Ton Crane	hrs	$91.90	0	$0
60 Ton Crane Operator	hrs	$31.03	0	$0
30 Ton Crane	hrs	$58.29	0	$0
30 Ton Crane Operator	hrs	$31.03	0	$0
Equipment Maintenance (Butler)	hrs	$22.45	112	$2,515
Concrete Removal	sf	$3.30	1,200	$3,960

Total Vanadium Oxidation Circuit Removal **$24,684**

Main Shop/Warehouse Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	128	$2,031
Laborers	hrs	$17.16	64	$1,098
Small Tools	hrs	$1.35	192	$259
Cat 770 Haul Truck	hrs	$102.19	128	$13,081
Truck Drivers	hrs	$21.30	128	$2,726
Cat 988 Loader	hrs	$144.84	32	$4,635
Cat 988 Loader Operator	hrs	$26.00	32	$832
Cat 365 Excavator	hrs	$139.69	32	$4,470
Cat 365 Excavator Operator	hrs	$28.78	32	$921
PC 300 w/metal Shears	hrs	$170.14	32	$5,444
PC 300 Operator	hrs	$28.78	32	$921
Equipment Maintenance (Butler)	hrs	$22.45	224	$5,030
Asbestos Removal	sf			
Concrete Removal	sf	$2.15	19,300	$41,495

Total Main Shop/Warehouse Demolition **$82,944**

Decon Pads (2) Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	64	$1,015
Laborers	hrs	$17.16	32	$549
Small Tools	hrs	$1.35	96	$130
Cat 770 Haul Truck	hrs	$102.19	64	$6,540
Truck Drivers	hrs	$21.30	64	$1,363
Cat 988 Loader	hrs	$144.84	16	$2,317
Cat 988 Loader Operator	hrs	$26.00	16	$416
Cat 365 Excavator	hrs	$139.69	16	$2,235
Cat 365 Excavator Operator	hrs	$28.78	16	$460
PC 300 w/metal Shears	hrs	$170.14	16	$2,722
PC 300 Operator	hrs	$28.78	16	$460
Equipment Maintenance (Butler)	hrs	$22.45	112	$2,515
Concrete Removal	sf	$3.30	1,350	$4,455

Total Decon Pads (2) Demolition **$25,179**

Office Building Demolition

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	96	$1,523
Laborers	hrs	$17.16	48	$824
Small Tools	hrs	$1.35	144	$194
Cat 770 Haul Truck	hrs	$102.19	96	$9,811
Truck Drivers	hrs	$21.30	96	$2,045
Cat 988 Loader	hrs	$144.84	24	$3,476
Cat 988 Loader Operator	hrs	$26.00	24	$624
Cat 365 Excavator	hrs	$139.69	24	$3,353
Cat 365 Excavator Operator	hrs	$28.78	24	$691
PC 300 w/metal Shears	hrs	$170.14	24	$4,083
PC 300 Operator	hrs	$28.78	24	$691
Equipment Maintenance (Butler)	hrs	$22.45	168	$3,772
Asbestos Removal	sf			
Concrete Removal	sf	$1.25	12,100	$15,125

Total Office Building Demolition **$46,211**

Septic Tanks and Drain Fields

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	0	$0
Laborers	hrs	$17.16	16	$275
Small Tools	hrs	$1.35	32	$43
Cat 770 Haul Truck	hrs	$102.19	16	$1,635
Truck Drivers	hrs	$21.30	16	$341
Cat 988 Loader	hrs	$144.84	8	$1,159
Cat 988 Loader Operator	hrs	$26.00	8	$208
Cat 365 Excavator	hrs	$139.69	8	$1,118
Cat 365 Excavator Operator	hrs	$28.78	8	$230
PC 300 w/metal Shears	hrs	$170.14	0	$0
PC 300 Operator	hrs	$28.78	0	$0
Equipment Maintenance (Butler)	hrs	$22.45	32	$719

Total Septic Tanks and Drain Fields **$5,727**

Misc. Tankage & Spare Parts Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	48	$762
Laborers	hrs	$17.16	24	$412
Small Tools	hrs	$1.35	72	$97
Cat 770 Haul Truck	hrs	$102.19	48	$4,905
Truck Drivers	hrs	$21.30	48	$1,022
Cat 988 Loader	hrs	$144.84	12	$1,738
Cat 988 Loader Operator	hrs	$26.00	12	$312
Cat 365 Excavator	hrs	$139.69	12	$1,676
Cat 365 Excavator Operator	hrs	$28.78	12	$345
PC 300 w/metal Shears	hrs	$170.14	12	$2,042
PC 300 Operator	hrs	$28.78	12	$345
Equipment Maintenance (Butler)	hrs	$22.45	84	$1,886

Total Misc. Tankage & Spare Parts Removal **$15,543**

Alternate Feed Circuit and Reagent Storage Building

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Mechanics	hrs	$15.87	50	$793
Laborers	hrs	$17.16	50	$858
Small Tools	hrs	$1.35	96	$130
Cat 770 Haul Truck	hrs	$102.19	50	$5,110
Truck Drivers	hrs	$23.25	50	$1,163
Cat 988 Loader	hrs	$144.84	34	$4,925
Cat 988 Loader Operator	hrs	$26.00	34	$884
Cat 365 Excavator	hrs	$139.69	34	$4,750
Cat 365 Excavator Operator	hrs	$28.78	34	$978
PC 300 w/metal Shears	hrs	$170.14	52	$8,847
PC 300 Operator	hrs	$28.78	52	$1,496
Equipment Maintenance (Butler)	hrs	$22.45	170	$3,817
Concrete Removal	sf	$2.15	25,500	$54,825

Total Alternate Feed Circuit and Reagent Storage Building **$88,575**

MILL DECOMMISSIONING

Mill Yard Decontamination

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	257	$57,032
Cat 637 Scraper Operator	hrs	$28.78	257	$7,396
Cat D8N Dozer With Ripper	hrs	$103.84	65	$6,749
Cat D8N Dozer Operator	hrs	$26.00	65	$1,690
Cat D7 Dozer	hrs	$88.08	65	$5,725
Cat D7 Dozer Operator	hrs	$26.00	65	$1,690
Cat 651 Waterwagon	hrs	$115.90	65	$7,534
Cat 651 Waterwagon Operator	hrs	$23.25	65	$1,511
Cat 14H Motorgrader	hrs	$77.15	65	$5,015
Cat 14H Motorgrader Operator	hrs	$28.78	65	$1,871
Equipment Maintenance (Butler)	hrs	$22.45	517	$11,609

Total Mill Yard Decontamination **$107,822**

Ore Storage Pad Decontamination

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	189	$41,942
Cat 637 Scraper Operator	hrs	$28.78	189	$5,439
Cat D8N Dozer With Ripper	hrs	$103.84	48	$4,984
Cat D8N Dozer Operator	hrs	$26.00	48	$1,248
Cat D7 Dozer	hrs	$88.08	48	$4,228
Cat D7 Dozer Operator	hrs	$26.00	48	$1,248
Cat 651 Waterwagon	hrs	$115.90	48	$5,563
Cat 651 Waterwagon Operator	hrs	$23.25	48	$1,116
Cat 14H Motorgrader	hrs	$77.15	48	$3,703
Cat 14H Motorgrader Operator	hrs	$28.78	48	$1,381
Equipment Maintenance (Butler)	hrs	$22.45	381	$8,555

Total Ore Storage Pad Decontamination **$79,408**

Equipment Storage Area Cleanup

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	68	$15,090
Cat 637 Scraper Operator	hrs	$28.78	68	$1,957
Cat D8N Dozer With Ripper	hrs	$103.84	17	$1,765
Cat D8N Dozer Operator	hrs	$26.00	17	$442
Cat D7 Dozer	hrs	$88.08	17	$1,497
Cat D7 Dozer Operator	hrs	$26.00	17	$442
Cat 651 Waterwagon	hrs	$115.90	17	$1,970
Cat 651 Waterwagon Operator	hrs	$23.25	17	$395
Cat 14H Motorgrader	hrs	$77.15	17	$1,312
Cat 14H Motorgrader Operator	hrs	$28.78	17	$489
Equipment Maintenance (Butler)	hrs	$22.45	136	$3,054

Total Equipment Storage Area Cleanup **$28,414**

Revegetate Mill Yard & Ore Pad

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	174	$38,613
Cat 637 Scraper Operator	hrs	$28.78	174	$5,007
Cat D8N Dozer With Ripper	hrs	$103.84	33	$3,427
Cat D8N Dozer Operator	hrs	$26.00	33	$858
Cat D7 Dozer	hrs	$88.08	33	$2,907
Cat D7 Dozer Operator	hrs	$26.00	33	$858
Cat 14H Motorgrader	hrs	$77.15	33	$2,546
Cat 14H Motorgrader Operator	hrs	$28.78	33	$950
Seed Mix	Acre	$25.50	2,178	$55,539
Equipment Maintenance (Butler)	hrs	$22.45	273	$6,130

Total Revegetate Mill Yard & Ore Pad **$116,834**

Total Demolition and Decontamination **$1,489,953**

CLEANUP OF WINDBLOWN CONTAMINATION

Scoping Survey

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Soil Samples	each	$50.00	100	$5,000
Survey Crew	hrs	$15.27	752	$11,483
Sample Crew	hrs	$15.27	1,312	$20,035

Total Scoping Survey **$36,518**

Characterization Survey

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Soil Samples	each	$50.00	472	$23,600
Sample Crew	hrs	$15.27	1,136	$17,347

Total Characterization Survey **$40,947**

Final Status Survey

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Soil Samples	each	$50.00	300	$15,000
Sample Crew	hrs	$15.27	3,552	$54,241

Total Final Status Survey **$69,241**

MILL DECOMMISSIONING

Windblown Cleanup

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	680	$150,902
Cat 637 Scraper Operator	hrs	$28.78	680	$19,569
Cat D8N Dozer With Ripper	hrs	$103.84	170	$17,652
Cat D8N Dozer Operator	hrs	$26.00	170	$4,420
Cat D7 Dozer	hrs	$88.08	170	$14,973
Cat D7 Dozer Operator	hrs	$26.00	170	$4,420
Cat 14H Motorgrader	hrs	$77.15	170	$13,116
Cat 14H Motorgrader Operator	hrs	$28.78	170	$4,892
Soil Samples	each	$50.00	500	$25,000
Survey Crew	hrs	$15.27	163	$2,489
Sample Crew	hrs	$15.27	83	$1,267
Equipment Maintenance (Butler)	hrs	$22.45	1,190	$26,721

Total Windblown Cleanup **$285,421**

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	$62.00	2,080	**$128,960**

Total Quality Control **$128,960**

Total Cleanup Windblown Contamination **$561,088**

Conventional Ore Disposal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 770 Haul Truck (3)	hrs	$102.19	130	$13,322
Truck Drivers (3)	hrs	$21.30	130	$2,777
Cat 988 Loader	hrs	$144.84	43	$6,294
Cat 988 Loader Operator	hrs	$26.00	43	$1,130
Cat 651 Water wagon	hrs	$115.90	43	$5,036
Cat 651 Water wagon Operator	hrs	$23.25	43	$1,010
Cat 14H Motorgrader	hrs	$77.15	25	$1,929
Cat 14H Motorgrader Operator	hrs	$28.78	25	$719
Equipment Maintenance (Butler)	hrs	$22.45	242	$5,440

Total Conventional Ore Disposal **$37,658**

Total Quantity 25,551 Cubic Yards*
196 Cubic Yards per Truck per hour
130 Truck Hours

34,494 * tons as of 1/25/16
Loose (in-truck) material unit weight assumed as 100 lb/cubic foot

Claricone Contaminated Soil Disposal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 770 Haul Truck (3)	hrs	$102.19	20	$2,086
Truck Drivers (3)	hrs	$21.30	20	$435
Cat 988 Loader	hrs	$144.84	7	$985
Cat 988 Loader Operator	hrs	$26.00	7	$177
Cat 651 Waterwagon	hrs	$115.90	7	$788
Cat 651 Waterwagon Operator	hrs	$23.25	7	$158
Cat 14H Motorgrader	hrs	$77.15	15	$1,157
Cat 14H Motorgrader Operator	hrs	$28.78	15	$432
Equipment Maintenance (Butler)	hrs	$22.45	49	$1,101

Total Claricone Contaminated Soil Disposal **$7,319**

Total Quantity 4,000 Cubic Yards*
196 Cubic Yards per Truck per hour
20 Truck Hours

13.96 *Use 4 times estimated volume
Loose (in-truck) material unit weight assumed as 100 lb/cubic foot

Nitrate Contaminated Soil Disposal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 770 Haul Truck (3)	hrs	$97.66	335	$32,723
Truck Drivers (3)	hrs	$21.30	335	$7,137
Cat 988 Loader	hrs	$144.84	112	$16,178
Cat 988 Loader Operator	hrs	$26.00	112	$2,904
Cat D8N Dozer With Ripper	hrs	$50.00	251	$12,545
Cat D8N Dozer Operator	hrs	$15.27	251	$3,831
Cat 651 Waterwagon	hrs	$115.79	112	$12,933
Cat 651 Waterwagon Operator	hrs	$21.30	112	$2,379
Cat 14H Motorgrader	hrs	$67.43	112	$7,532
Cat 14H Motorgrader Operator	hrs	$26.32	112	$2,940
Equipment Maintenance (Butler)	hrs	$22.45	921	$20,682
Concrete Removal	sf	$2.15	27,500	$59,125

Total Nitrate Contaminated Soil Disposal **$180,908**

Total Quantity 95,352 Cubic Yards*
285 Cubic Yards per Truck per hour
335 Truck Hours

*Use 2 times estimated volume

MILL DECOMMISSIONING

Bulk Alternate Feed Material

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 770 Haul Truck (3)	hrs	$102.19	46	$4,653
Truck Drivers (3)	hrs	$21.30	46	$970
Cat 988 Loader	hrs	$144.84	15	$2,198
Cat 988 Loader Operator	hrs	$26.00	15	$395
Cat 651 Waterwagon	hrs	$115.90	15	$1,759
Cat 651 Waterwagon Operator	hrs	$23.25	15	$353
Cat 14H Motorgrader	hrs	$77.15	6	$463
Cat 14H Motorgrader Operator	hrs	$28.78	6	$173
Equipment Maintenance (Butler)	hrs	$22.45	82	$1,839

Bulk Alternate Feed Material **$12,801**

Total Quantity 8,924 Cubic Yards* (current as of 01/25/2016)
196 Cubic Yards per Truck per hour
46 Truck Hours

* Includes FMRI, GAM and Dawn Mining

Alternate Feed Barrels

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Equipment Operators	hrs	$21.30	53	$1,130
Flat Bed Trailer and Tractor*	hrs	$55.00	53	$2,917
Fork Lift (2)	hrs	$18.00	106	$1,909
Equipment Maintenance (Butler)	hrs	$22.45	53	$1,191

Total Alternate Feed Barrels **$7,147**

* includes operator

5,242 Barrels (current as of 01/25/2016)
31 Totes
40 Barrels per load
20 Totes Per Load
0.4 Hours per load
53 Truck Hours

	lbs. per barrel	No. Drums
CaF2	727	161
Calcined	320	2,200
Regen	406	57
KF		2,704
Cotter Resin		31
UF4	547	120
		5,242

Sub-Total Alternate Feed Disposal **$19,949**

TOTAL MILL DECOMMISSIONING **$2,296,874**

Reviewed 2/25/16

1) Removal of contaminated material from Mill Yard

Assume:

-- 18 inches (1.5 feet) will have to be removed
-- Area (from CAD takeoff) = 1,643,453 sq. feet
37.7 acres

Therefore: Volume moved = [1,643,453 x 1.5] / 27 = 91,303 cubic yards
(use 91,300)

91,300 / 355 cubic yards per hour = 257 machine hours

Haul route H

2) Removal of contaminated material from Ore Pad

Assume:

-- 18 inches (1.5 feet) will have to be removed
-- Area (from CAD takeoff) = 976,780 sq. feet
22.4 acres

Therefore: Volume moved = [976,780 x 1.5] / 27 = 54,266 cubic yards
(use 54,300)

54,300 / 287 cubic yards per hour = 189 machine hours

Haul route H

3) Demolition Equipment

-- Kamatsu PL400 (or Cat equivalent) with LaBounty Sheers (hydraulic)
-- Cat 365 Trackhoe with Grapples
-- Cat 770 Rock Trucks (4 each)
-- Cat 988 Loader (1 each)

4) Demolition Crew

-- Heavy Equipment Operators - PC400, Cat 365, Cat 988
-- Dust Control - 2 Laborers
-- Mechanics - Cut debris to reduce/avoid oversize and voids - 4 each
-- Truck Drivers - 4 each

5) Tool and Expendable Allowance, covering the following items:

-- Safety gear and supplies
-- Hand tools
-- Bottled Gases and Torches
-- Allow $1.30 per man-hour for all but Heavy Equipment Operators and Truck Drivers

6) Demolition Time Estimates

-- Mill Building	20	Days
-- Ore Bin	2	Days
-- CCD, Pre-Leach, Claricone	5	Days
-- Sample Plant	1	Day
-- Boiler House	5	Days
-- Vanadium EMF/Ox	2	Days
-- Shop/Warehouse	4	Days
-- Office/Lab Building	3	Days
-- Misc. & Bone Yard	4	Days
-- Decon Pads (2)	2	Days

7) Foundation Demolition

-- Assume area of structure times $3.30 per square foot

	Area, sq ft	$ Cost
Mill Building	37,500	$ 123,750
SX Building	55,970	$ 184,701
CCD, Pre-Leach, Claricone	15,000	$ 49,500
Shop/Warehouse	19,300	$ 63,690
Office*	12,100	$ 15,125
Sample Plant	4,200	$ 13,860
Vanadium EMF/Ox	1,200	$ 3,960
Boiler house	2,900	$ 9,570
Decon Pads	1,350	$ 4,455

-- Labor at $2.75, Equipment at $0.55
-- * Labor at $0.70, Equipment at $0.55

8) Revegetation

Assume:

-- Mill Yard Area 1,643,453 sq. feet
-- Ore Pad Area 976,780 sq. feet

-- Place 6 inches of Topsoil

[1,643,453 976,780] sq.feet x 0.5 feet] / [27 cubic feet / cubic Yard] 48,523 cu yds

Use 48,600 Cubic Yards

48,600 / 279 cu yds per hour = 174 Scraper hours

Seeding

RS Means Referance 32 92 19 14 0500 = $25.50 / 1 thousand sq.ft.
50 acres = 2178 thousand sq.ft.

9) Removal of Nitrate and Ammonium Sulfate Contaminated Soil
and Concrete Cover Required by Phase 1 of the Nitrate CAP

Assume:

-- 222 inches (18.5 feet) will have to be removed over the entire excavated area as delineated by the proposed excavation contours in Attachment 4-1 to the December 2013 White Mesa Uranium Mill Proposal for Remediation, 2012 Phase 1 of Final Nitrate Corrective Action Plan, May 7, and Stipulation and Consent Order of December 12, 2012 Docket No. UGW-12-04
-- This depth corresponds to 20 feet minus the 18 inches associated with the Mill Yard and Ore Pad reclamation.
-- The nitrate and ammonium sulfate contamination is located within the Mill Yard and Ore Pad which will both have the top 18 inches removed during reclamation as addressed in above in item 1 and 2.
-- Production is limited by the trucking fleet and not the loader.
-- The dozer will assist the loader during the soil removal.
-- The dozer will backfill and grade the excavation area after the contaminated soil has been removed.
--Volumes and areas are taken from CAD and shown on Attachment 4-1.
--RS Means reference 02 41 13 17 5300 was used to estimate the costs. $2.15 per square foot.

--Excavation Area (from CAD takeoff) =	83,641	sq. feet
-- Concrete Cover Area (from CAD takeoff)	27,500	sq. feet

-- Volume (from CAD takeoff) =	47,676	Cubic Yards
-- Volume including a 200% Conservatism Factor	95,352	Cubic Yards

95,352 / 285 cubic yards per hour =	335	Trucking Hours
95,352 / 685 cubic yards per hour =	139	Backfilling Hours

Haul route H

10) Asbestos Removal

See the attached Executive Summaries from the Asbestos Inspection Reports.

Admin Building	$ 35,650
Maint/Warehouse	$ 8,601
SX Building	$ 100

Cell 1

Cell 1 Reclamation

Dewatering of Cell 1

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Dewatering of Cell 1 (2 yrs)	hrs	$0.48	17,520	**$8,423**

Total Dewatering of Cell 1 **$8,423**

Crystal Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 770 Truck	hrs	$102.19	1,119	$114,387
Truck Drivers	hrs	$21.30	1,119	$23,842
Cat 988 Loader	hrs	$144.84	373	$54,041
Cat 988 Loader Operator	hrs	$26.00	373	$9,701
Cat D8N Dozer With Ripper	hrs	$103.84	373	$38,741
Cat D8N Dozer Operator	hrs	$26.00	373	$9,701
Cat 365 Excavator	hrs	$139.69	373	$52,120
Cat 365 Excavator Operator	hrs	$28.78	373	$10,737
Liner Cutting (Laborer)	hrs	$18.69	373	$6,974
Cat 651 Waterwagon	hrs	$115.90	373	$43,244
Cat 651 Waterwagon Operator	hrs	$23.25	373	$8,675
Cat 14H Motorgrader	hrs	$77.15	373	$28,786
Cat 14H Motorgrader Operator	hrs	$28.78	373	$10,737
Equipment Maintenance (Butler)	hrs	$22.45	2,985	$67,024

Total Crystal Removal **$478,710**

Contaminated Materials Removal

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	308	$68,350
Cat 637 Scraper Operator	hrs	$28.78	308	$8,863
Cat D8N Dozer With Ripper	hrs	$103.84	77	$7,995
Cat D8N Dozer Operator	hrs	$26.00	77	$2,002
Cat 651 Waterwagon	hrs	$115.90	77	$8,924
Cat 651 Waterwagon Operator	hrs	$23.25	77	$1,790
Cat 14H Motorgrader	hrs	$77.15	77	$5,941
Cat 14H Motorgrader Operator	hrs	$28.78	77	$2,216
Equipment Maintenance (Butler)	hrs	$22.45	539	$12,103

Total Contaminated Materials Removal **$118,185**

Topsoil Application

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	61	$13,537
Cat 637 Scraper Operator	hrs	$28.78	61	$1,755
Cat D8N Dozer With Ripper	hrs	$103.84	40	$4,153
Cat D8N Dozer Operator	hrs	$26.00	40	$1,040
Cat 651 Waterwagon	hrs	$115.90	40	$4,636
Cat 651 Waterwagon Operator	hrs	$23.25	40	$930
Cat 14H Motorgrader	hrs	$77.15	40	$3,086
Cat 14H Motorgrader Operator	hrs	$28.78	40	$1,151
Equipment Maintenance (Butler)	hrs	$22.45	181	$4,064

Total Topsoil Application **$34,353**

Cell 1 Reclamation

Construct Channel

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 770 Truck	hrs	$102.19	324	$33,061
Truck Drivers	hrs	$21.30	324	$6,891
Cat 365 Excavator	hrs	$139.69	81	$11,298
Cat 365 Excavator Operator	hrs	$28.78	81	$2,327
Drilling & Blasting Contractor	BCY	$2.44	67,000	$163,717
Drilling & Blasting Contractor, Fuel	Gal.	$1.81	1,011	$1,834
Cat 14H Motorgrader	hrs	$77.15	81	$6,240
Cat 14H Motorgrader Operator	hrs	$28.78	81	$2,327
Cat D8N Dozer With Ripper	hrs	$103.84	81	$8,398
Cat D8N Dozer Operator	hrs	$26.00	81	$2,103
Equipment Maintenance (Butler)	hrs	$22.45	566	$12,713

Total Construct Channel **$250,910**

Rock Armor and Rip Rap Filter

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat D7 Dozer	hrs	$88.08	30	$2,642
Cat D7 Dozer Operator	hrs	$26.00	30	$780
Cat 651 Waterwagon	hrs	$115.90	30	$3,477
Cat 651 Waterwagon Operator	hrs	$23.25	30	$698
Cat 14H Motorgrader	hrs	$77.15	30	$2,315
Cat 14H Motorgrader Operator	hrs	$28.78	30	$863
Rock Cost Delivered	CY	$6.60	8,607	$56,766
Equipment Maintenance (Butler)	hrs	$22.45	90	$2,021

Total Place Rock Armor and Rip Rap Filter **$69,561**

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	$62.00	800	**$49,600**

Total Quality Control **$49,600**

TOTAL RECLAMATION OF CELL 1 **$1,009,743**

Volume Calculation - Cell 1

Reviewed 2/25/16

1) Area of Cell 1 - 2,575,703 sq ft = 59.13 acres

2) Crystal and Liner Cover Removal
- Dewatering estimated at 2 years based on the last time Cell 1 was dry and approximate duration.
- Crystal thickness assumed as 1.5 feet.
- Soil Cover over the PVC Liner is based on design and as-built - 1.5 feet.
- Crystal and soil cover will be excavated at the same time and placed in Cell 4A.
- Crystal and soil cover will be windrowed with a dozer, and loaded into 3 trucks with a loader.
- The PVC Liner will cut into manageable pieces and loaded into a truck with a hydraulic excavator.
- Road maintenance will be accomplished with a motorgrader and water wagon.

$$\text{Volume to be removed} = \frac{2{,}575{,}703 \times (1.5\text{ ft} + 1.5\text{ ft})}{27\text{ ft}^3/\text{cy}} = 286{,}189 \text{ CY}$$

3) Removal of Contaminated Material Under Liner
- Estimated depth of contaminated soil required to be removed - 1 foot.
- Contaminated material will be removed to Cell 4A.
- Contaminated soil will be windrowed with a dozer, and loaded into 3 trucks with a loader.
- Road maintenance will be accomplished with a motorgrader and water wagon.

$$\text{Volume to be removed} = \frac{2{,}575{,}703 \times (1\text{ ft})}{27\text{ ft}^3/\text{cy}} = 95{,}396 \text{ CY}$$

4) Construct Channel
- The channel will be constructed in the southwest corner of Cell 1 and will daylight to an existing natural channel.
- The channel requires blasting of the bedrock to achieve the design grade.
- Approximate dimensions of the channel are 1,200 feet long by 150 feet wide by 10 feet deep.

$$\text{Volume to be removed} = \frac{1{,}200\text{ ft} \times 150\text{ ft} \times 10\text{ ft}}{27\text{ ft}^3/\text{cy}} = 66{,}667 \text{ CY}$$

- The broken rock material will be loaded into 3 trucks with a hydraulic excavator.
- 23,188 CY of this material will be used in Cell 1 to grade the side slopes from 3H:1V to 5H:1V.
- The remainder of the excavated material will be hauled to Cell 4A South Slope and used as Random Fill - 43,479 CY.

5) Grade Side slopes
- Material needed to grade the side slopes of Cell 1 will be produced during the construction of the Cell 1 Drainage Channel
- The costs for staging the grading material at the base of the slopes is accounted for thin the Channel Construction Task.
- The slopes will be graded and shaped with a dozer.
- Cell 1 has 6,020 feet of slopes. The slopes are 8 feet high and currently at a 3H:1V slope.

$$\text{Volume needed for Grading} = \frac{6{,}020\text{ ft} \times 8\text{ ft} \times 26\text{ ft} \times (1/2)}{27\text{ ft}^3/\text{cy}} = 23{,}188 \text{ CY}$$

6) Topsoil Application
- 29 acres of Cell 1 requires placement of 6 inches of topsoil.
- The remainder of Cell 1 will be covered with exposed Dakota Sandstone or Rip Rap.
- The topsoil will hauled from Topsoil pile W4.
- A scraper fleet will haul the topsoil and a dozer will assist with loading and final spreading.
- Road maintenance will be accomplished with a motorgrader and water wagon.

$$\text{Volume needed for be placed} = \frac{29 \text{ acres} \times 43{,}560 \text{ ft2 /acre} \times 0.5 \text{ ft}}{27 \text{ ft}^3\text{/cy}} = 23{,}393 \text{ CY}$$

7) Rock Armor and Rip Rap Filter Placement
- Rock for side armor, top armor and toe aprons will come from an off-site gravel source one (1) mile north of Blanding. Rock will be produced through screening, stockpiled and trucked to the site at the time of use. Belly dump trucks will dump gravel in windrows on the top and sides of the Cell.
- A dozer will spread the delivered rock.
- Road maintenance will be accomplished with a motorgrader and water wagon.
- 8,607 CY of rock will be placed.

Cell 2

RECLAMATION OF CELL 2

Dewatering of Cell 2

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Dewatering of Cell 2 (12 yrs)	hrs	$0.48	105,120	**$50,539**
Total Dewatering of Cell 2				**$50,539**

RECLAMATION OF CELL 2

Upper Random Fill (2')

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 365 Excavator	hrs	$139.69	264	$36,864
Cat 365 Excavator Operator	hrs	$28.78	264	$7,594
Cat 980 Loader	hrs	$100.39	264	$26,493
Cat 980 Loader Operator	hrs	$26.00	264	$6,861
Cat 770 Truck (4 trucks in Fleet)	hrs	$102.19	1,056	$107,872
Truck Drivers	hrs	$21.30	1,056	$22,484
Cat 825 Compactor	hrs	$101.99	264	$26,915
Cat 825 Compactor Operator	hrs	$23.25	264	$6,136
Cat D7 Dozer	hrs	$88.08	264	$23,243
Cat D7 Dozer Operator	hrs	$26.00	264	$6,861
Cat 651 Waterwagon	hrs	$115.90	264	$30,585
Cat 651 Waterwagon Operator	hrs	$23.25	264	$6,136
Cat 14H Motorgrader	hrs	$77.15	264	$20,360
Cat 14H Motorgrader Operator	hrs	$28.78	264	$7,594
5000 Gallon Water Truck	hrs	$67.74	264	$17,877
5000 Gallon Water Truck Operator	hrs	$23.25	264	$6,136
Equipment Maintenance (Butler)	hrs	$22.45	1,583	$35,554

* assumes 4 trucks and the trucks are limiting production.

Total Place Upper Random Fill **$395,563**

Rock Armor and Rip Rap Filter

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat D7 Dozer	hrs	$88.08	300	$26,423
Cat D7 Dozer Operator	hrs	$26.00	300	$7,800
Cat 651 Waterwagon	hrs	$115.90	300	$34,771
Cat 651 Waterwagon Operator	hrs	$23.25	300	$6,975
Cat 14H Motorgrader	hrs	$77.15	300	$23,146
Cat 14H Motorgrader Operator	hrs	$28.78	300	$8,633
Rock Cost Delivered	CY	$6.60	72,945	$481,093
Equipment Maintenance (Butler)	hrs	$22.45	900	$20,209

Total Place Rock Armor and Rip Rap Filter **$609,051**

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	$62.00	600	$37,200

Total Quality Control **$37,200**

TOTAL RECLAMATION OF CELL 2 **$1,092,353**

Volume Calculation - Cell 2

Reviewed 02/25/16

1) Area of Cell 2 - 2,986,660 sq ft = 68.56 acres

2) The bridging layer of the cover has already been placed over the entire Cell 2 surface.

3) Assumptions

- Cell will be graded to Design elevation utilizing finer materials in random fill stockpiles and from "clay" stockpiles.
-Dewatering Estimated at 12 years based on the Cell 2 2013 drawdown(1 foot/ year) and remaing solution depth (12 feet).

"- Radon Barrier has been placed over the entire Cell"

- The upper 1 foot of random fill will be placed utilizing the fine random fill and clay stockpiles

- Rock for side armor, top armor and toe aprons will come from an off-site gravel source one (1) mile north of Blanding. Rock will be produced through screening, stockpiled and trucked to the site at the time of use. Belly dump trucks will dump gravel in windrows on the top and sides of the Cell.

5) Bring Platform Fill up to Design elevation (Lower Random) **COMPLETE**
Assume full area of Cell X one (1) foot thick

2,986,660 sq ft X 1 ft. / 27 cubic feet per cubic yard = cubic yards

Use cubic yards

6) Placement of Clay Layer (One (1) foot thick on top of Cell only) **DELETED**
Assume full area of Cell X one (1) foot thick

2,986,660 sq ft X 1 ft. / 27 cubic feet per cubic yard = cubic yards

Use cubic yards

7) Upper Random Fill Volume - Top of Cell area
Assume full area of Cell X two (2) foot thick
- An excavator and loader will load 4 trucks.
- The dozer will place the material, water truck will moisture condition and the compactor will compact the material.
- The water wagon and grader will maintain the haul road.

2,986,660 sq ft X 2 ft. / 27 cubic feet per cubic yard = 221,234 cubic yards

Use 221,300 cubic yards

8) Armor Protection - Top of Cell
Assume full area of Cell X one-half (0.5) foot thick

2,986,660 sq ft X 0.5 ft. / 27 cubic feet per cubic yard = 55,309 cubic yards

Use 55,400 cubic yards

9) Cell 2 North Slope (Slope #1) common with Cell 1-I

Average height 12 feet
Length 2600 feet

a) Random fill to reduce slope from 3:1 to 5:1

First Wedge [12 X 12 X 5)/2 - (12 X 12 X 3)/2] X 2600

= 374,400 cubic feet/ 27 = 13,867 cubic yards

Use 13,900 cubic yards

Remaining Random Fill

[15 X 15 X 5)/2 - (12 X 12 X 5)/2] X 2600

= 526,500 cubic feet/ 27 = 19,500 cubic yards

Use 19,500 cubic yards

Total Random Fill North Slope 33,400 cubic yards

b) Rock Armor 8" thick - 0.67 feet

[15.67 X 15.67 X 5)/2 - (15 X 15 X 5)/2] X 2600

= 133,568 cubic feet/ 27 = 4,947 cubic yards

Use 5,000 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

[15.5 X 15.5 X 5)/2 - (15 X 15 X 5)/2] X 2600

= 99,125 cubic feet/ 27 = 3,671 cubic yards

Use 3,700 cubic yards

d) Toe Apron 2 X 7 X 2600 / 27 = 1,348 cubic yards
Use 1,400 cubic yards

Total Rock Armor Cell 2 north Slope 6,400 cubic yards

10) North Slope common with Mill yard (Slope #2)

Average height 1 feet
Length 900 feet

a) Random fill to reduce slope from 3:1 to 5:1

First Wedge [1 X 1 X 5)/2 - (1 X 1 X 3)/2] X 900

= 900 cubic feet/ 27 = 33 cubic yards
Use 100 cubic yards

Remaining Random Fill

[4 X 4 X 5)/2 - (1 X 1 X 5)/2] X 900

= 33,750 cubic feet/ 27 = 1,250 cubic yards
Use 1,300 cubic yards

Total Random Fill North Slope 1,400 cubic yards

b) Rock Armor 8" thick - 0.67 feet

[4.67 X 4.67 X 5)/2 - (4 X 4 X 5)/2] X 900

= 13,070 cubic feet/ 27 = 484 cubic yards
Use 500 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

[4.5 X 4.5 X 5)/2 - (4 X 4 X 5)/2] X 900

= 9,563 cubic feet/ 27 = 354 cubic yards
Use 350 cubic yards

d) No Toe Apron on fill common with Mill Yard

Total Rock Armor on slope common to Mill Yard 500 cubic yards

11) Cell 2 West Dike (Slope #3)

Average height 2 feet
Length 500 feet

a) Random fill to reduce slope from 3:1 to 5:1

First Wedge [2 X 2 X 5)/2 - (2 X 2 X 3)/2] X 500

= 2,000 cubic feet/ 27 = 74 cubic yards
Use 100 cubic yards

Remaining Random Fill

[2 X 2 X 5)/2 - (2 X 2 X 3)/2] X 500

= 2,000 cubic feet/ 27 = 74 cubic yards
Use 100 cubic yards

Total Random Fill North Slope 200 cubic yards

b) Rock Armor 8" thick - 0.67 feet

[5.67 X 5.67 X 5)/2 - (5 X 5 X 5)/2] X 500

= 8,936 cubic feet/ 27 = 331 cubic yards
Use 400 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

[5.5 X 5.5 X 5)/2 - (5 X 5 X 5)/2] X 500

= 6,563 cubic feet/ 27 = 243 cubic yards
Use 250 cubic yards

d) Toe Apron Not required for slope 10 feet long - Drainage from Cell goes south to Cell 3 and then off of south slope of Cell 3

Total Rock Armor Cell 2 north Slope 400 cubic yards

12) Cell 2 East Dike (Slope #4)

Average height 1 feet
Length 1250 feet

a) Random Fill Wedge from #10 1 cubic foot per linear foot X 1250 46 cubic yards
Use 100 cubic yards

b) Remaining Random Fill from #10

37.5 cubic foot per linear foot X 1250 / 27 = 1,736 cubic yards

Use 1,800 cubic yards

Total Random Slope #4 1,900 cubic yards

c) Rock Armor 8" thick - 0.67 feet from #10 14.52 cubic feet per linear foot of dike

14.52 cubic foot per linear foot X 1250 / 27

= 18,150 cubic feet/ 27 = 672 cubic yards

Use 675 cubic yards

d) Rip Rap Filter 6" thick - 0.5 feet

9.075 cubic foot per linear foot X 1250 / 27

= 420 cubic feet/ 27 = 420 cubic yards

Use 420 cubic yards

e) Toe Apron Not required

Total Rock Armor Cell 2 north Slope 675 cubic yards

13) South Slope Cell 2 common with Cell 3 (Slope #5)

Average height 3 feet
Length 3500 feet

a) Random fill to reduce slope from 3:1 to 5:1

Random Fill [3 X 3 X 5)/2 - (3 X 3 X 3)/2] X 3500

= 31,500 cubic feet/ 27 = 1,167 cubic yards

Use 1,200 cubic yards

Random Fill Upper

[6 X 6 X 5)/2 - (4 X 4 X 5)/2] X 3500

= 175,000 cubic feet/ 27 = 6,481 cubic yards

Use 6,500 cubic yards

b) Clay Layer

[4 X 4 X 5)/2 - (3 X 3 X 5)/2] X 3500

= 61,250 cubic feet/ 27 = 2,269 cubic yards

Use 2,300 cubic yards

c) Rock Armor 8" thick - 0.67 feet

[6.67 X 6.67 X 5)/2 - (6 X 6 X 5)/2] X 3500

= 74,278 cubic feet/ 27 = 2,751 cubic yards

Use 2,800 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

[6.5 X 6.5 X 5)/2 - (6 X 6 X 5)/2] X 3500

= 54,688 cubic feet/ 27 = 2,025 cubic yards

Use 2,050 cubic yards

No Toe Apron

Total Rock Armor on slope Cell 2 Slope common to Cell 3 2,800 cubic yards

Volume Summary - Cell 2

	Bridging Layer	Random	Clay	Random	Rock Armor	**Filter**
Top of Cell	-	-	-	221,300	55,400	0
North (Slope #1)		13,900		19,500	6,400	3,700
North (Slope #2)		100		1,300	500	350
West (Slope #3)		100		100	400	250
East (Slope #4)		100		1,800	675	420
South (Slope #5)		1,200	2,300	6,500	2,800	2,050
Totals	-	15,400	2,300	250,500	66,175	6,770

Cell 2 Reclamation

Cat 637 Resource Requirements

	Volume	Route	Yds/hr	%	Equip. Hr.
Cell 2 Lower Random Fill					
Tailings Surface	-	E	263	100%	0.0
Slope 1	13,900	E	263	100%	52.8
Slope 2	100	E	263	100%	0.4
Slope 3	100	E	263	100%	0.4
Slope 4	100	E	263	100%	0.4
Slope 5	1,200	E	263	100%	4.6
Total	15,400				58.5

Trucking Fleet Requirements

Cell 2 Upper Random Fill	Volume	Route	Yds/hr per Truck	%	Equip. Hr.
Tailings Surface	221,300	E	237	100%	932.5
Slope 1	19,500	E	237	100%	82.2
Slope 2	1,300	E	237	100%	5.5
Slope 3	100	E	237	100%	0.4
Slope 4	1,800	E	237	100%	7.6
Slope 5	6,500	E	237	100%	27.4
Total	250,500				1055.6

Cell 2 Rock Armor and Rip Rap Filter -- use Highway Trucks

Clay Production Cell 2 **DELETED**

(use same assumptions as Cell 3)

Clay Volume =	2,300	Bank Cubic Yards (BCY)	
	0.8	Swell Factor	
=	2,875	Loose Cubic Yards (LCY)	

Trucking	475	LCY/hr	8 trucks plus one (1) Loader

150,000 LCY / 475 LCY/hr = 6 hours

use 300 hours

300 X 8 Trucks = 2400 hours

	Hours
980 Loader	300
D8N w/ ripper	300
Cat 651 WW	300
Cat 825 Comp.	325
14G Patrol	325
5000 gal WW	175

Rock Armor and Rip Rap Filter Production Cell 2

72,945 cubic yards (cy)

38 cy per hour times 8 trucks

304 cy per hour delivered

Assume 25% extra time for spreading, loading and screen wait

304 / 1.25 243.2 cy per hour 300 Hours

Cell 3

RECLAMATION OF CELL 3

Dewatering of Cell 3

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Dewatering of Cell 3 (12 yrs)	hrs	$0.48	105,120	**$50,539**

Total Dewatering of Cell 3 **$50,539**

Place Remainder of Bridging (Platform) Lift

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	415	$92,094
Cat 637 Scraper Operators	hrs	$28.78	415	$11,943
Cat 825 Compactor	hrs	$101.99	104	$10,582
Cat 825 Compactor Operator	hrs	$23.25	104	$2,412
Cat D8N Dozer With Ripper	hrs	$103.84	104	$10,773
Cat D8N Dozer Operator	hrs	$26.00	104	$2,697
Cat D7 Dozer	hrs	$88.08	104	$9,138
Cat D7 Dozer Operator	hrs	$26.00	104	$2,697
5000 Gallon Water Truck	hrs	$67.74	104	$7,028
5000 Gallon Water Truck Operator	hrs	$23.25	104	$2,412
Cat 14H Motorgrader	hrs	$77.15	104	$8,005
Cat 14H Motorgrader Operator	hrs	$28.78	104	$2,986
Equipment Maintenance (Butler)	hrs	$22.45	934	$20,967

Total Place Remainder of Bridging (Platform) Lift **$183,735**

Place Lower Random Fill (12")

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	485	$107,628
Cat 637 Scraper Operators	hrs	$28.78	485	$13,957
Cat 825 Compactor	hrs	$101.99	194	$19,787
Cat 825 Compactor Operator	hrs	$23.25	194	$4,511
Cat D8N Dozer With Ripper	hrs	$88.08	194	$17,087
Cat D8N Dozer Operator	hrs	$26.00	194	$5,044
Cat D7 Dozer	hrs	$77.15	194	$14,968
Cat D7 Dozer Operator	hrs	$26.00	194	$5,044
5000 Gallon Water Truck	hrs	$67.74	194	$13,142
5000 Gallon Water Truck Operator	hrs	$23.25	194	$4,511
Cat 14H Motorgrader	hrs	$77.15	194	$14,968
Cat 14H Motorgrader Operator	hrs	$28.78	194	$5,583
Equipment Maintenance (Butler)	hrs	$22.45	1,455	$32,672

Total Place Lower Random Fill (12") **$258,900**

RECLAMATION OF CELL 3

Clay Layer

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 825 Compactor	hrs	$101.99	350	$35,697
Cat 825 Compactor Operator	hrs	$23.25	350	$8,138
Cat D8N Dozer With Ripper	hrs	$103.84	320	$33,227
Cat D8N Dozer Operator	hrs	$26.00	320	$8,320
Cat 651 Waterwagon	hrs	$115.90	320	$37,089
Cat 651 Waterwagon Operator	hrs	$23.25	320	$7,440
Cat 14H Motorgrader	hrs	$77.15	350	$27,004
Cat 14H Motorgrader Operator	hrs	$28.78	350	$10,072
Cat 980 Loader	hrs	$100.39	320	$32,125
Cat 980 Loader Operator	hrs	$26.00	320	$8,320
5000 Gallon Water Truck	hrs	$67.74	175	$11,855
5000 Gallon Water Truck Operator	hrs	$23.25	175	$4,069
Highway Trucks	hrs	$79.20	2,560	$202,750
Truck Drivers	hrs	$21.30	2,560	$54,530
Equipment Maintenance (Butler)	hrs	$22.45	1,835	$41,205

Total Place Clay Layer **$521,840**

RECLAMATION OF CELL 3

Upper Random Fill

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 365 Excavator	hrs	$139.69	235	$32,852
Cat 365 Excavator Operator	hrs	$28.78	235	$6,768
Cat 770 Truck (4 trucks in Fleet)	hrs	$102.19	941	$96,134
Truck Drivers	hrs	$21.30	941	$20,038
Cat 825 Compactor	hrs	$101.99	235	$23,986
Cat 825 Compactor Operator	hrs	$23.25	235	$5,468
Cat 988 Loader	hrs	$144.84	235	$34,063
Cat 988 Loader Operator	hrs	$26.00	235	$6,115
Cat D7 Dozer	hrs	$88.08	235	$20,714
Cat D7 Dozer Operator	hrs	$26.00	235	$6,115
Cat 651 Waterwagon	hrs	$115.90	235	$27,257
Cat 651 Waterwagon Operator	hrs	$23.25	235	$5,468
Cat 14H Motorgrader	hrs	$77.15	235	$18,144
Cat 14H Motorgrader Operator	hrs	$28.78	235	$6,768
5000 Gallon Water Truck	hrs	$67.74	235	$15,931
5000 Gallon Water Truck Operator	hrs	$23.25	235	$5,468
Equipment Maintenance (Butler)	hrs	$22.45	2,587	$58,089

Total Upper Random Fill **$389,377**

Rock Armor and Rip Rap Filter

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat D7 Dozer	hrs	$88.08	290	$25,543
Cat D7 Dozer Operator	hrs	$26.00	290	$7,540
Cat 651 Waterwagon	hrs	$115.90	290	$33,612
Cat 651 Waterwagon Operator	hrs	$23.25	290	$6,743
Cat 14H Motorgrader	hrs	$77.15	290	$22,374
Cat 14H Motorgrader Operator	hrs	$28.78	290	$8,345
Rock Cost Delivered	CY	$6.60	70,455	$464,671
Equipment Maintenance (Butler)	hrs	$22.45	870	$19,536

Total Place Rock Armor and Rip Rap Filter **$588,363**

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	$62.00	1,200	**$74,400**

Total Quality Control **$74,400**

TOTAL RECLAMATION OF CELL 3 **$2,067,154**

Volume Calculation - Cell 3

Reviewed 02/25/16

1) Area of Cell 3 - 3,234,252 sq ft = 74.25 acres

2) Area of Cell 3 still open as of January 2015

3.0 acres Use 131,328 sq ft

3) Assumptions

- Bridging layer is placed using random fill from piles east and west of Cell 3
-Dewatering estimated at 12 years.
- Cell will be graded to Design elevation utilizing finer materials in random fill stockpiles and from "clay" stockpiles.

- Clay will be mined, blended, and hauled from borrow site location in Section 16 four miles south of the mill area, using belly dump trucks, clay layer on top of Cell only

- The upper 1 foot of random fill will be placed utilizing the fine random fill and clay stockpiles

- Rock for side armor, top armor and toe aprons will come from an off-site gravel source one (1) mile north of Blanding. Rock will be produced through screening, stockpiled and trucked to the site at the time of use. Belly dump trucks will dump gravel in windrows on the top and sides of the Cell.

4) Bridging Layer (Platform Fill) Remaining to be placed

131,328 sq ft X 3 ft. / 27 cubic feet per cubic yard = 14,592 cubic yards

- The cost to Blast Load and Haul the material from the Cell 1 channel is accounted for in the channel construction.

5) Bring Platform Fill up to Design elevation (Lower Random)
Assume full area of Cell X one (1) foot thick

3,234,252 sq ft X 1 ft. / 27 cubic feet per cubic yard = 119,787 cubic yards

6) Placement of Clay Layer (One (1) foot thick on top of Cell only)
Assume full area of Cell X one (1) foot thick

3,234,252 sq ft X 1 ft. / 27 cubic feet per cubic yard = 119,787 cubic yards

Use 120,000 cubic yards

7) Upper Random Fill Volume - Top of Cell area
Assume full area of Cell X one (2) foot thick
- 4 trucks, 1 loader and 1 excavator used to load and haul the random fill.
- A dozer will spread the material, a water truck will moisture condition prior to being compacted with the compactor.
- A road grader and water wagon will maintain the haul roads.

3,234,252 sq ft X 2 ft. / 27 cubic feet per cubic yard = 239,574 cubic yards

Use 240,000 cubic yards

8) Armor Protection - Top of Cell
Assume full area of Cell X one-half (0.5) foot thick

3,234,252 sq ft X 0.5 ft. / 27 cubic feet per cubic yard = 59,894 cubic yards

Use 60,000 cubic yards

9) Cell 3 North Slope (Slope #6) common with Cell 2 No clay on slopes. Toe apron only at base of long slope or where drainage is directed.

Average height 2 feet
Length 1100 feet

a) Random fill to reduce slope from 3:1 to 5:1
First Wedge [2 X 2 X 5)/2] X 1100

= 11,000 cubic feet/ 27 = 407 cubic yards

Use 410 cubic yards

Remaining Random Fill

[5 X 5 X 5)/2 - (2 X 2 X 5)/2] X 1100

= 57,750 cubic feet/ 27 = 2,139 cubic yards

Use 2,200 cubic yards

Total Random Fill North Slope 2,610 cubic yards

b) Rock Armor 8" thick - 0.67 feet

[5.67 X 5.67 X 5)/2 - (5 X 5 X 5)/2] X 1100

= 19,659 cubic feet/ 27 = 728 cubic yards

Use 730 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

[5.5 X 5.5 X 5)/2 - (5 X 5 X 5)/2] X 1100

= 14,438 cubic feet/ 27 = 535 cubic yards

Use 550 cubic yards

d) Toe Apron No rock required

Total Rock Armor Cell 3 north Slope 730 cubic yards

10) Cell 3 South Dike, west end (Slope #7)

Average heigh 16 feet
Length 1750 feet

a) Random fill to reduce slope from 3:1 to 5:1

First Wedge [16 X 16 X 5)/2 - (16 X 16 X 3)/2] X 175(

= 448,000 cubic feet/ 27 = 16,593 cubic yards
Use 16,600 cubic yards

Remaining Random Fill

[19 X 19 X 5)/2 - (16 X 16 X 5)/2] X 175(

= 459,375 cubic feet/ 27 = 17,014 cubic yards
Use 17,100 cubic yards

Total Random Fill North Slope 33,700 cubic yards

b) Rock Armor 8" thick - 0.67 feet

[19.67 X 19.67 X 5)/2 - (19 X 19 X 5)/2] X 175(

= 113,351 cubic feet/ 27 = 4,198 cubic yards
Use 4,200 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

[19.5 X 19.5 X 5)/2 - (519 X 19 X 5)/2] X 175(

= 84,219 cubic feet/ 27 = 3,119 cubic yards
Use 3,200 cubic yards

d) Rock Apron at toe of slope [2ft X 7ft wide X 1750 long] / 27 = 907
Use 1,000 cubic yards

Total Rock Armor Slope #7 5,200 cubic yards

11) Cell 3 South Dike (Slope #8) **VOLUME DELETED. AREA FILLED WITH CELL 4A TAILINGS**

a) Random Fill No existing Dike [(4 X 4 X 5) / 2] X 800 /27 = 1185 cubic yards

Use 1,200 cubic yards

Total Random Slope #4 1,200 cubic yards

b) Rock Armor 8" thick - 0.67 feet 14.52 cubic feet per linear foot of dike

14.52 cubic foot per linear foot X 800 / 27

= 430 cubic feet/ 27 = 430 cubic yards

Use 450 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

10.84 cubic foot per linear foot X 800 / 27

= 321 cubic feet/ 27 = 321 cubic yards

Use 325 cubic yards

d) Toe Apron Not required

Total Rock Armor Cell 3 East Slope 450 cubic yards

Volume Summary - Cell 3

	Bridging Layer	Lower Random	Clay	Upper Random	Rock Armor	Rip Rap Filter
Top of Cell	14,592	119,787	120,000	240,000	60,000	0
West (Slope #6)		410		2,200	730	550
South (Slope #7)		16,600		17,100	5,200	3,200
East (Slope #9)				1,200	450	325
Totals	14,592	136,797	120,000	260,500	66,380	4,075

Cell 3 Reclamation

Cat 637 Resource Requirements

	Volume	Route	Yds/hr	%	Equip. Hr.
Cell 3 Bridging Lift					
Tailings Surface	14,592	C	285	100%	51.3
Cell 3 Lower Random Fill					
Tailings Surface	119,787	C	285	100%	420.8
Slope 6	410	C	285	100%	1.4
Slope 7	16,600	C	285	100%	58.3
Slope 9	-	C	285	100%	0.0
Total					480.5

Trucking Fleet Requirements

Cell 3 Upper Random Fill	Volume	Route	Yds/hr per Truck	%	Equip. Hr.
Tailings Surface	154,990	C	258	100%	601.2
Tailings Surface	85,010	D	311	100%	273.5
Slope 6	2,200	D	311	100%	7.1
Slope 7	17,100	D	311	100%	55.0
Slope 9	1,200	D	311	100%	3.9
Total	260,500				940.7

Cell 3 Rock Armor -- use Highway Trucks

Clay Production Cell 3

(use same assumptions as Cell 2)

Clay Volume =	120,000	Bank Cubic Yards (BCY)	
	0.8	Swell Factor	
=	150,000	Loose Cubic Yards (LCY)	

Trucking 475 LCY/hr 8 trucks plus one (1) Loader

150,000 LCY / 475 LCY/hr = 316 hours

use 320 hours

320 X 8 Trucks = 2560 hours

	Hours
980 Loader	320
D8N w/ ripper	320
Cat 651 WW	320
Cat 825 Comp	350
14G Patrol	350
5000 gal WW	175

Rock Armor and Rip Rap Filter Production Cell 3

70,455 cubic yards (cy)

38 cy per hour times 8 trucks

304 cy per hour delivered

Assume 25% extra time for spreading, loading and screen wait

304 / 1.25 243.2 cy per hour 290 Hours

Cell 4A

RECLAMATION OF CELL 4A

Dewatering of Cell 4A

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Dewatering of Cell 4A (6 yrs)	hrs	$0.48	52,560	**$25,269**

Total Dewatering of Cell 4A **$25,269**

Place Bridging (Platform) Lift

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	554	$123,045
Cat 637 Scraper Operators	hrs	$28.78	554	$15,956
Cat 825 Compactor	hrs	$101.99	139	$14,138
Cat 825 Compactor Operator	hrs	$23.25	139	$3,223
Cat D8N Dozer With Ripper	hrs	$103.84	139	$14,393
Cat D8N Dozer Operator	hrs	$26.00	139	$3,604
Cat D7 Dozer	hrs	$88.08	139	$12,209
Cat D7 Dozer Operator	hrs	$26.00	139	$3,604
Cat 651 Waterwagon	hrs	$115.90	139	$16,066
Cat 651 Waterwagon Operator	hrs	$23.25	139	$3,223
Cat 14H Motorgrader	hrs	$77.15	139	$10,695
Cat 14H Motorgrader Operator	hrs	$28.78	139	$3,989
Equipment Maintenance (Butler)	hrs	$22.45	1,248	$28,014

Total Place Bridging (Platform) Lift **$252,158**

Place Lower Random Fill

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	461	$102,404
Cat 637 Scraper Operators	hrs	$28.78	461	$13,280
Cat 825 Compactor	hrs	$101.99	115	$11,766
Cat 825 Compactor Operator	hrs	$23.25	115	$2,682
Cat D8N Dozer With Ripper	hrs	$88.08	115	$10,161
Cat D8N Dozer Operator	hrs	$26.00	115	$2,999
Cat D7 Dozer	hrs	$77.15	115	$8,901
Cat D7 Dozer Operator	hrs	$26.00	115	$2,999
Cat 651 Waterwagon	hrs	$115.90	115	$13,371
Cat 651 Waterwagon Operator	hrs	$23.25	115	$2,682
Cat 14H Motorgrader	hrs	$77.15	115	$8,901
Cat 14H Motorgrader Operator	hrs	$28.78	115	$3,320
Equipment Maintenance (Butler)	hrs	$22.45	1,038	$23,314

Total Place Lower Random Fill **$206,781**

RECLAMATION OF CELL 4A

Clay Layer

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 825 Compactor	hrs	$101.99	200	$20,398
Cat 825 Compactor Operator	hrs	$23.25	200	$4,650
Cat D8N Dozer With Ripper	hrs	$103.84	180	$18,690
Cat D8N Dozer Operator	hrs	$26.00	180	$4,680
Cat 651 Waterwagon	hrs	$115.90	180	$20,862
Cat 651 Waterwagon Operator	hrs	$23.25	180	$4,185
Cat 14H Motorgrader	hrs	$77.15	200	$15,431
Cat 14H Motorgrader Operator	hrs	$28.78	200	$5,755
Cat 980 Loader	hrs	$100.39	150	$15,059
Cat 980 Loader Operator	hrs	$26.00	150	$3,900
5000 Gallon Water Truck	hrs	$67.74	150	$10,161
5000 Gallon Water Truck Operator	hrs	$23.25	150	$3,488
Highway Trucks	hrs	$33.70	1,440	$48,527
Truck Drivers	hrs	$21.30	1,440	$30,673
Equipment Maintenance (Butler)	hrs	$22.45	1,060	$23,802

Total Place Clay Layer **$230,262**

Upper Random Fill

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 365 Excavator	hrs	$139.69	219	$30,575
Cat 365 Excavator Operator	hrs	$28.78	219	$6,299
Cat 770 Truck (3 trucks in Fleet)	hrs	$102.19	657	$67,103
Truck Drivers	hrs	$21.30	657	$13,986
Cat 825 Compactor	hrs	$101.99	219	$22,323
Cat 825 Compactor Operator	hrs	$23.25	219	$5,089
Cat D7 Dozer	hrs	$88.08	219	$19,278
Cat D7 Dozer Operator	hrs	$26.00	219	$5,691
Cat 651 Waterwagon	hrs	$115.90	219	$25,368
Cat 651 Waterwagon Operator	hrs	$23.25	219	$5,089
Cat 14H Motorgrader	hrs	$77.15	219	$16,887
Cat 14H Motorgrader Operator	hrs	$28.78	219	$6,299
5000 Gallon Water Truck	hrs	$67.74	219	$14,827
5000 Gallon Water Truck Operator	hrs	$23.25	219	$5,089
Equipment Maintenance (Butler)	hrs	$22.45	1,970	$44,233

Total Place Upper Random Fill **$170,172**

RECLAMATION OF CELL 4A

Rock Armor and Filter Layer

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat D7 Dozer	hrs	$88.08	240	$21,139
Cat D7 Dozer Operator	hrs	$26.00	240	$6,240
Cat 651 Waterwagon	hrs	$115.90	240	$27,816
Cat 651 Waterwagon Operator	hrs	$23.25	240	$5,580
Cat 14H Motorgrader	hrs	$77.15	240	$18,517
Cat 14H Motorgrader Operator	hrs	$28.78	240	$6,907
Rock Cost Delivered	CY	$6.60	48,695	$321,157
Equipment Maintenance (Butler)	hrs	$22.45	720	$16,167

Total Place Rock Armor and Filter Layer **$423,523**

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	$62.00	1,045	**$64,790**

Total Quality Control **$64,790**

TOTAL RECLAMATION OF CELL 4A **$1,372,956**

Volume Calculation - Cell 4A

Reviewed 2/25/16

1) Area of Cell 1,785,960 sq ft = 41.00 acres

2) Assumptions

- Bridging layer is placed using random fill from piles east of Cell 4A
- Dewatering estimated at 6 years.
- Cell will be graded to Design elevation utilizing finer materials in random fill stockpiles and from "clay" stockpiles.

- Clay will be mined, blended, and hauled from borrow site location in Section 16 - four miles south of the mill area, using belly dump trucks, clay layer on top of Cell only.

- The upper 1 foot of random fill will be placed utilizing the fine random fill and clay stockpiles

- Rock for side armor, top armor and toe aprons will come from an off-site gravel source one (1) mile north of Blanding. Rock will be produced through screening, stockpiled and trucked to the site at the time of use. Belly dump trucks will dump gravel in windrows on the top and sides of the Cell.

3) Bridging Layer (Platform Fill) Remaining to be placed

1,785,960 sq ft X 3 ft. / 27 cubic feet per cubic yard = 198,440 cubic yards

Use 198,500 cubic yards

4) Bring Platform Fill up to Design elevation (Lower Random)
Assume full area of Cell X one (1) foot thick

1,785,960 sq ft X 1 ft. / 27 cubic feet per cubic yard = 66,147 cubic yards

Use 66,000 cubic yards

5) Placement of Clay Layer (One (1) foot thick on top of Cell only)
Assume full area of Cell X one (1) foot thick

1,785,960 sq ft X 1 ft. / 27 cubic feet per cubic yard = 66,147 cubic yards

Use 66,000 cubic yards

6) Upper Random Fill Volume - Top of Cell area
Assume full area of Cell X one (2) foot thick
- 3 trucks, 1 excavator used to load and haul the random fill.
- A dozer will spread the material, a water truck will moisture condition prior to being compacted.
- A road grader and water wagon will maintain the haul roads.

1,785,960 sq ft X 2 ft. / 27 cubic feet per cubic yard = 132,293 cubic yards

Use **132,500 cubic yards**

7) Armor Protection - Top of Cell
Assume full area of Cell X one-half (0.5) foot thick

1,785,960 sq ft X 0.5 ft. / 27 cubic feet per cubic yard = 33,073 cubic yards

Use **33,000 cubic yards**

8) Cell 4A South Dike, (Slope #1)

Average heigl 36 feet
Length 1600 feet

a) Random fill to reduce slope from 3:1 to 5:1

First Wedge [36 X 36 X 5)/2 - (36 X 36 X 3)/2] X 1600

= 2,073,600 cubic feet/ 27 = 76,800 cubic yards
- 43,479 CY of material will come from the excavated channel within Cell 1. (43,479) cubic yards
- The cost to load, haul and stage the material is included in Cell 1 channel construction.

Use **33,321 cubic yards**

Remaining Random Fill

[39 X 39 X 5)/2 - (36 X 36 X 5)/2] X 1600

= 900,000 cubic feet/ 27 = 33,333 cubic yards

Use **34,000 cubic yards**

Total Random Fill South Slope **110,800 cubic yards**

b) Rock Armor 8" thick - 0.67 feet

[39.67 X 39.67 X 5)/2 - (39 X 39 X 5)/2] X 1600

= 210,836 cubic feet/ 27 = 7,809 cubic yards

Use **7,800 cubic yards**

c) Rip Rap Filter 6" thick - 0.5 feet

[39.5 X 39.5 X 5)/2 - (39 X 39 X 5)/2] X 1600

= 157,000 cubic feet/ 27 = **5,815 cubic yards**
Use **6,000 cubic yards**

d) Rock Apron at toe of slope [2ft X 7ft wide X 1600 long] / 27 = 830
Use 850 cubic yards

Total Rock Armor South Slope 8,650 cubic yards

9) Cell 4A East Slope (Slope #2)

Average heigl 8 feet
Length 1200 feet

a) Random fill to reduce slope from 3:1 to 5:1

First Wedge [8 X 8 X 5)/2 - (8 X 8 X 3)/2] X 1200

= 76,800 cubic feet/ 27 = 1185 cubic yards
Use 1,200 cubic yards

Remaining Random Fill

[11 X 11 X 5)/2 - (8 X 8 X 5)/2] X 1200

= 171,000 cubic feet/ 27 = 6,333 cubic yards
Use 6,500 cubic yards

Total Random Slope #3 7,700 cubic yards

b) Rock Armor 8" thick - 0.67 feet 14.52 cubic feet per linear foot of dike

14.52 cubic foot per linear foot X 1200 / 27

= 645 cubic feet/ 27 = 24 cubic yards
Use 25 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

10.84 cubic foot per linear foot X 1200 / 27

= 482 cubic feet/ 27 = **18 cubic yards**
Use **20 cubic yards**

c) Toe Apron Not required

Total Rock Armor Cell 4A East Slope 25 cubic yards

Volume Summary - Cell 4A

	Bridging Layer	Lower Random	Clay	Upper Random	Rock Armor	Rip Rap Filter
Top of Cell	198,500	66,000	66,000	132,500	33,000	0
South (Slope #1)		33,321		34,000	8,650	6,000
East (Slope #2)		1,200		6,500	25	20
Totals	198,500	100,521	66,000	173,000	41,675	6,020

Cell 4A Reclamation

Cat 637 Resource Requirements

	Volume	Route	Yds/hr	%	Equip. Hr.
Cell 4A Bridging Lift					
Tailings Surface	198,500	A	358	100%	554.9
Cell 4A Lower Random Fill					
Tailings Surface	37,500	B	303	100%	123.7
Tailings Surface	28,500	A	358	100%	79.7
Slope 1	33,321	B	303	100%	109.9
Slope 2	1,200	B	303	100%	4.0
Total					317.2

Trucking Fleet Requirements

Cell 4A Upper Random Fill	Volume	Route	Yds/hr per truck	%	Equip. Hr.
Tailings Surface	132,500	B	263	100%	502.9
Slope 1	34,000	B	263	100%	129.0
Slope 2	6,500	B	263	100%	24.7
Total					656.6

Cell 4A Rock Armor -- use Highway Trucks

Clay Production Cell 4A

(use same assumptions as Cell 2)

Clay Volume = 66,000 Bank Cubic Yards (BCY)

0.8 Swell Factor

= 82,500 Loose Cubic Yards (LCY)

Trucking 475 LCY/hr 8 trucks plus one (1) Loader

85,000 LCY / 475 LCY/hr = 174 hours

use 180 hours

180 X 8 Trucks = 1,440 hours

Machine	Hours
980 Loader	180
D8N w/ ripper	180
Cat 651 WW	180
Cat 825 Com	200
14G Patrol	200
5000 gal WW	150

Rock Armor and Filter Layer Production Cell 4A

47,695 cubic yards (cy)

38 cy per hour times 8 trucks

304 cy per hour delivered

Assume 25% extra time for spreading, loading and screen wait

304 / 1.25 243.2 cy per hour 196 Hours

Cell 4A Capacity 2014

1,190,000 tons
991,667 cy

Source	Cell 1 Crystals	286,189	cy
	Cell 1 Cont Mat	95,396	cy
	Demo Mat	663	hr
	Demo Mat Vol	265,250	cy
	Mill Cont Mat	240,921	cy
	Cell 4B Cont Mat	66,147	cy
	Total	953,902	cy

Cell 4B

RECLAMATION OF CELL 4B

Dewatering of Cell 4B

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Dewatering of Cell 4B (1 Yr)	hrs	$0.48	8,760	**$4,212**

Total Dewatering of Cell 4B **$4,212**

Place Bridging (Platform) Lift

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	660	$146,463
Cat 637 Scraper Operators	hrs	$28.78	660	$18,993
Cat 825 Compactor	hrs	$101.99	165	$16,829
Cat 825 Compactor Operator	hrs	$23.25	165	$3,836
Cat D8N Dozer With Ripper	hrs	$103.84	165	$17,133
Cat D8N Dozer Operator	hrs	$26.00	165	$4,290
Cat D7 Dozer	hrs	$88.08	165	$14,533
Cat D7 Dozer Operator	hrs	$26.00	165	$4,290
Cat 651 Waterwagon	hrs	$115.90	165	$19,124
Cat 651 Waterwagon Operator	hrs	$23.25	165	$3,836
Cat 14H Motorgrader	hrs	$77.15	165	$12,730
Cat 14H Motorgrader Operator	hrs	$28.78	165	$4,748
Equipment Maintenance (Butler)	hrs	$22.45	1,485	$33,345

Total Place Bridging (Platform) Lift **$300,151**

Place Lower Random Fill

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	480	$106,519
Cat 637 Scraper Operators	hrs	$28.78	480	$13,813
Cat 825 Compactor	hrs	$101.99	120	$12,239
Cat 825 Compactor Operator	hrs	$23.25	120	$2,790
Cat D8N Dozer With Ripper	hrs	$103.84	120	$12,460
Cat D8N Dozer Operator	hrs	$26.00	120	$3,120
Cat D7 Dozer	hrs	$88.08	120	$10,569
Cat D7 Dozer Operator	hrs	$26.00	120	$3,120
Cat 651 Waterwagon	hrs	$115.90	120	$13,908
Cat 651 Waterwagon Operator	hrs	$23.25	120	$2,790
Cat 14H Motorgrader	hrs	$77.15	120	$9,258
Cat 14H Motorgrader Operator	hrs	$28.78	120	$3,453
Equipment Maintenance (Butler)	hrs	$22.45	1,080	$24,251

Total Place Lower Random Fill **$218,292**

Clay Layer

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	0	$0
Cat 637 Scraper Operators	hrs	$28.78	0	$0
Cat 825 Compactor	hrs	$101.99	200	$20,398
Cat 825 Compactor Operator	hrs	$23.25	200	$4,650
Cat D8N Dozer With Ripper	hrs	$103.84	180	$18,690
Cat D8N Dozer Operator	hrs	$26.00	180	$4,680
Cat D7 Dozer	hrs	$88.08	0	$0
Cat D7 Dozer Operator	hrs	$26.00	0	$0
Cat 651 Waterwagon	hrs	$115.90	180	$20,862
Cat 651 Waterwagon Operator	hrs	$23.25	180	$4,185
Cat 14H Motorgrader	hrs	$77.15	200	$15,431
Cat 14H Motorgrader Operator	hrs	$28.78	200	$5,755
Cat 980 Loader	hrs	$100.39	150	$15,059
Cat 980 Loader Operator	hrs	$26.00	150	$3,900
5000 Gallon Water Truck	hrs	$67.74	150	$10,161
5000 Gallon Water Truck Operator	hrs	$23.25	150	$3,488
Highway Trucks	hrs	$31.75	1,440	$45,719
Truck Drivers	hrs	$23.25	1,440	$33,481
Equipment Maintenance (Butler)	hrs	$22.45	1,060	$23,802

Total Place Clay Layer **$230,262**

Upper Random Fill

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat 637 Scraper	hrs	$221.91	570	$126,491
Cat 637 Scraper Operators	hrs	$28.78	570	$16,403
Cat 825 Compactor	hrs	$101.99	143	$14,534
Cat 825 Compactor Operator	hrs	$23.25	143	$3,313
Cat D8N Dozer With Ripper	hrs	$103.84	143	$14,796
Cat D8N Dozer Operator	hrs	$26.00	143	$3,705
Cat D7 Dozer	hrs	$88.08	143	$12,551
Cat D7 Dozer Operator	hrs	$26.00	143	$3,705
Cat 651 Waterwagon	hrs	$115.90	143	$16,516
Cat 651 Waterwagon Operator	hrs	$23.25	143	$3,313
Cat 14H Motorgrader	hrs	$77.15	143	$10,994
Cat 14H Motorgrader Operator	hrs	$28.78	143	$4,101
5000 Gallon Water Truck	hrs	$67.74	143	$9,653
5000 Gallon Water Truck Operator	hrs	$23.25	143	$3,313
Equipment Maintenance (Butler)	hrs	$22.45	1,425	$31,998

Total Place Upper Random Fill **$275,388**

Rock Armor and Filter Layer

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Cat D7 Dozer	hrs	$88.08	200	$17,616
Cat D7 Dozer Operator	hrs	$26.00	200	$5,200
Cat 651 Waterwagon	hrs	$115.90	200	$23,180
Cat 651 Waterwagon Operator	hrs	$23.25	200	$4,650
Cat 14H Motorgrader	hrs	$77.15	200	$15,431
Cat 14H Motorgrader Operator	hrs	$28.78	200	$5,755
Rock Cost Delivered	CY	$6.60	48,695	$321,157
Equipment Maintenance (Butler)	hrs	$22.45	600	$13,473

Total Place Rock Armor and Filter Layer **$406,462**

Quality Control

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Quality Control Contractor	hrs	$62.00	1,045	**$64,790**

Total Quality Control **$64,790**

TOTAL RECLAMATION OF CELL 4B **$1,499,557**

	Volume	Route	Yds/ Hr		Equip Hours
Cell 4B Bridging Lift					
Tailings Surface	198,500	2	303	100%	655.1
Cell 4B Lower Random Fill					
Tailings Surface	66,000	2	303	100%	217.8
South Slope	77,000	2	303	100%	254.1
West Slope	1,200	2	303	100%	4.0
					475.9
Cell 4B Upper Random Fill					
Tailings Surface	132,000	2	303	100%	435.6
South Slope	34,000	2	303	100%	112.2
West Slope	6,500	2	303	100%	21.5
					569.3
Rock Armor					
Rip Rap	42,675			100%	
Filter	6,020			100%	

Volume Calculation - Cell 4B

Reviewed 2/25/16

1) Area of Cell 4B 1,785,960 sq ft = 41 acres

2) Assumptions

- Bridging layer is placed using random fill from piles west of Cell 4B

- Cell will be graded to Design elevation utilizing finer materials in random fill stockpiles and from "clay" stockpiles.

- Clay will be mined, blended, and hauled from borrow site location in Section 16 - four miles south of the mill area, using belly dump trucks, clay layer on top of Cell only.

- The upper 1 foot of random fill will be placed utilizing the fine random fill and clay stockpiles

- Rock for side armor, top armor and toe aprons will come from an off-site gravel source one (1) mile north of Blanding. Rock will be produced through screening, stockpiled and trucked to the site at the time of use. Belly dump trucks will dump gravel in windrows on the top and sides of the Cell.

3) Bridging Layer (Platform Fill) Remaining to be placed

1,785,960 sq ft X 3 ft. / 27 cubic feet per cubic yard = 198,440 cubic yards

Use 198,500 cubic yards

4) Bring Platform Fill up to Design elevation (Lower Random)
Assume full area of Cell X one (1) foot thick

1,785,960 sq ft X 1 ft. / 27 cubic feet per cubic yard = 66,147 cubic yards

Use 66,000 cubic yards

5) Placement of Clay Layer (One (1) foot thick on top of Cell only)
Assume full area of Cell X one (1) foot thick

1,785,960 sq ft X 1 ft. / 27 cubic feet per cubic yard = 66,147 cubic yards

Use 66,000 cubic yards

6) Upper Random Fill Volume - Top of Cell area
Assume full area of Cell X one (2) foot thick

1,785,960 sq ft X 2 ft. / 27 cubic feet per cubic yard = 132,293 cubic yards

Use 132,000 cubic yards

7) Armor Protection - Top of Cell
Assume full area of Cell X one-half (0.5) foot thick

1,785,960 sq ft X 0.5 ft. / 27 cubic feet per cubic yard = 33,073 cubic yards

Use 33,000 cubic yards

8) Cell 4B South Dike, (Slope #1)

Average height 36 feet
Length 1600 feet

a) Random fill to reduce slope from 3:1 to 5:1

First Wedge [36 X 36 X 5)/2 - (36 X 36 X 3)/2] X 1600

= 2,073,600 cubic feet/ 27 = 76,800 cubic yards
Use 77,000 cubic yards

Remaining Random Fill

[39 X 39 X 5)/2 - (36 X 36 X 5)/2] X 1600

= 900,000 cubic feet/ 27 = 33,333 cubic yards
Use 34,000 cubic yards

Total Random Fill South Slope 111,000 cubic yards

b) Rock Armor 8" thick - 0.67 feet

[39.67 X 39.67 X 5)/2 - (39 X 39 X 5)/2] X 1600

= 210,836 cubic feet/ 27 = 7,809 cubic yards
Use 7,800 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

[39.5 X 39.5 X 5)/2 - (39 X 39 X 5)/2] X 1600

= 157,000 cubic feet/ 27 = **5,815 cubic yards**
Use **6,000 cubic yards**

d) Rock Apron at toe of slope [2ft X 7ft wide X 1600 long] / 27 = 830
Use 850 cubic yards

Total Rock Armor South Slope 8,650 cubic yards

9) Cell 4B West Slope (Slope #2)

Average height 8 feet
Length 1200 feet

a) Random fill to reduce slope from 3:1 to 5:1

First Wedge [8 X 8 X 5)/2 - (8 X 8 X 3)/2] X 1200

= 76,800 cubic feet/ 27 = 1185 cubic yards
Use 1,200 cubic yards

Remaining Random Fill

[11 X 11 X 5)/2 - (8 X 8 X 5)/2] X 1200

= 171,000 cubic feet/ 27 = 6,333 cubic yards
Use 6,500 cubic yards

Total Random Slope #3 7,700 cubic yards

b) Rock Armor 8" thick - 0.67 feet 14.52 cubic feet per linear foot of dike

14.52 cubic foot per linear foot X 1200 / 27

= 645 cubic feet/ 27 = 24 cubic yards
Use 25 cubic yards

c) Rip Rap Filter 6" thick - 0.5 feet

10.84 cubic foot per linear foot X 1200 / 27

= 482 cubic feet/ 27 = **18 cubic yards**
Use **20 cubic yards**

c) Toe Apron Not required

Total Rock Armor Cell 4B West Slope 25 cubic yards

Volume Summary - Cell 4B

	Bridging Layer	Lower Random	Clay	Upper Random	Rock Armor	Rip[Rap Filter
Top of Cell	198,500	66,000	66,000	132,000	33,000	0
South (Slope #1)		77,000		34,000	8,650	6,000
West (Slope #3)		1,200		6,500	25	20
Totals	198,500	144,200	66,000	172,500	41,675	6,020

Cell 4B Reclamation

Cat 637 Resource Requirements

	Volume	Route	Yds/hr	%	Equip. Hr.
Cell 4B Bridging Lift					
Tailings Surface	198,500	B	303	100%	654.6
Cell 4B Lower Random Fill					
Tailings Surface	66,000	B	303	100%	217.6
Slope 1	77,000	B	303	100%	253.9
Slope 2	1,200	B	303	100%	4.0
Total					475.5
Cell 4B Upper Random Fill					
Tailings Surface	132,000	B	303	100%	435.3
Slope 1	34,000	B	303	100%	112.1
Slope 2	6,500	B	303	100%	21.4
Total					568.8

Cell 4B Rock Armor -- use Highway Trucks

Clay Production Cell 4B

(use same assumptions as Cell 2)

Clay Volume = 66,000 Bank Cubic Yards (BCY)

0.8 Swell Factor

= 82,500 Loose Cubic Yards (LCY)

Trucking 475 LCY/hr 8 trucks plus one (1) Loader

85,000 LCY / 475 LCY/hr = 174 hours

use 180 hours

180 X 8 Trucks = 1,440 hours

Machine	Hours
980 Loader	180
D8N w/ ripper	180
Cat 651 WW	180
Cat 825 Comp.	200
14G Patrol	200
5000 gal WW	150

Rock Armor and Filter Layer Production Cell 4B

47,695 cubic yards (cy)

38 cy per hour times 8 trucks

304 cy per hour delivered

Assume 25% extra time for spreading, loading and screen wait

304 / 1.25 243.2 cy per hour 196 Hours

Miscellaneous

MISCELLANEOUS ITEMS

Decontamination Pad

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Laborers	hrs	$17.16	8,320	**$142,747**
Construct Wheel Wash Facility	LS	$180,000	1	**$180,000**
	Facilities constructed in 2000 & 2008			($180,000)
Total Decontamination Facilities				**$142,747**

Chloroform System Operation and Reclamation

Task 1: Operation for a 10 year period.	$	185,252
Task 2: Maintenance for a 10 year period.	$	104,382
Task 3: Monitoring for a 10 year period.	$	763,045
Task 4: Reporting for a 10 year period.	$	101,653
Task 5: Chloroform System Abandonment	$	21,920
Sub Total	**$**	**1,176,252**

Nitrate System Operation and Reclamation

Task 1: Operation for a 5 year period.	$	-
Task 2: Maintenance for a 5 year period.	$	4,349
Task 3: Monitoring for a 5 year period.	$	6,864
Task 4: Reporting for a 5 year period.	$	8,242
Task 5: Nitrate System Abandonment	$	3,555
Sub Total	**$**	**23,010**

Notes: The Nitrate Pumping System Operation is included in the Chloroform Pumping System Operation Costs.
There is only 1 Nitrate pumping well that is not already included in the 13 wells associated with the Chloroform Pumping System.

Maintenance is scaled from the Chloroform estimate based on the ratio of pumping wells (1 Nitrate Pumping well / 13 Chloroform Pumping Wells and 5 years instead of 10 years)

Monitoring is based on an analytical cost of $345 per quarter for 5 years.

Reporting is scaled from the Chloroform estimate based on the ratio of total wells (6 Nitrate wells / 37 Chloroform Wells and 5 years instead of 10 years)

Abandonment is scaled from the Chloroform estimate based on the ratio of total wells (6 Nitrate wells / 37 Chloroform Wells)

Slimes Drain Evaporation Pond

Resource Description	Units	Cost/Unit	Task Units	Task Cost
60 mil HDPE Liner, installed	sq. ft.	$0.70	960,000	$672,000
Cat 637 Scraper	hrs	$221.91	100	$22,191
Cat 637 Scraper Operator	hrs	$28.78	100	$2,878
Cat 825 Compactor	hrs	$101.99	25	$2,550
Cat 825 Compactor Operator	hrs	$23.25	25	$581
Cat D7 Dozer	hrs	$88.08	25	$2,202
Cat D7 Dozer Operator	hrs	$26.00	25	$650
Cat 651 Waterwagon	hrs	$115.90	25	$2,898
Cat 651 Waterwagon Operator	hrs	$23.25	25	$581
Cat 14H Motorgrader	hrs	$77.15	25	$1,929
Cat 14H Motorgrader Operator	hrs	$28.78	25	$719
Equipment Maintenance (Butler)	hrs	$22.45	200	$4,491

Total Slimes Drain Evaporation Pond **$713,670**

TOTAL MISCELLANEOUS ITEMS **$2,055,680**

Chloroform Pumping System

Chloroform Pumping System - Required Surety Estimate

Task 1: Operation for a 10 year period.

Assumptions

The full Chloroform pumping and monitoring system has already been installed.
Operation will be performed by the Environmental Technician at $30.890 per hour
Environmental Technician will be local labor hired by a DWMRC Contractor. A 15% markup has been applied to the actual labor rate
Daily operation checks take 1.0 hours for 1 Environmental Technician.
Weekly operation checks take 3.0 hours for 1 Environmental Technician.
Measure Depth to Water Monthly 6 hours for 1 Environmental Technician.
Water from the chloroform pumping sysytem will be pumped to the evaporation or tailings ponds or used in the Mill process. After reclamation, the water will pumped to the Cell 2 Slimes evaporation pond. The costs associated with the Cell 2 slimes evaporation pond are included in the Miscellaneous items.
Power $0.07/KWH
Average power of each pump motor = 0.75 hp.
Average pumping time per day = 1.1 hr.

Item	Quantity	Units	Quantity	Units	Cost
Daily Operation Checks - Labor	1	Hrs/Day	365	hrs/Yr	$ 11,274
Weekly Operation Checks - Labor	3	Hrs/Wk	156	hrs/Yr	$ 4,819
Measure Depth to Water Monthly	6	Hrs/Month	72	hrs/Yr	$ 2,224
Pumping hours per well per quarter	1.1	Hrs/Day	401.5	hrs/Yr	$ 16.00
				Total per year	**$ 18,525**
				Total 10 years	**$ 185,252**

Task 2: Maintenance for a 10 year period.

Assumptions

Maintenance will be performed by the Environmental Technician at $30.890 per hour
Environmental Technician will be local labor hired by a DWMRC Contractor. A 15% markup has been applied to the actual labor rate
Pump Replacement takes 4 hours for 2 Environmental Technicians.
Average of 3 pump replacements per year. Each replacement pump costs $2,200
Flow Meter Replacement takes 2 hours for 2 Environmental Technicians.
Average of 4 flow meter replacements per year. Each replacement flow meter costs $245
Heat lamp bulb replacement labor is included in daily operational checks.
Average of 14 heat lamp bulb replacements per year. Each bulb cost $10
Average of 3 pipeline freezing per year.
Clearing of a pipeline freeze takes 8 hours for 2 Environmental Technicians. No material costs.

Item	Quantity	Units	Labor Hours / Year	Material Cost per year	Cost
Pump Replacement	3	Replaced / year	24	6600	$ 7,341
Flow Meter Replacement	4	Replaced / year	16	980	$ 1,474
Heat Lamp Replacement	14	Replaced / year	0	140	$ 140
Frozen Pipeline Clearing	3	Clearing / year	48	0	$ 1,483
				Total	**$ 10,438**
				Total 10 years	**$ 104,382**

Task 3: Monitoring for a 10 year period.

Assumptions

Analytical cost per sample = $169
45 samples per quarter
Sample collection will be performed by an Environmental Technician and a Contractor Field Geologist
Environmental Technician = $31.89 per hour. Field Geologist = $90.00 per hou
Environmental Technician will be local labor hired by a DWMRC Contractor. A 15% markup has been applied to the actual labor rate
Sample collection requires 80 hours for 2 Environmental Technicians per quarter.

Item	Quantity	Units	Quantity	Unit	Cost
Analytical Costs	180	Samples/year	$ 169	$/Sample	$ 30,420
Sampling Labor - Environmental Technician	320	Hrs/year	$ 30.89	$/hr	$ 9,884
Sampling Labor - Field Geologist	320	Hrs/year	$ 90.00	$/hr	$ 28,800
Field Geologist - Travel Costs	40	Days/year	$ 180.00	$/day	$ 7,200
				Total	**$ 76,304**
				Total 10 years	**$ 763,044.67**

Task 4: Reporting for a 10 year period.

Assumptions

Reporting will be performed by the Environmental Technician at $30.890 per hour
Environmental Technician will be local labor hired by a DWMRC Contractor. A 15% markup has been applied to the actual labor rate
Report preparation is expected to take 40 hours for the Environmental Technician to complete each quarter.
Quarterly analysis of contamination extent is estimated to cost $3,000.

Item	Quantity	Units	Quantity	Unit	Cost
Report Preparation	160	Hrs/year	$ 30.89	$/hr	$ 4,942
Contamination Analyisis	4	per year	$ 3,000.00	$/Quarter	$ 12,000
				Total 10 years	**$ 101,653**

Task 5: Chloroform System Abandonment

Assumptions

Pumps and well head enclosures will be loaded on a flat bed truck by hand.
Abandonment will be performed by the Environmental Technician at $30.890 per hour
Wells will be abandoned in accordance with State of Utah Administrative Code R655-4 subsection 14.9
Flatbed truck with operator costs $55/hr.
Assumed 1 hour of labor to remove each pump and enclosure.
The materials will be discarded in the active trash area of the tailing cells if available or in an off-site landfill.
Well casing will be cut off 2 feet below the ground level.
The well will be abandoned by filling will Hole Plug.
Hole Plug Material cost estimated at $2 per foot of well.
Average well depth of 120 feet.
There is 2,600 feet of underground electrical line and 3,850' of pipeline
The HDPE pipeline and power line will be uncovered with a 365 Excavator
The 365 Excavator is estimated to excavate or backfill 412 feet per hour.
The 365 Excavator costs $155/hr without the operator.
The Excavator will also backfill the trench after the pipe has been removed.
Assumed 8 hours to place the pipeline and powerlines in the tailing cell.

Item	Quantity	Units	Labor Hrs	Equipment Hours	Total Cost
Pull pumps and remove enclosures	13	Pumping Wells	13	13	$ 1,116.56
Abandon All Wells - Labor	38	Wells	38	0	$ 1,173.78
Abandon All Wells - Materials	38	Wells	0	0	$ 9,120.00
Landfil Charges	1	Surcharge	0	0	$ 5,000.00
Excavate and Backfill Pipeline Trench	12900	Linear Feet	39.34	31.34	$ 5,510.09
				Total	**$ 21,920.43**

Labor Costs

LABOR COSTS

Specified Wages

Energy Fuels and WMI Rates **2014 Estimated Labor Rates**** 15.65% 7.00% 15.05%

Labor Rates increased by 3% and 2.5% in 2015 and 2016 respectivly.

2015 2016
103% 102.5%

Labor Classification	Base Rate ***	Mandated Fringe	Labor Burden (FICA, SUI, FUI, etc.	Company Benefits (medical, life insure, etc)	Fringe Costs	Labor Cost/HR	Fringe Costs - on Overtime hours	Labor Cost/HR - Overtime	**Labor Cost/HR - 50 hour week**
Boiler Makers	$26.63	$18.76	$4.17	no added cost	$22.93	$49.55	$22.33	$73.43	**$54.33**
Millwrights	$21.98	$4.28	$3.44	no added cost	$7.72	$29.70	$7.12	$43.65	**$32.49**
Ironworkers	$23.06	$9.92	$3.61	no added cost	$13.53	$36.59	$12.93	$53.98	**$40.06**
Carpenters	$15.57	$3.03	$2.44	no added cost	$5.47	$21.04	$4.87	$30.66	**$22.96**
Cement Masons	$14.78	$0.56	$2.31	$0.47	$3.35	$18.13	$2.75	$26.29	**$19.76**
Electricians	$15.33	$2.71	$2.40	no added cost	$5.11	$20.44	$4.51	$29.76	**$22.30**
Ironworkers - Reinforcing	$21.76		$3.41	$1.52	$4.93	$26.69	$4.33	$39.13	**$29.18**
Laborers (including pipe layers)	$13.99	$0.00	$2.19	$0.98	$3.17	$17.16	$2.57	$24.84	**$18.69**
Pipefitters	$21.47		$3.36	$1.50	$4.86	$26.34	$4.26	$38.61	**$28.79**
POWER EQUIPMENT OPERATORS									
Backhoes	$17.37		$2.72	$1.22	$3.93	$21.30	$3.33	$31.05	**$23.25**
Cranes	$23.13		$3.62	$1.62	$5.24	$28.37	$4.64	$41.66	**$31.03**
Dozers	$19.40		$3.04	$1.36	$4.40	$23.80	$3.80	$34.80	**$26.00**
Graders	$21.46		$3.36	$1.50	$4.86	$26.32	$4.26	$38.59	**$28.78**
Loaders	$19.40		$3.04	$1.36	$4.40	$23.80	$3.80	$34.80	**$26.00**
Scrapers	$21.46		$3.36	$1.50	$4.86	$26.32	$4.26	$38.59	**$28.78**
Trackhoes	$21.46		$3.36	$1.50	$4.86	$26.32	$4.26	$38.59	**$28.78**
Tractors	$17.37		$2.72	$1.22	$3.93	$21.30	$3.33	$31.05	**$23.25**
Truck Drivers	$17.37		$2.72	$1.22	$3.93	$21.30	$3.33	$31.05	**$23.25**

	% of employee pay
Payroll Taxes	7.65
WC	7.4
UI	0.60
	15.65

Note: base rates do not include FICA, worker comp, unemployment, or company benefits which increase the cost per hour

State of Utah - General Decision - Current Update UT130043, attached, 5 pages, 02/27/2014. **(For comparison only, not used)**

LABOR COSTS

Nonspecified Wages	Base Rate***	Mandated Fringe	Labor Burden (FICA, SUI, FUI, etc.	Company Benefits (medical, life insure, etc)	Fringe Costs	Labor Cost/HR	Fringe Costs - on Overtime hours	Labor Cost/HR - Overtime	**Labor Cost/HR - 50 hour week**
Survey Crew Member	$12.45	$0.00	$1.95	$0.87	$2.82	$15.27	$2.22	$22.01	**$16.62**
Sample Crew Member	$12.45	$0.00	$1.95	$0.87	$2.82	$15.27	$2.22	$22.01	**$16.62**
Mechanic (Demolition)	$12.94	$0.00	$2.02	$0.91	$2.93	$15.87	$2.33	$22.90	**$17.27**
Manager/Engineer	$45.55	$0.00	$7.13	$3.19	$10.32	$55.87	$9.72	$82.90	**$61.27**
Radiation Safety Officer	$35.59	$0.00	$5.57	$2.49	$8.06	$43.65	$7.46	$64.58	**$47.84**
Secretary	$14.39	$0.00	$2.25	$1.01	$3.26	$17.65	$2.66	$25.58	**$19.24**
Clerk	$11.84	$0.00	$1.85	$0.83	$2.68	$14.53	$2.08	$20.89	**$15.80**
Engineer	$35.59	$0.00	$5.57	$2.49	$8.06	$43.65	$7.46	$64.58	**$47.84**
Environmental Technician	$20.04	$0.00	$3.14	$1.40	$4.54	$24.58	$3.94	$35.97	**$26.86**
Safety Engineer	$20.04	$0.00	$3.14	$1.40	$4.54	$24.58	$3.94	$35.97	**$26.86**
Maintenance Foreman	$26.12	$0.00	$4.09	$1.83	$5.92	$32.03	$5.32	$47.15	**$35.05**
Security Personnel	$7.71	$0.00	$1.21	$0.54	$1.75	$9.46	$1.15	$13.29	**$10.23**
Chemist	$20.95	$0.00	$3.28	$1.47	$4.75	$25.70	$4.15	$37.65	**$28.09**

** Labor rates based on the 2014 White Mesa Mill Operating Budget.
*** Reflects 0.0% cost of living raise for 2014

Equipment Costs

WHITE MESA MILL RECLAMATION COST
HOURLY EQUIPMENT COSTS 2016 DOLLARS

Actual equipment rates quoted from North Central Rental & Leasing, LLC, 12 month rental period
January 19, 2016

		RATE				MTCE	FUEL	FUEL @	Tires and GET	TOTAL	Mob/Demob	Mob/Demob	Operating Hrs	Replacement Cost
	Units	MONTHLY	HOURLY	Excess Hours	50 Hour Weeks	EXPENDABLES	USAGE	$1.81		COST	per machine	Totals	per Month	
637G Scraper	4	31,700	180.11	91.00	162.29	11.75	23.5	42.62	5.25	$221.91	$35,900	$143,600	880	$ 1,940,000
D8T Dozer	1	15,800	89.77	46.00	81.02	6.35	8.5	15.42	1.05	$103.84	$23,850	$23,850	220	$ 650,000
D7E Dozer	1	13,350	75.85	39.00	68.48	5.85	7.0	12.70	1.05	$88.08	$21,100	$21,100	220	$ 550,000
825H Compactor	1	14,050	79.83	41.00	72.06	5.85	13.0	23.58	0.50	$101.99	$22,050	$22,050	220	$ 250,000
980 H/K Loader	1	14,150	80.40	41.00	72.52	6.30	9.0	16.32	5.25	$100.39	$21,700	$21,700	220	$ 300,000
988 H Loader	1	21,800	123.86	62.00	111.49	8.15	11.0	19.95	5.25	$144.84	$26,200	$26,200	220	$ 345,000
770 Haul Truck	4	14,350	81.53	41.00	73.43	9.25	8.5	15.42	4.10	$102.19	$22,500	$90,000	880	$ 2,000,000
365CL Excavator	1	20,650	117.33	59.00	105.66	9.40	13.0	23.58	1.05	$139.69	$40,500	$40,500	220	$ 425,000
651 Water Wagon	1	14,700	83.52	42.00	75.22	7.75	17.0	30.83	2.10	$115.90	$24,800	$24,800	220	$ 250,000
5000 gal Water Truck	1	8,350	47.44	25.00	42.95	4.55	10.0	18.14	2.10	$67.74	$10,950	$10,950	220	$ 175,000
14H/Ripper Motor Grader	1	11,050	62.78	32.00	56.63	5.30	5.5	9.98	5.25	$77.15	$17,200	$17,200	220	$ 265,000
												$441,950	3,740	

Equipment Rental Rate Quoted by WorldWide Rental Services (02/26/2013) for PC 300 Excavator with Shear
Rental Rates increased by 2013, 2014 and 2015 CPI-u Rate of 1.50%, 0.80% and 0.50% respectively

											Mob/Demob	
PC 300 w/ Shear	25,705.89	146.06	59.00	128.64	18.82	12.5	22.67		$170.14		$4,884	$ 450,000

Small tools allocation - Demolition - $1.35/mechanic labor hour for oxygen/acetylene, expendables	$1.35

	Monthly Maintenance Flat Rate	Butler Maintained Equipment Planned Operating Hours/month	Planned Operating hours/month (other equipment	Total Operating hours per month	Fuel Usage per day, gal,	Fuel Cost per month, 21 days	Maintenance Cost per Operating Hour	Mob/Demob
Butler Equipment Maintenance Cost	$83,600	3,740	570	4,310	10	$ 380.89	$22.45	$ 100,200

	RATE		MTCE	FUEL	FUEL @		TOTAL		
Crane Rental Rates	MONTHLY	HOURLY	EXPENDABLES	USAGE	$1.81		COST	Mob/Demob	
60 ton Hydraulic Crane	11,002	62.51	2.18	15.0	27.21		$91.90	$ 2,500	$ 250,000
30 ton Hydraulic Crane	6,684	37.97	2.18	10.0	18.14		$58.29	$ 900	$ 175,000

Rental Rates updated from Honnen Equipment, 02/26/2013
Rental Rates increased by 2013, 2014 and 2015 CPI-u Rate of 1.50%, 0.80% and 0.5% respectively

2013 Crane Monthly Rental Rates	
60 ton	$10,700
30 ton	$6,500

Power Motive - Screen deck and conveyors, Replacement Cost $ 200,000

$ 8,225,000

$ 82,250

Fuel

Producer Price Index-Commodities
Original Data Value

Series Id: WPU057303
Not Seasonally Adjusted
Group: Fuels and related products and power
Item: No. 2 diesel fuel
Base Date: 198200
Years: 2005 to 2015

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2005	141.1	149.5	173.3	175.4	170.8	187.2	189.8	200.6	212.6	264.1	206.2	198.5
2006	197.1	196.2	206.5	230.4	239.6	246.9	237.5	250.2	201.3	197.5	197.2	203.0
2007	180.9	193.5	220.2	238.0	226.5	227.6	243.5	231.2	246.2	249.6	296.7	271.9
2008	278.2	287.5	353.7	365.1	398.2	421.0	431.9	346.7	342.3	281.8	224.1	168.0
2009	161.6	147.2	139.2	167.4	166.4	191.1	172.8	204.1	193.2	202.8	215.7	205.1
2010	229.4	206.9	225.5	240.0	235.8	221.8	218.5	231.1	227.7	243.7	255.3	259.2
2011	270.0	289.3	321.8	339.8	328.4	333.7	327.8	307.3	317.8	310.6	337.1	311.0
2012	322.0	329.2	344.3	339.4	325.8	295.4	298.7	324.1	342.4	351.0	323.8	317.4
2013	318.9	342.4	321.0	318.3	307.7	304.8	311.6	319.3	328.0	318.4	307.0	314.7
2014	308.5	322.0	318.1	318.7	316.5	308.8	307.8	306.9	302.3	283.4	272.3	229.9
2015	182.6	191.5	193.1	183.8	202.6	198.7	194.0	189.2	168.6	174.4	168.3	129.7

12 month Average 181.4

Equipment Productivity

Dozer (D-8) Productivity Determination - 100' Push Distance			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Dozing Distance, FT:		100	
Ideal Dozer Productivity	LCY/HR	825	*CAT Handbook*
Adjusted Dozer Productivity	LCY/HR	**685**	

Wheel Loader (988) Productivity Determination loading 3 @ 30 C.Y. Trucks			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Bucket Capacity (C.Y)		10.0	
Load Time, 3 loads / truck (min)		1.65	
Ideal Loader Productivity	LCY/HR	1091	
Adjusted Loader Productivity	LCY/HR	**905**	

Haul Truck (770) Productivity Determination - 3,310' haul (Haul Route M)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		3,310	Haul Route M
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.65	
Haul Time (min)		3.76	
Dump Time (min)		1.00	
Cycle Time (min)		5.25	
Ideal Truck Productivity	LCY/HR	343	
Adjusted Truck Productivity	LCY/HR	**285**	

Hydraulic Excavator (365) Productivity Determination loading 3 @ 30 C.Y. Trucks			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Bucket Capacity (C.Y)		6.0	Mass Excavation Boom, pg. 18
Time per Pass (min)		0.35	Cat Handbook, V 42 pg. 4-204
Load Time, 5 passes / truck (min)		1.75	
Truck Capacity (CY)		30.0	
Ideal Loading Productivity	LCY/HR	1029	
Adjusted Loading Productivity	LCY/HR	**854**	

Hydraulic Excavator (365) Productivity Determination Digging a Trench			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Bucket Capacity (C.Y)		6.0	Mass Excavation Boom, pg. 18
Time per Pass (min)		0.35	Cat Handbook, V 42 pg. 4-204
CY per Linear Foot of Trench		1	7 ft wide 4 ft deep
Ideal Excavating Productivity	CY/HR	1029	
Efficency in uncovering pipe		50%	
Linear feet per hour		**412**	

Haul Truck (770) Productivity Determination - 3120' haul (Haul Route E)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		3,120	Haul Route E
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.75	
Haul Time (min)		3.55	
Dump Time (min)		1.00	
Cycle Time (min)		6.30	
Ideal Truck Productivity	LCY/HR	286	
Adjusted Truck Productivity	LCY/HR	**237**	

Haul Truck (770) Productivity Determination - 2680' haul (Haul Route C)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		2,680	Haul Route C
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.75	
Haul Time (min)		3.05	
Dump Time (min)		1.00	
Cycle Time (min)		5.80	
Ideal Truck Productivity	LCY/HR	311	
Adjusted Truck Productivity	LCY/HR	**258**	

Haul Truck (770) Productivity Determination - 2,470' haul (Haul Route D)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		2,470	Haul Route D
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.00	
Haul Time (min)		2.81	
Dump Time (min)		1.00	
Cycle Time (min)		4.81	
Ideal Truck Productivity	LCY/HR	374	
Adjusted Truck Productivity	LCY/HR	**311**	

Haul Truck (770) Productivity Determination - 2,810' haul (Haul Route L)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		2,810	Haul Route L
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.65	
Haul Time (min)		3.19	
Dump Time (min)		1.00	
Cycle Time (min)		5.84	
Ideal Truck Productivity	LCY/HR	308	
Adjusted Truck Productivity	LCY/HR	**256**	

Haul Truck (770) Productivity Determination - 3960' haul (Haul Route K)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		3,960	Haul Route K
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.75	
Haul Time (min)		4.50	
Dump Time (min)		1.00	
Cycle Time (min)		7.25	
Ideal Truck Productivity	LCY/HR	248	
Adjusted Truck Productivity	LCY/HR	**206**	

Haul Truck (770) Productivity Determination - 2010' haul (Haul Route A)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		2,010	Haul Route A
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.75	
Haul Time (min)		2.28	
Dump Time (min)		1.00	
Cycle Time (min)		5.03	
Ideal Truck Productivity	LCY/HR	358	
Adjusted Truck Productivity	LCY/HR	**297**	

Haul Truck (770) Productivity Determination - 2,570' haul (Haul Route B)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		2,570	Haul Route B
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.75	
Haul Time (min)		2.92	
Dump Time (min)		1.00	
Cycle Time (min)		5.67	
Ideal Truck Productivity	LCY/HR	317	
Adjusted Truck Productivity	LCY/HR	**263**	

Haul Truck (770) Productivity Determination - 1,150' haul (Haul Route N)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		1,150	Haul Route B
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.75	
Haul Time (min)		1.31	
Dump Time (min)		1.00	
Cycle Time (min)		4.06	
Ideal Truck Productivity	LCY/HR	444	
Adjusted Truck Productivity	LCY/HR	**368**	

Haul Truck (770) Productivity Determination - 2,030' haul (Haul Route O)			
Work Efficiency, %:		0.83	Assumes 50 minutes/hour
Average Distance, FT:		2,030	Haul Route B
Average Travel Speed		20	Miles per Hour
Truck Capacity (C.Y)		30.00	
Load Time (min)		1.65	
Haul Time (min)		2.31	
Dump Time (min)		1.00	
Cycle Time (min)		4.96	
Ideal Truck Productivity	LCY/HR	363	
Adjusted Truck Productivity	LCY/HR	**301**	

Rock Production

ROCK PRODUCTION COST

Assumptions:
Rock is obtained from gravel source north of Blanding, Utah. BLM Public Pit
Rip Rap Rock is processed by screening only, no crushing is required, 1.25 CY of feed for 1 CY of product
Filter material is produced from Rip Rap reject
Rock is produced and stockpiled at the site
Site is 7 road miles from the mill; 6 miles of which is paved public highway
Rock will be hauled in 22 CY bellydump trucks, contract haulers ($100.00/hr)
Rock will be dumped in windrows on Tailings Cells by trucks, spread by grader, and spread by D7 Dozer
Trucks can average 30 MPH (1.75 rounds/hr)

	Product Required (CY)	Reject Factor	Material Feed to Plant (CY)	Plant Throughput (CY/hr)	Plant Operating Hours
Rip Rap material fed to plant	189,000	25.0%	236,250	122	1,900
Filter material fed to plant	25,500	10.0%	28,050	122	200
	214,500				2,100

PRODUCTION OF RIPRAP

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Laborer	hrs	$17.16	2,100	$36,030
Cat D8N Dozer With Ripper	hrs	$103.84	375	$38,938
Cat D8N Dozer Operator	hrs	$26.00	375	$9,750
Cat 980 Loader	hrs	$100.39	2,100	$210,823
Cat 980 Loader Operator	hrs	$26.00	2,100	$54,600
Screening Plant w/conveyors*	hrs	$72.46	2,100	$152,164
BLM Usage Fee	CY	$0.60	214,500	$128,700
Contract Highway Trucks - Bellydumps**	hrs	$100.50	5,571	$559,929
Equipment Maintenance (Butler)	hrs	$22.45	2,475	$55,576

Total Production of RipRap **$1,246,509**

RIPRAP COST PER CUBIC YARD DELIVERED **$6.60**

* Cost Quoted from Power Motive Corporation, Denver, Colorado updated February 14, 2012
$12,800 (less 10%) for screen and conveyors, 176 hours per month for one month, plus screen set up at $2,500.
Mob and Demob - $ 5,500.00
Rental costs for screening equipment increased by CPI-U 2012, 2013, 2014 and 2015 of 1.74%, 1.50%, 0.80% and 0.50% respectively.

** Cost quoted from Dennis Cosby, Cosby Trucking, Inc., Blanding, Utah, Updated 3/3/14. Escalated by 2015 CPI of 0.5%.
(includes ownership expense, fuel, maintenance and operator)

Long Term Care

LONG TERM CARE CALCULATION
March 2016

Base Amount (Starting in Dec. 1978)	$250,000
CPI-U December, 1978	67.7
CPI-U November 2015	237.336

Adjusted Long Term Care = $250,000 x (CPI-U most recent / CPI-U Dec., 1978)

Adjusted Long Term Care	$876,425

General Liability & Auto Insurance

General Liability and Auto Insurance

Project Life 7 years

GL Insurance per full year $ 15,000

Auto $ 1,250

	Vehicles	Vehicle Ins.	GL Insurance
Year 1	5	$ 6,250	$ 15,000
Year 2	10	$ 12,500	$ 15,000
Year 3	10	$ 12,500	$ 15,000
Year 4	10	$ 12,500	$ 15,000
Year 5	10	$ 12,500	$ 15,000
Year 6	10	$ 12,500	$ 15,000
Year 7	3	$ 3,750	$ 15,000
		$ 72,500	$ 105,000

Project Cost $ 177,500

Mobilization and Management Support

Mobilization and Management Support

Office Facilities

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Install New Powerline	LS	$15,225	1	**$15,225**
Utilities for Offices	months	$1,028	36	**$37,016**
Temporary Office Trailer	months	$1,542	33	**$50,898**
Temporary Office Trailer, mob, demob & setup	LS	$3,085	1	**$3,085**

* All Office Facilities costs were estimated in 2012 and escalated by CPI 1.5%, 0.8% and 0.5% in 2013,2014 and 2015 respectively.

Total Office Facilities **$106,224**

Equipment Mobilization

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Butler Machinery Mobilization	LS	$542,150	1	**$542,150**
Other Equipment Mobilization	LS	$4,884	1	**$4,884**
Cranes	LS	$3,400	2	**$6,800**

Total Equipment Mobilization **$553,834**

MANAGEMENT/SUPPORT

Resource Description	Units	Cost/Unit	Task Units	Task Cost
Manager/Engineer	hrs	$55.87	6,240	**$348,614**
Legal	hrs	$450.00	100	**$45,000**
Radiation Safety Officer	hrs	$43.65	6,240	**$272,384**
Secretary	hrs	$17.65	6,240	**$110,162**
Clerk	hrs	$14.53	4,866	**$70,682**
Environmental Technician (3/4 time, 4.5 years)	hrs	$24.58	7,300	**$179,447**
Maintenance Foreman	hrs	$32.03	6,240	**$199,872**
Chemist	hrs	$25.70	2,080	**$53,454**
Security	hrs	$9.46	18,720	**$177,096**
Safety Engineer	hrs	$24.58	4,160	**$102,260**
Misc. Materials & Supplies	hrs	$36.45	6,240	**$227,448**
Health Physics Costs	hrs	$64.81	2,080	**$134,800**
Environmental Monitoring Costs, Laboratory	years	$71,620.00	7.0	**$501,340**

Total Management/Support **$2,422,560**

Total Mobilization and Manaagement Support **$3,082,617**