Appendix A

Cost Estimates

Appendix B

MDNR 10 CSR 80, Chapter 11

Table A

AmerenUE - Power Plant Ash Disposal Preliminary Landfill Development Costs Quantity Estimates June 8, 2004

	Annual Pro <u>Tons</u>	oduction <u>Cubic Yards*</u>	20 Year Production Cubic Yards*
Labadie Power Plant:			
Flyash	350,000		
Scrubber Sludge	70,000		
Bottom Ash	150,000		
Total Ash Disposed	570,000	704,000	14,100,000
		ermediate Cover**	0
	TOTAL VOLU	ME LANDFILLED	14,100,000
Rush Island Power Plant:			
Flyash	180,000		
Scrubber Sludge	70,000		
Bottom Ash	80,000		
Total Ash Disposed	330,000	408,000	8,200,000
		ermediate Cover**	0
	TOTAL VOLU	ME LANDFILLED	8,200,000
Meramec Power Plant:			
Flyash	135,000		
Scrubber Sludge	5,000		
Bottom Ash	35,000		
Total Ash Disposed	175.000	217,000	4,400,000
	Inte	ermediate Cover**	0
	TOTAL VOLU	ME LANDFILLED	4,400,000
Sioux Power Plant:			
Flyash	70,000		
Scrubber Sludge	70,000		
Bottom Ash	<u>110,000</u> 250,000	200.000	6 000 000
Total Ash Disposed		309,000 armediate Cover**	6,200,000
			6,200.000
			0,200,000
TOTAL - (All	4 Plants):		
Flyash	735,000		
Scrubber Sludge	215,000		
Bottom Ash	375,000		
Total Ash Disposed	1,325,000	1,636,000	32,800,000
		termediate Cover	0
	TOTAL VOLU	ME LANDFILLED	32,800,000

* Assumes average in-situ ash density of 60 lbs/cuft

** We assumed that intermediate cover would not be required due to cementitious nature of ash

.

Table B

AmerenUE - Power Plant Ash Disposal Preliminary Landfill Development Costs Cost Estimate June 8, 2004

	Quantity Lan	dfilled (tons)	Present Value Costs*							
Power Plant	Annual	Total (20 Years)	Total Site Development	Annual Operating	Site Closure	Post Closure	Total	Potential Cost Additions	Cost per Ton** of Material Landfilled	Cost per Ton** of Material Landfilled w/contingencies
Labadie:		(20 100.0)	Dereiopinein	operating	One Onobare	1 031 0103012	10121	Additions	Lanumed	w/contingencies
Pit Quarry Landfill Above Grade Landfill			\$6,484,000 \$11,142,000	\$17,671,414 \$17,671,414	\$240,079 \$533,676	\$3,311,298 \$3,311,298	\$27,706,790 \$32,658,387	\$7,652,552 \$1,108,809	\$2.43 \$2.86	\$3.10 \$2.96
Rush Island: Pit Quarry Landfill Above Grade Landfill		6,600,000 6,600,000	\$4,508,000 \$7,526,000	\$10,318,710 \$10,318,710	\$139,826 \$364,452	\$1,925,719 \$1,925,719	\$16,892,255 \$20,134,881	\$5,092,317 \$711,944	\$2.56 \$3.05	\$3.33 \$3.16
Meramec: Pit Quarry Landfill Above Grade Landfill		3,500,000 3,500,000	\$5,615,000 \$12,651,000	\$5,583,070 \$5,583,070	\$75,001 \$246,863	\$1,033,313 \$1,033,313	\$12,306,384 \$19,514,246	\$3,262,611 \$394,226	\$3.52 \$5.58	\$4.45 \$5.69
Sioux: Pit Quarry Landfill Above Grade Landfill	250,000 250,000	5,000,000 5,000,000	\$3,629,000 \$5,752,000	\$7,826,268 \$7,826,268	\$105,906 \$304,150	\$1,456,032 \$1,456,032	\$13,017,206 \$15,338,449	\$4,155,311 \$567,596	\$2.60 \$3.07	\$3.43 \$3.18
4 Plants Combined: Pit Quarry Landfill Above Grade Landfill	1,325,000 1,325,000		\$12,383,000 \$21,987,000	\$40,975,748 \$40,975,748	\$559,304 \$1,042,099	\$7,702,877 \$7,702,877	\$61,620,928 \$71,707,724	\$14,967,268 \$2,321,262	\$2.33 \$2.71	\$2.89 \$2.79

* Future Costs are discounted assuming an average annual interest rate of 5%

** Does not include transportation costs

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Labadie Power Plant - Landfill in Abandoned Quarry

14,100,000

Total Ash Storage Required (CY)

Landfill Dimensions:

Height (feet): 150 Length & Width (feet): 1,593 Approximate Footprint (acres): 58 Approximate Property Required (acres): 74

	2004 UNIT			EXTENDED	
ITEM	COST	UNIT TYPE	QUANTITY	COST	SUBTOTAL
· · · · · · · · · · · · · · · · · · ·					
	Entire S	te Development	Cost		
Site Purchase Cost	\$10,000.00	Acres	74	\$739,000	
Site Clearing	\$500.00	Acres	58	\$30,000	
General Site Preparation (Grading)	\$2,000.00	Acre	58	\$117,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	6,480	\$195,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	6,560	\$164,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-					
site soils)	\$3.00	Cubic Yard	188,000	\$564,000	
Side Liner: 10 Ft. wide compacted clay (on-					
site soils)	\$3.00	Cubic Yard	354,074	\$1,063,000	
Leachate Drainage Blanket or 1-foot Rock			•		
Drainage Layer	\$1.00	Square Foot	2,538,000	\$2,538,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
				I Development Costs	\$6,484,000
					<i>40,10,1000</i>
	Annua	al Operating Cos	ts		
Groundwater Sampling/Analysis	\$2.000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	705,000	\$1,410,000	
		P	•	nnual Operating Cost	\$1,418,000
					<i>4HH</i> 0 <i>H</i> 0 <i>H0<i>H</i>0<i>H0<i>H</i>0<i>H0<i>H</i>0<i>H0<i>H0<i>H0H0<i>H0H0<i>H0H0<i>H0<i>H0H0<i>H0H0<i>H0<i>H0H0<i>H0H0<i>H0H0<i>H0H0H0<i>H0H0<i>H0H0H0H0H<i>0H0H<i>0H<i>0H<i>0H<i>0H<i>0H<i>0H<i>0H<i>0H<i>0H<i>0H<i>0H<i>0H<i>0H<i>0H0H<i>0H0H<i>0H<i>0H0<i>H0</i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i></i>
	Site	Closure Costs			
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	94,000	\$282,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	94,000	\$282,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	58	\$73,000	
	1.1-0000	,		Total Closure Costs	\$637,000
					\$007,000
Post-	Closure Cost	8			
		per CY LF			
Post Closure Operations for 20 years	\$0.05	Matl/year	14,100,000	\$705,000	
· ··· ··· ··· · ·,··· · ·,··· ·· · · ·	•••••		, , ,	al Post-Closure Cost	\$705,000
			,		\$700,000
	Poten	tial Cost Additio	ns		
Import Off-Site Soils for:			<u></u>		
Bottom Liner	\$10.00	Cubic Yard	188,000	\$1,880.000	
Side Liner	\$10.00	Cubic Yard	354,074	\$3,541,000	
Final Cover	\$10.00	Cubic Yard	94,000	\$940,000	
Final Cover Topsoil	\$10.00	Cubic Tard	94,000	\$940,000	
	910.00		34,000	<i>ψ</i> ση0,000	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	2,538,000	\$1,523,000	
Bottom Liner, of Wit HUFE	90.00	oquale root		Potential Extra Costs	000 kcg g9
			10(a)	F VIGHIIGI EXILG COSIS	\$8,824,000

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Labadie Power Plant - Landfill Above Grade

14,100,000

Total Ash Storage Required (CY)

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Landfill Dimensions: Helght Above Natural Grade (feet): 100 Depth Below Natural Grade: (feet): 10 Length & Width at Top (feet): 1,412 Approximate Footprint (acres): 112 Approximate Property Required (acres): 184 Borrow Created by Excavation (cubic yards): 1,760,000

Includes 50 acres for stockpile

	2004 UNIT			EXTENDED	
ITEM	COST	UNIT TYPE	QUANTITY	COST	SUBTOTAL
	Entiro Site	Development C	ant		
Site Purchase Cost	\$10,000.00	Acres	184	\$1,844,000	
Site Clearing	\$500.00	Acres	112		
Excavate/Stockpile Excess Soil (Grading)	\$2.00	Cubic Yard	979.111	\$57,000 \$1,959,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	8,940	\$269,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	9,020	\$226,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner. 2 Ft. Compacted Clay (on-site	\$10,000.00	comp Som	•	\$10,000	
solis)	\$3.00	Cubic Yard	363,185	\$1,090,000	
Leachate Drainage Blanket or 1-foot Rock	Q3.00	Ouble Laid	505,105	\$1,030,000	
Drainage Layer	\$1.00	Square Foot	4,623,000	\$4,623,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	-,020,000	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
	****	3	Total	Development Costs	\$11,142,000
				·	
		Operating Costs	3		
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Matl	705,000	\$1,410,000	
			An	nual Operating Cost	\$1,418,00
	Sito	<u>Closure Costs</u>			
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	000 050	CC07 000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	208,852 208,852	\$627,000 \$627,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	208,852	\$162,000	
Seedimuici/Fermize	\$1,200.00	AGe		Total Closure Costs	\$4.446.000
				Total Closule Costs	\$1,416,000
	Post-	Closure Costs			
		per CY LF			
Post Closure Operations for 20 years	\$0.05	Matl/year	14,100,000	\$705.000	
······································		······		I Post-Closure Cost	\$705.00

	<u>Potentia</u>	al Cost Additions	<u>s</u>		
Off-Site Soils required (Cubic Yards):					
Total Soil Required	780,889				
Total Soil Excavated for UWL Development	<u>1,760,000</u>				
	-979,111	Excess Cut			
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	4,903,000	\$2.942.000	
DOLLOW LINER OF MILLIOPE	40.00	Syuard FOOL		otential Extra Costs	\$2.042.000
			rotal P	otoritiai Extra Costs	\$2,942,000

Rush Island Power Plant - Landfill in Abandoned Quarry

8,200,000 Total Ash Storage Required (CY)

Landfill Dimensions:

Height (feet): 150 Length & Width (feet): 1,215 Approximate Footprint (acres): 34 Approximate Property Required (acres): 46

	2004 UNIT			EXTENDED	
ITEM	COST	UNIT TYPE	QUANTITY	COST	SUBTOTA
	Enfire Si	ite Development	Cost		
Site Purchase Cost	\$10,000.00	Acres	46	\$460,000	
Site Clearing	\$500.00	Acres	34	\$17,000	
General Site Preparation (Grading)	\$2,000.00	Acre	34	\$68,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	4,960	\$149,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	5,040	\$126,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1		
	\$10,000.00	Lomb 200	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-	60.00	Out to Mand	400.000	8000 000	
site soils)	\$3.00	Cubic Yard	109,333	\$328,000	
Side Liner: 10 Ft. wide compacted clay (on-	6 0.00	0.11.27.1	070 000	0010.000	
site soils)	\$3.00	Cubic Yard	270,000	\$810,000	
Leachate Drainage Blanket or 1-foot Rock					
Drainage Layer	\$1.00	Square Foot	1,476,000	\$1,476,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
			Tot	al Development Costs	\$4,508,000
	Annu	al Operating Cos	ts		
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Mall	410.000	\$820,000	
	\$2.00			unnual Operating Cost	\$828,000
	0.14				
		e Closure Costs	<i>c 1 0</i> 07	0101.000	
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	54,667	\$164,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	54,667	\$164,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	34	\$43,000	
				Total Closure Costs	\$371,000
Post-	Closure Cost	5			
De al Olanza Oranalizza (n. 00	60.05	per CY LF	0.000.000	<u> </u>	
Post Closure Operations for 20 years	\$0.05	Mati/year	8,200,000	\$410,000	
			Ann	ual Post-Closure Cost	\$410,000
	<u>Poten</u>	tial Cost Additio	ns		
Import Off-Site Solls for:					
Bottom Liner	\$10.00	Cubic Yard	109,333	\$1,094,000	
Side Liner	\$10.00	Cubic Yard	270,000	\$2,700,000	
Final Cover	\$10.00	Cubic Yard	54,667	\$547,000	
Final Cover Topsoil	\$10.00	Cubic Yard	54,667	\$547,000	
	00.00	o	(172 000	A AAA AAA	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	1,476,000	\$886,000	

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Rush Island Power Plant - Landfill Above Grade

Total Ash Storage Required (CY)

8,200,000

Landfill Dimensions:

- Height Above Natural Grade (feet): 100 Depth Below Natural Grade: (feet): 10 Length & Width at Top (feet): 965
- Approximate Footprint (acres): 72 Approximate Property Required (acres): 119 Borrow Created by Excavation (cubic yards): 1,120,000

Includes 30 acres for stockpile

	2004 UNIT			EXTENDED	
ITEM	COST	UNIT TYPE	QUANTITY	COST	SUBTOTAL
		<u>e Development C</u>	ost		
Site Purchase Cost	\$10,000.00	Acres	119	\$1,191,000	
Site Clearing	\$500.00	Acres	72	\$36,000	
Excavate/Stockpile Excess Soil (Grading)	\$2.00	Cubic Yard	601,000	\$1,202,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	7,160	\$215,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	7,260	\$182,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Bullding & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site					
soils)	\$3.00	Cubic Yard	234,000	\$702,000	
Leachate Drainage Blanket or 1-foot Rock				• • •	
Drainage Layer	\$1.00	Square Foot	2,924,000	\$2,924,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	-, 1,	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Weil Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
r onnining, Engriconing a Eogar	0100,000.00	Duugot	•	al Development Costs	\$7,526,000
			100	a Development Costs	\$1,020,000
	Annual	Operating Costs			
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Mati	410,000	\$820,000	
Earloss operating Expense	Q2.00	per or cr man	•	Annual Operating Cost	\$828,000
			· · ·	unioal Operating Cost	\$620,000
	Site	Closure Costs			
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	142,593	\$428,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	142,593	\$428,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	88	\$111,000	
	V 1,200,000	11010	00	Total Closure Costs	\$967,000
				Total Closure Costs	4901,000
	Post-	Closure Costs			
		per CY LF			
Post Closure Operations for 20 years	\$0.05	Matl/year	8,200,000	\$410,000	
	V0.00	mail joan		ual Post-Closure Cost	\$410,000
			73081	an i 03(-01030/0 003(\$410,000
	Potentia	al Cost Additions	6		
Off-Site Soils required (Cubic Yards);			-		
Total Soil Required	519,185				
Total Soil Excavated for UWL Development	1,120,000				
Total con Excercice for othe Development	-600,815	Excess Cut			
	-0001010	MAG000 UUL			
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	3.148.000	\$1.889.000	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	3,148,000 Total	\$1,889,000 Potential Extra Costs	\$1,889,000

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Sioux Power Plant - Landfill in Abandoned Quarry

Total Ash Storage Required (CY) 6,200,000

Landfill Dimensions:

Height (feet): 150 Length & Width (feet): 1,056 Approximate Footprint (acres): 26 Approximate Property Required (acres): 36

	2004 UNIT			EXTENDED	
ITEM	COST	UNIT TYPE	QUANTITY	COST	SUBTOTAL
	<u>Entire Si</u>	te Development	Cost		
Site Purchase Cost	\$5,000.00	Acres	36	\$182,000	
Site Clearing	\$500.00	Acres	26	\$13,000	
General Site Preparation (Grading)	\$2,000.00	Acre	26	\$52,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	4,320	\$130,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	4,400	\$110,000	
Electric Gates	\$15,000.00	Lump Sum	2	\$30,000	
Maintenance Building & Utilities	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	1	\$75,000	
Boltom Liner: 2 Ft. Compacted Clay (on-		•			
site soils)	\$3.00	Cubic Yard	82,593	\$248,000	
Side Liner: 10 Ft. wide compacted clay (on-					
site soils)	\$3.00	Cubic Yard	234,815	\$705,000	
Leachate Drainage Blanket or 1-foot Rock				, .,	
Drainage Layer	\$1.00	Square Foot	1,115,000	\$1,115,000	
Leachate Package Treatment System	\$100,000.00	Lumo Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
	+,	301		Development Costs	\$3,629,000
			1010		\$0,0E0,000
	Annua	al Operating Cos	ts		
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Mall	310.000	\$620,000	
		p		nnual Operating Cost	\$628,000
				······································	••==;•••
	Site	e Closure Costs			
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	41,296	\$124,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	41,296	\$124,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	26	\$33,000	
				Total Closure Costs	\$281,000
Post-	Closure Cost				
		per CY LF			
Post Closure Operations for 20 years	\$0.05	Matl/year	6,200,000	\$310,000	
			Annu	ual Post-Closure Cost	\$310,000
	Poten	tial Cost Additio	ne		
Import Off-Site Soils for:					
Bottom Liner	\$10.00	Cubic Yard	82,593	\$826,000	
Side Liner	\$10.00	Cubic Yard	234,815		
Side Liner Final Cover		Cubic Yard		\$2,349,000	
	\$10.00		41,296	\$413,000	
Final Cover Topsoil	\$10.00	Cubic Yard	41,296	\$413,000	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	1,115,000	\$669,000	
BORON CIUCL OF WIT ADEE	ψ0.00	oquale i oot		Potential Extra Costs	\$4,670,000
			i otai	I Gonnai Exila GUSIS	94,070,000

6/14/04

Sioux Power Plant - Landfill Above Grade

 Total Ash Storage Required (CY)
 6,200,000

 Landfill Dimensions:

 Height Above Natural Grade (feet):
 10

 Depth Below Natural Grade: (feet):
 10

 Length & Width at Top (feet):
 775

 Approximate Footprint (acres):
 57

 Approximate Property Required (acres):
 103

 Borrow Created by Excavation (cubic yards):
 880,000

2004 UNIT EXTENDED ITEM COST **UNIT TYPE** QUANTITY SUBTOTAL COST Entire Site Development Cost Site Purchase Cost \$5,000.00 103 Acres \$514,000 \$500.00 \$29,000 Site Clearing Acres 57 Excavate/Stockpile Excess Soil (Grading) \$2.00 456,000 Cubic Yard \$912,000 20-foot wide Perimeter Roadway (gravel) \$30.00 Linear Feet 6,400 \$192,000 8-foot High Barbed Wire Fence \$25.00 Linear Foot 6,500 \$163,000 \$15,000.00 **Electric Gates** Lump Sum 2 \$30,000 Maintenance Building & Utilities \$75,000.00 \$75,000 Lump Sum 1 Landfill Scale \$75,000.00 Lump Sum \$75,000 1 Bottom Liner: 2 Ft. Compacted Clay (on-site soils) \$3.00 Cubic Yard 186,000 \$558,000 Leachate Drainage Blanket or 1-foot Rock Drainage Layer \$1.00 Square Foot 2,310,000 \$2,310,000 Leachate Package Treatment System \$100,000.00 Lump Sum \$100,000 1 Groundwater Monitoring Well Installation \$10,000.00 per Well 4 \$40,000 Initial Well Background Analysis \$1,000.00 per Well 4 \$4,000 Permitting, Engineering & Legal \$750,000.00 Budget \$750,000 1 **Total Development Costs** \$5,752,000 Annual Operating Costs Groundwater Sampling/Analysis \$2,000.00 per Well \$8,000 4 Landfill Operating Expense \$2.00 per CY LF Matl 310,000 \$620,000 \$628,000 Annual Operating Cost Site Closure Costs Final Cover: 1 Ft. Compacted Clay Cap \$3.00 Cubic Yard 118,778 \$357,000 Final Cover: 1 Ft. Topsoil \$3.00 Cubic Yard 118.778 \$357,000 \$1,250.00 Seed/Mulch/Fertilize Acre 74 \$93,000 Total Closure Costs \$807,000 Post-Closure Costs per CY LF Post Closure Operations for 20 years \$0.05 Matl/year 6,200,000 \$310,000 Annual Post-Closure Cost \$310.000 **Potential Cost Additions** Off-Site Soils required (Cubic Yards): 423,556 Total Soil Required Total Soil Excavated for UWL Development 880,000 Excess Cut -456,444 Bottom Liner: 60 Mil HDPE \$0.60 Square Foot 2,510,000 \$1,506,000 Total Potential Extra Costs \$1,506,000

6/14/04

Meramec Power Plant - Landfill in Abandoned Quarry

4,400,000

.

Total Ash Storage Required (CY)

Landfill Dimensions:

Height (feet): 150 Length & Width (feet): 890 Approximate Footprint (acres): 18 Approximate Property Required (acres): 27

	2004 UNIT			EXTENDED	
ITEM	COST	UNIT TYPE	QUANTITY	COST	SUBTOTA
	Entira Ci	ite Development C	t		
Site Purchase Cost	\$100,000.00	ite Development Co Acres	27	\$2,728,000	
			18		
Site Clearing	\$500.00 \$2,000.00	Acres Acre	18	\$10,000	
General Site Preparation (Grading) 20-foot wide Perimeter Roadway (gravel)		Linear Feet		\$37,000	
	\$30.00 \$25.00		3,660 3,740	\$110,000	
8-foot High Barbed Wire Fence	•	Linear Foot	3,740	\$94,000	
Electric Gates Maintenance Building & Utilities	\$15,000.00	Lump Sum	2	\$30,000	
*	\$75,000.00	Lump Sum	1	\$75,000	
Landfill Scale	\$75,000.00	Lump Sum	T	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-	60.00	0.14.14.1	50.007	A470.000	
site soils)	\$3.00	Cubic Yard	58,667	\$176,000	
ide Liner: 10 Ft. wide compacted clay (on-		A	(
site soils)	\$3.00	Cubic Yard	197,778	\$594,000	
Leachate Drainage Blanket or 1-foot Rock	<u> </u>	o		A-44 444	
Drainage Layer	\$1.00	Square Foot	792,000	\$792,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Well Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
			Tota	I Development Costs	\$5,615,000
	۸nnu	al Operating Costs			
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Mall	220,000	\$440,000	
Landin Operating Expense	¥2.00	per OT LI man	•	nnual Operating Cost	\$448,000
				initial operating boot	Q110,000
	Sit	<u>e Closure Costs</u>			
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	29,333	\$88,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	29,333	\$88,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	18	\$23,000	
				Total Closure Costs	\$199,000
Poet-	Closure Cost	6			
<u>1031-</u>		per CY LF			
Post Closure Operations for 20 years	\$0.05	Matt/year	4,400,000	\$220,000	
r our ofordite operations for he years	00.00	manayour		al Post-Closure Cost	\$220,000
			74110		9220,000
	Poten	tial Cost Additions			
Import Off-Site Soils for:					
Bottom Liner	\$10.00	Cubic Yard	58,667	\$587,000	
Side Liner	\$10.00	Cubic Yard	197,778	\$1,978,000	
Final Cover	\$10.00	Cubic Yard	29,333	\$294,000	
Final Cover Topsoil	\$10.00	Cubic Yard	29,333	\$294,000	
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	792,000	\$476,000	
DOMONT LINES, OF WITH DEE	40.00			Potential Extra Costs	\$3,629,000

6/14/04

Meramec Power Plant - Landfill Above Grade Total Ash Storage Required (CY) 4,400,000 Landfill Dimensions: Height Above Natural Grade (feet): 100 Depth Below Natural Grade: (feet): 10 Length & Width at Top (feet): 575 Approximate Footprint (acres): 44 Approximate Property Required (acres): 82 Includes 25 acres for stockpile Borrow Created by Excavation (cubic yards): 670,000 2004 UNIT EXTENDED QUANTITY ITEM COST UNIT TYPE COST SUBTOTAL Entire Site Development Cost Site Purchase Cost \$100,000.00 Acres 82 \$8,231,000 Site Clearing \$500.00 \$22,000 Acres 44 Excavate/Stockpile Excess Soil (Grading) \$2.00 Cubic Yard 335,000 \$670,000 20-foot wide Perimeter Roadway (gravel) \$30.00 Linear Feet 5,600 \$168,000 8-foot High Barbed Wire Fence \$25.00 Linear Foot 5,700 \$143,000 \$15,000.00 Electric Gates Lump Sum 2 \$30,000 Maintenance Building & Utilities \$75,000.00 Lump Sum \$75,000 1 Landfill Scale \$75,000.00 Lump Sum \$75,000 1 Bottom Liner: 2 Ft. Compacted Clay (on-site \$3.00 Cubic Yard 142,000 soils) \$426,000 Leachate Drainage Blanket or 1-foot Rock Drainage Layer \$1.00 Square Foot 1,917,000 \$1,917,000 Leachate Package Treatment System \$100,000.00 Lump Sum \$100,000 1 per Well Groundwater Monitoring Well Installation \$10,000.00 4 \$40,000 Initial Well Background Analysis \$1,000.00 per Well 4 \$4,000 Permitting, Engineering & Legal \$750,000.00 Budget \$750,000 1 Total Development Costs \$12,651,000 Annual Operating Costs per Well Groundwater Sampling/Analysis \$2,000,00 \$8,000 4 Landfill Operating Expense \$2.00 per CY LF Matl 220,000 \$440,000 \$448,000 Annual Operating Cost Site Closure Costs Final Cover: 1 Ft. Compacted Clay Cap \$3.00 Cubic Yard 96,556 \$290,000 Final Cover: 1 Ft. Topsoil \$3.00 Cubic Yard 96.556 \$290,000 Seed/Mulch/Fertilize \$1,250.00 Acre 60 \$75,000 **Total Closure Costs** \$655,000 **Post-Closure Costs** per CY LF Post Closure Operations for 20 years \$0.05 Matl/year 4,400,000 \$220,000 Annual Post-Closure Cost \$220,000 Potential Cost Additions Off-Site Soils required (Cubic Yards): 335,111 Total Soil Required Total Soil Excavated for UWL Development 670,000 Excess Cut 334,889 Bottom Liner: 60 Mil HDPE \$0.60 Square Foot 1,742,000 \$1,046,000 Total Potential Extra Costs \$1,046,000

Combined Power Plants (4) - Landfill in Abandoned Quarry

Total Ash Storage Required (CY) 32,800,000

Landfill Dimensions:

Height (feet): 150 Length & Width (feet): 2,430 Approximate Footprint (acres): 136 Approximate Property Required (acres): 159

2004 UNIT			EXTENDED	
COST	UNIT TYPE	QUANTITY	COST	SUBTOTAL
_				
• • • • • • • • • • • •				
•				
,		-,		
		,	· ·	
			•	
		-		
\$75,000.00	Lump Sum	1	\$75,000	
\$3.00	Cubic Yard	437,407	\$1,313,000	
\$3.00	Cubic Yard	540,000	\$1,620,000	
\$1.00	Square Foot	5,905,000	\$5,905,000	
\$100,000.00	Lump Sum	1	\$100,000	
\$10,000.00	per Well	4	\$40,000	
\$1,000.00	per Well	4	\$4,000	
\$750,000.00	Budget	1	\$750,000	
		Tota	I Development Costs	\$12,383,000
		4 -		
\$2.00	per CY LF Mati			
		A	nnual Operating Cost	\$3,288,000
Site	e Closure Costs			
		218 704	\$657.000	
•		•		
Q1,200.00	7,610	100		\$1,484,000
			10101 0100010 00013	\$1,404,000
Closure Coste	3			
	per CY LF			
\$0.05	Mall/year	32,800,000	\$1,640,000	
		Annu	al Post-Closure Cost	\$1,640,000
Potent	tial Cost Addition	<u>15</u>		
	Cubic Yard	437,407	\$4,375,000	
\$10.00	Cubic Yard	540,000	\$5,400,000	
\$10.00	Cubic Yard	218,704	\$2,188,000	
\$10.00	Cubic Yard	218,704	\$2,188,000	
\$0.60	Square Foot	5,905,000	\$3,543,000	
	COST Entire Si \$10,000.00 \$500.00 \$25.00 \$15,000.00 \$30.00 \$25.00 \$15,000.00 \$75,000.00 \$3.00 \$10,000.00 \$10,000.00 \$10,000.00 \$10,000.00 \$10,000.00 \$10,000.00 \$10,000.00 \$10,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000.00 \$2,000 \$3.00 \$1,250.00 Closure Costs \$0.05 Potent \$10.00 \$10.00 \$10.00 <	COST UNIT TYPE Entire Site Development \$10,000.00 Acres \$500.00 Acres \$2,000.00 Acres \$30.00 Linear Feet \$25.00 Linear Feet \$25.00 Lump Sum \$75,000.00 Lump Sum \$75,000.00 Lump Sum \$75,000.00 Lump Sum \$3.00 Cubic Yard \$3.00 Cubic Yard \$10,000.00 Lump Sum \$10,000.00 Lump Sum \$10,000.00 per Well \$1,000.00 per Well \$1,000.00 per Well \$1,000.00 per Well \$1,000.00 per Well \$2,000.00 per CY LF Mati S22,000.00 per CY LF Mati \$2,000 Queree Costs \$3.00 Cubic Yard \$3.00 Cubic Yard \$1,250.00 Acre Closure Costs per CY LF \$0.05 Matl/year Potential Cost	COST UNIT TYPE QUANTITY Entire Site Development Cost \$10,000.00 Acres 159 \$500.00 Acres 136 \$2,000.00 Acree 136 \$2,000.00 Acres 136 \$30.00 Linear Feet 9,820 \$25.00 Linear Foot 9,900 \$15,000.00 Lump Sum 2 \$75,000.00 Lump Sum 1 \$300 Cubic Yard 437,407 \$3.00 Cubic Yard 5,905,000 \$100,000.00 Square Foot 5,905,000 \$100,000.00 Lump Sum 1 \$10,000.00 per Well 4 \$1,000.00 per Well 4 \$1,000.00 per Well 4 \$100,000.00 per Well 4 \$1,640,000 Are \$2,000.00 per CY LF 1640,000 Are \$2,000.00 per CY LF Matil 1,640,000 Are \$3.00 Cubic Yard 218,704 218,704 \$3.00 Cubic Yard 218,704 32,800,000	COST UNIT TYPE QUANTITY COST Entire Site Development Cost 510,000.00 Acres 159 \$1,588,000 \$500.00 Acres 136 \$68,000 \$22,000 \$22,000 \$22,000 \$22,000 \$22,000 \$22,000 \$22,000 \$22,000 \$24,8,000 \$24,8,000 \$35,000 Linear Feet 9,820 \$295,000 \$24,8,000 \$35,000 Lump Sum 2 \$30,000 \$30,000 \$30,000 \$275,000,00 Lump Sum 1 \$75,000 \$75,000 \$3,000 Cubic Yard \$40,000 \$1,620,000 \$3,000 Cubic Yard \$40,000 \$1,620,000 \$1,620,000 \$1,620,000 \$1,620,000 \$1,620,000 \$1,620,000 \$1,620,000 \$1,000,000 per Well 4 \$40,000 \$3,100,000,00 per Well 4 \$40,000 \$3,280,000 \$1,640,000 \$3,280,000 \$3,280,000 Annual Operating Costs \$3,280,000 Annual Operating Costs \$3,280,000 Annual Operating Costs \$3,280,000 \$1,640,000 \$3,280,000 \$1,640,000 \$3,2,80,000

Reitz & Jens Confidential

6/14/04

HIGHLY CONFIDENTIAL

Combined Power Plants (4) - Landfill Above Grade

Total Ash Storage Required (CY) 32,800,000

Landfill Dimensions:

Landfill Dimensions: Height Above Natural Grade (feet): 100 Depth Below Natural Grade: (feet): 10 Length & Width at Top (feet): 2,395 Approximate Footprint (acres): 235 Approximate Property Required (acres): 365 Borrow Created by Excavation (cubic yards): 3,720,000

Includes 100 acres for stockpile

	2004 UNIT			EXTENDED	
ITEM	COST	UNIT TYPE	QUANTITY	COST	SUBTOTA
	Entire Site	<u>e Development C</u>	oet		
Sile Purchase Cost	\$10,000.00	Acres	365	\$3,654,000	
Site Clearing	\$500.00	Acres	235	\$118,000	
Excavate/Stockpile Excess Soil (Grading)	\$2.00	Cubic Yard	2,143,000	\$4,286,000	
20-foot wide Perimeter Roadway (gravel)	\$30.00	Linear Feet	12,900	\$387,000	
8-foot High Barbed Wire Fence	\$25.00	Linear Foot	12,980	\$325,000	
Electric Gates	\$15,000.00	Lump Sum	2		
Maintenance Building & Utilities	\$75,000.00	Lump Sum	2	\$30,000	
Landfill Scale	\$75,000.00	•	,	\$75,000	
Bottom Liner: 2 Ft. Compacted Clay (on-site	\$10,000.00	Lump Sum	1	\$75,000	
	¢0.00	0.44.14.14	201.000		
soils)	\$3.00	Cubic Yard	761,000	\$2,283,000	
Leachate Drainage Blanket or 1-foot Rock	64.00	Onunan Esti	0.000.000	*** ****	
Drainage Layer	\$1.00	Square Foot	9,860,000	\$9,860,000	
Leachate Package Treatment System	\$100,000.00	Lump Sum	1	\$100,000	
Groundwater Monitoring Weil Installation	\$10,000.00	per Well	4	\$40,000	
Initial Well Background Analysis	\$1,000.00	per Well	4	\$4,000	
Permitting, Engineering & Legal	\$750,000.00	Budget	1	\$750,000	
			Total	Development Costs	\$21,987,000
	Annual	Operating Costs			
Groundwater Sampling/Analysis	\$2,000.00	per Well	4	\$8,000	
Landfill Operating Expense	\$2.00	per CY LF Mati	1,640,000	\$3,280,000	
	<i>t</i> illee	por or er maa	• •	ual Operating Cost	\$3,288,000
	<u>Site Closure</u>				
Final Cover: 1 Ft. Compacted Clay Cap	\$3.00	Cubic Yard	407,926	\$1,224,000	
Final Cover: 1 Ft. Topsoil	\$3.00	Cubic Yard	407,926	\$1,224,000	
Seed/Mulch/Fertilize	\$1,250.00	Acre	253	\$317,000	
			-	Total Closure Costs	\$2,765,000
	Boot Closure	Casta			
	Post-Closure				
Post Clasura Operations for 00	£0.05	per CY LF			
Post Closure Operations for 20 years	\$0.05	Matl/year	32,800,000	\$1,640,000	
			Annuai	Post-Closure Cost	\$1,640,000
	Potentia	d Cost Additions	i		
Off-Site Soils required (Cubic Yards):			-		
Total Soil Required	1,576,852				
Total Soil Excavated for UWL Development	3,720,000				
	-2,143,148	Excess Cut			
B <i>u</i> b b b b c b c c c c c c c c c c					
Bottom Liner: 60 Mil HDPE	\$0.60	Square Foot	10,265,000	\$6,159,000	
				otential Extra Costs	\$6,159,000

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