

# what's a Buffer?

COMPUTED

DATE

CHECKED

DATE

## Sluicing

### OPTION

without Buffer

① - WET ASH IN POND - GYP ON PENINSULA + Dry IN PHASE 3  
(INCLUDE FRENCH DRAINS)

② - Dry ASH IN POND - GYP ON PENINSULA <sup>without</sup> Buffer + Dry IN PHASE 3  
(INCLUDE FRENCH DRAINS)

③ - WET ASH IN POND - GYPSUM IN POND

④ - Dry ASH IN POND - GYPSUM IN POND

Engineering will give me the SLICE COST.  
(PUT IN O & M PART OF ESTIMATE IN BODY OF ESTIMATE)  
(PLANT COST)

ELECTRICAL

PERMITTING COST

Spreadsheet Report  
KIF/0509301/FLY&BOTTM ASH

KINGSTON FOSSIL PLANT  
OPTION 1 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)

Project name KIF0509301/FLY&BOTTM ASH  
 Engineer DAN SMITH  
 Estimator C. L. Toney  
 Labor rate table KIF 40 2004  
 Equipment rate table TVA Equipment  
 Ash  
 KIF  
 0509301  
 KIF530  
 Dan Smith  
 Requesting Engr 1  
 Revision 0  
 Phase 2  
 Preliminary  
 Estimate Type +/- 20%  
 Estimate Accuracy 12/20/2004  
 Est. Issue Date  
 Funding Type Capital  
 Unit N

Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2. Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow;

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Notes

Report format Sorted by 'Location/Activity'  
Detail summary

Spreadsheet Report  
KJF0509301/FLY&BOTTMAH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Erosion Controls/S P	Erect Silt Fence	1,000.00 lf	0.069	68.57 mh	1,675	484		311		2.4E	2,480
		Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.016	68.86 mh	1,649	5,678		172		1.74	7,497
		D50 9' Riprap	5,215.00 tn	0.320	1,688.86 mh	41,737	52,150		26,338		23.05	120,225
		3' Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 tn	0.096	192.38 mh	5,069	17,886		3,006		12.96	25,981
		Sig 1-5 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 F/Ea)	4.00 ea	166.084	664.33 mh	17,165	19,860		2,740		9,946.25	39,785
		Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 boy	52.00 cy	0.400	20.80 mh	503			173		13.01	876
		Fill With 1092 Compacted/Crushed Stone	93.00 cy	0.400	37.20 mh	930	761		587		24.82	2,308
		30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	14,695	26,000		3,610		44.30	44,304
		Bedding For 30" CMP, 6" Thick	135.00 lf	0.500	67.50 mh	1,633	1,262		225		3.121	3,423
		30" Diameter CMP Stand Pipe (4Pipes @ 6 Stages w/3' Per Stage)	720.00 lf	0.750	540.00 mh	13,969	18,720		2,235		23.05	34,923
		D50 9' Riprap, Outlet For Metal Spillway	53.00 tn	0.320	16.96 mh	424	530		268		1.222	1,222
		Galvanized Compacted Metal Anti-Seep Collar	16.00 ea	16.000	256.00 mh	6,270	4,800		1,540		788.12	12,610
		Erosion Controls/S P			4,201.35 hrs	105,759	148,168		41,205			295,132
		01			4,201.35 hrs	105,759	148,168		41,205			295,132
	Seed/Mulch	Seed/Mulch Disturbed Areas	28.00 ac		0.00 hrs	0	0	62,920	0		2,420.00	62,920
		Seed/Mulch			0.00 hrs	0	0	62,920	0			62,920
	02				0.00 hrs	0	0	62,920	0			62,920
	South Access Road	1032 Crushed Stone Base, 6" Depth	3,520.00 tn	0.120	422.40 mh	11,545	31,416		4,066		13.36	47,027
		South Access Road			422.40 hrs	11,545	31,416		4,066			47,027
	03				422.40 hrs	11,545	31,416		4,066			47,027
	Perimeter Road	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,865.00 tn	0.120	823.20 mh	22,582	61,449		7,953		13.36	91,983
		Perimeter Road			826.20 hrs	22,582	61,449		7,953			91,983
	04				826.20 hrs	22,582	61,449		7,953			91,983
	Inlet Drms/Swan Pond	6" Dia Pipe Bollards	24.00 ea	1.500	36.00 mh	871	4,800		240		246.29	5,911
		PVC Monitoring Wells	6.00 ea					12,000			2,000.00	12,000
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.200	94.80 mh	2,174	771		395		7.05	3,340
		Crushed Stone, Bedding 6" Depth	16.00 tn	0.500	8.00 mh	194	150		27		23.12	370
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 780)	520.00 lf	0.200	104.00 mh	2,385	846		433		7.05	3,664
		Crushed Stone, Bedding 6" Depth	18.00 tn	0.500	9.00 mh	216	168		30		23.12	416
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 782)	491.00 lf	0.200	98.20 mh	2,252	789		409		7.05	3,460
		Crushed Stone, Bedding 6" Depth	17.00 tn	0.500	8.50 mh	206	159		28		23.12	393
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 810)	1,282.00 lf	0.200	256.40 mh	5,881	2,086		1,067		7.05	9,034
		Crushed Stone, Bedding 6" Depth	43.00 tn	0.500	21.50 mh	520	402		72		23.12	894
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.200	243.60 mh	5,697	1,982		1,014		7.05	8,563
		Crushed Stone, Bedding 6" Depth	41.00 tn	0.500	20.50 mh	496	383		68		23.12	831.5
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 825)	1,160.00 lf	0.200	232.00 mh	5,321	1,888		966		7.05	9,255
		Crushed Stone, Bedding 6" Depth	40.00 tn	0.500	20.00 mh	484	374		67		23.12	815
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 832)	1,160.00 lf	0.200	232.00 mh	5,321	1,888		966		7.05	9,255
		Crushed Stone, Bedding 6" Depth	39.00 tn	0.500	19.50 mh	472	365		65		23.12	901
		Cut For 6" Dia Non-Perforated HDPE (17,668 boy)	21,190.00 cy	0.200	4,238.00 mh	102,517	35,318		35,318		6.51	137,836
		Backfill For 6" Dia Non-Perforated HDPE (12,361 boy)	14,833.00 cy	0.250	3,708.25 mh	89,703	43,809		43,809		8.89	133,312
		Cut For 6" Dia Perforated HDPE (18,185 boy)	21,824.00 cy	0.200	4,364.80 mh	105,685	36,375		36,375		6.51	141,960
		Backfill For 6" Dia Perforated HDPE (12,730 boy)	15,276.00 cy	0.250	3,819.00 mh	92,382	44,911		44,911		8.89	137,293
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 763)	2,000.00 lf	0.200	400.00 mh	9,174	3,255		1,665		7.05	14,084
		1081 Crushed Stone	378.00 tn	0.160	56.70 mh	1,372	374		473		13.80	5,218
		Geotextile Woven Monofilament	1,595.00 sy	0.021	32.01 mh	767	3,098		107		2.55	3,972
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,790.00 lf	0.200	758.00 mh	17,385	6,169		3,155		7.05	26,709
		1081 Crushed Stone	716.00 tn	0.021	107.40 mh	2,598	6,900		895		13.80	9,863
		Geotextile Woven Monofilament	2,948.00 sy	0.021	60.64 mh	1,454	5,669		202		2.55	7,525
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,160.00 lf	0.200	832.00 mh	19,082	6,770		3,463		7.05	29,316
		1081 Crushed Stone	786.00 tn	0.150	117.90 mh	2,852	7,015		963		13.80	10,850
		Geotextile Woven Monofilament	3,225.00 sy	0.021	66.56 mh	1,596	6,443		222		2.55	8,261
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	3,925.00 lf	0.200	785.00 mh	18,004	6,388		3,268		7.05	27,669
		1081 Crushed Stone	742.00 tn	0.150	111.30 mh	2,822	6,622		928		13.80	10,242
		Geotextile Woven Monofilament	3,053.00 sy	0.021	62.80 mh	1,506	6,079		209		2.55	7,793
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	5,410.00 lf	0.200	1,082.00 mh	29,403	10,432		5,396		7.05	45,171
		1081 Crushed Stone	1,211.00 tn	0.021	181.65 mh	4,384	10,609		1,514		13.80	16,716
		Geotextile Woven Monofilament	4,966.00 sy	0.021	102.65 mh	2,459	9,627		942		2.55	12,728
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	6,090.00 lf	0.200	1,218.00 mh	27,935	9,911		5,070		7.05	42,816
		1081 Crushed Stone	1,151.00 tn	0.021	97.44 mh	2,336	5,831		1,439		13.80	15,888
		Geotextile Woven Monofilament	5,900.00 sy	0.021	118.00 mh	2,763	9,602		325		2.55	12,092
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	1,115.00 tn	0.150	167.25 mh	4,046	9,951		1,394		13.80	15,391

Spreadsheet Report  
KIF/0509301/FLY&BOT/TM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Instl Dms/Swan Pond	Geotextile Woven Monofilament	4,589.00 sy	0.021	94.40 mh	2,263	9,137	-	315	-	2.55	11,714
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200	1,160.00 mh	26,605	9,440	-	4,829	-	7.05	40,873
		1081 Crushed Stone	1,096.00 sy	0.150	164.40 mh	9,877	9,782	-	1,370	-	13.80	15,129
		Geotextile Woven Monofilament	4,511.00 sy	0.021	92.79 mh	2,224	8,981	-	309	-	2.55	11,515
		12" Dia Force Main HDPE Perimeter Underdrain (EL. 783)	2,580.00 lf	0.250	645.00 mh	14,793	12,688	-	2,888	-	11.76	30,349
		1081 Crushed Stone	575.00 ln	0.150	86.25 mh	2,088	5,152	-	719	-	13.80	7,110
		Submersible Pumping Station Equipment Package	1.00 ls	56,000.00	56.00 mh	1,905	5,000	-	205	-	7,109.00	7,110
		30" Diameter Catch Basin (Precast)	1.00 ea	60,000.00	60.00 mh	1,521	4,565	-	488	-	4,989.00	4,989
		Geotextile Woven Monofilament	2,293.00 sy	0.021	47.17 mh	1,131	4,565	-	157	-	2.55	5,853
		Grot Seal Storm Drain - 24" Diameter (Pump & Plug)	54.00 cy	1,000	1,273	2,808	100	-	489	-	217.09	434
		Seal Weid 1/4" Thick A-36 Steel Plate	2.00 ea	1,000	8.00 mh	256	100	-	78	-	84.64	448
		Grot Seal Storm Drain - 24" Diameter (Pump & Plug)	53.00 cy	1,000	53.00 mh	1,260	100	-	78	-	217.09	434
		Seal Weid 1/4" Thick A-36 Steel Plate	2.00 ea	1,000	8.00 mh	256	100	-	78	-	84.64	448
		Grot Seal Storm Drain - 24" Diameter (Pump & Plug)	23.00 cy	1,000	23.00 mh	592	100	-	78	-	217.09	434
		Seal Weid 1/4" Thick A-36 Steel Plate	2.00 ea	1,000	8.00 mh	256	100	-	78	-	84.64	448
		24" CMP Storm Drain	38.00 lf	0.480	18.24 mh	418	760	-	67	-	32.71	1,245
		Excavation For 24" Dia Pipe (25 bcy)	30.00 cy	0.200	6.00 mh	145	15	-	75	-	7.34	220
		Backfill For 24" Culvert	21.00 cy	0.320	6.72 mh	163	48	-	163	-	15.50	326
		36" CMP Storm Drain	4.00 lf	0.500	2.00 mh	48	37	-	7	-	23.12	92
		Excavation For 36" Dia Pipe (67 bcy)	72.00 lf	0.600	43.20 mh	392	2,664	-	260	-	95.30	3,962
		Backfill For 36" Culvert	61.00 cy	0.200	16.20 mh	441	203	-	203	-	7.34	594
		Bedding For 36" Culvert	57.00 cy	0.500	4.50 mh	109	84	-	443	-	15.50	884
		Anchor Trench - Excavate Into Borrow Area (6,650 bcy)	9.00 tn	0.200	2,076.00 mh	50,718	243,514	-	23,950	-	7.34	76,168
		Upper & Lower LDPE Geomembrane	110,380.00 cy	0.050	5,519.00 mh	132,676	4,680	-	14,682	-	3.52	390,026
		Sediment Trap (3,630 bcy)	4,356.00 cy	0.040	174.24 mh	4,680	853,837	-	259,959	-	2.15	1,612,723
		Instl Dms/Swan Pond	4,356.00 cy	0.040	35,789.66 hrs	853,837	486,927	-	259,959	-	2.15	1,612,723
		05			35,789.66 hrs	853,837	486,927	-	259,959	-	2.15	1,612,723
	Drg CollP1 Opr Cost		1.00 lot								0.00	0
		Elv. 810 To Elv. 866	622,416.00 cy	1,300.000	478.78 cd	974,301	-	-	848,026	-	3.09	1,922,327
		Bottom Ash Dike Fill	4,855,654.00 cy					7,430,944			1.53	7,430,944
		Dredge	678,663.00 cy	375.000	1,810.26 cd	446,173	-	-	1,240,101	-	2.49	1,688,874
		Wet Dip And Stack	12.90 yr								0.00	0
		Disposal Life (Assume Dike & Dredge Ash)			48,954.36 hrs	1,421,074		7,430,944	2,188,127		0.00	11,040,145
	Drg CollP1 Opr Cost				48,954.36 hrs	1,421,074		7,430,944	2,188,127		0.00	11,040,145
	06				48,954.36 hrs	1,421,074		7,430,944	2,188,127		0.00	11,040,145
	Gypsum Sltk Peninsula		1.00 lot								0.00	0
		Clear And Grub	90.00 ac	72.000	6,480.00 mh	162,636	-	-	157,788	-	3,652.49	320,624
		Strip 1 lf Vegetation And Topsoil - Spoil At Stockpile	126,000.00 cy	0.020	2,520.00 mh	65,706	-	-	80,625	-	1.14	147,331
		Gypsum Sltk Peninsula			9,060.00 hrs	229,542	0	-	238,413	-	2.49	467,955
	07				9,060.00 hrs	229,542	0	-	238,413	-	2.49	467,955
	Erosion Controls											
		Erect Silt Fence (Trench Bottom Of Fence, 10% Hay Bales)	4,900.00 lf	0.069	335.99 mh	8,209	2,421	-	1,523	-	2.48	12,153
		Cut For Stormwater Runoff Pond (2,000 bcy)	2,400.00 cy	800.000	3.00 cd	2,698	-	-	2,172	-	2.15	5,164
		Cleanout Stormwater Runoff Pond (2,300 bcy)	2,750.00 cy	383.333	7.20 cd	3,226	-	-	2,304	-	2.00	5,530
		Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00 cy	1,904.000	7.56 cd	19,124	-	-	24,240	-	3.01	43,363
		Riprap For Stormwater Runoff Pond	4,300.00 ln	0.200	860.00 mh	21,509	43,000	-	19,079	-	19.21	82,588
		Pipe Bedding	20.00 ln	0.500	10.00 mh	242	196	-	33	-	23.54	471
		72" Dia. CMP For Outlet Structure	6.00 lf	2,000	12.00 mh	283	1,820	-	69	-	361.90	2,171
		48" Dia. CMP For Riser For Outlet Structure	7.00 lf	1,091	7.64 mh	180	920	-	44	-	163.40	1,144
		Cut Holes In Riser	150.00 lf	0.620	95.00 mh	2,183	7,280	-	531	-	66.70	10,005
		Composite Concrete For Riser: Base (Assume 7' x 7' x 2')	3.00 ea	1,000	3.00 mh	63	809	-	103	-	25.86	78
		Anti-Seep Collars (Assume Concrete)	4.00 cy	19,000	425.00 mh	14,273	4,981	-	1,346	-	496.70	1,989
		Erosion Controls	7.00 ea	75,000	525.00 mh	14,273	4,981	-	1,346	-	2,944.23	20,610
	08				2,763.38 hrs	73,077	61,436	-	50,762	-	2,944.23	166,274
	Roads				2,763.38 hrs	73,077	61,436	-	50,762	-	2,944.23	166,274
		Bottom Ash (South Access Road)	2,400.00 cy	1,904.000	1.20 cd	2,665	-	-	3,057	-	2.34	5,622
		Crushed Stone Base (South Access Road)	2,900.00 ln	0.120	348.00 mh	9,512	25,883	-	3,950	-	13.36	38,744
		Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 ln	0.120	40.80 mh	1,115	3,095	-	393	-	13.36	4,542
		Roads			479.56 hrs	13,192	28,917	-	6,799	-	2.49	48,908
	09				479.56 hrs	13,192	28,917	-	6,799	-	2.49	48,908
	Fencing											
		New Fencing (Including Grounding)	200.00 lf					4,100			20.50	4,100
		Personnel Swinging Gate	1.00 ea					360			360.00	360



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Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 2 Base Construct	Perforated Pipe ADS Drain Tube, 6" Diameter	4,946.00 lf	0.200	989.20 mh	22,687	8,050	-	-	-	7.05	34,854
		Geotextile For Underdrain	4,121.00 sy	0.021	84.77 mh	2,032	8,205	-	-	-	2.55	10,520
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,001.00 tn	0.150	150.15 mh	3,632	8,934	-	-	-	13.80	19,817
		Solid Outlet Pipe ADS Drain 6" Diameter	1,236.00 lf	0.200	247.20 mh	5,670	2,012	-	-	-	7.05	8,716
		#57 Stone For Outlet Pipe Bedding (135 pcf)	250.00 tn	0.150	37.50 mh	907	2,231	-	-	-	13.80	3,451
		6" Dia Non-Per HDPE Corrugated Tubing, Lateral Outlet Pipes (EL. 760)	302.00 lf	0.200	60.40 mh	1,385	482	-	-	-	7.05	2,128
		1061 Crushed Stone, Bedding 6" Depth	10.00 tn	0.500	5.00 mh	121	94	-	-	-	23.12	231
		6" Dia Perforated HDPE Drain (EL. 760)	1,512.00 lf	0.200	302.40 mh	6,936	2,481	-	-	-	7.05	10,655
		1061 Crushed Stone	286.00 tn	0.500	143.00 mh	3,459	2,674	-	-	-	23.12	8,611
		Geotextile Woven Monofilament	1,176.00 sy	0.021	24.19 mh	580	2,341	-	-	-	2.55	3,002
		Cut For Underdrain System	224.00 cy	0.200	44.80 mh	1,084	-	-	-	-	6.51	1,457
		Backfill For Underdrain System	168.00 cy	0.250	42.00 mh	1,016	-	-	-	-	8.99	1,516
		Certification	1.00 ls	-	-	-	-	31,500	-	-	31,500.00	31,500
		QA/QC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	457,884	-	-	457,884.00	457,884
	Ph 2 Base Construct	QA/QC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	796,284	1,865,084	31,500	4,947,700	4,947,700
	17		75,247.27 hrs			2,095,770	159,062	796,284	1,865,084	31,500		
			75,247.27 hrs			2,095,770	159,062	796,284	1,865,084	31,500		4,947,700
	Temp Slope Protect	Cut For Ditch (5.815 boy)	6,978.00 cy	1.200,000	5.82 cd	9,228	-	-	-	-	3.01	21,032
		D59 8" Riprap	4,239.00 tn	0.320	1,356.48 mh	33,926	42,390	-	-	-	23.05	97,724
		Seed Ditch	6,978.00 sy	-	-	-	-	3,489	-	-	0.50	3,489
		Jute Matting	6,978.00 sy	0.012	83.74 mh	2,007	5,373	-	-	-	1.12	7,799
	18		1,765.86 hrs			45,161	47,763	3,489	33,632	-		130,045
			1,765.86 hrs			45,161	47,763	3,489	33,632	-		130,045
	Riprap Stilling Basin	Riprap D50 Size 9"	2,344.00 tn	0.320	750.08 mh	19,760	23,440	-	-	-	23.05	54,038
		Cut For Basin (3.582 boy)	4,300.00 cy	1.200,000	3.58 cd	5,686	-	-	-	-	3.01	12,960
	19		950.75 hrs			24,446	23,440	-	-	-		66,998
			950.75 hrs			24,446	23,440	-	-	-		66,998
	Ph 2 Initial Constr.	Dredge Ash	451,295.00 cy	-	-	-	-	690,933	-	-	1.53	690,933
		Initial Disposal Life	0.90 yrs	-	-	-	-	-	-	-	0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	33,806	11,995	-	-	-	7.05	51,935
		Geotextile For Underdrain	6,142.00 sy	0.021	126.34 mh	3,029	12,229	-	-	-	2.55	15,679
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,482.00 tn	0.150	222.30 mh	5,414	13,316	-	-	-	13.80	20,595
		Solid Outlet Pipe ADS Drain 6" Diameter	1,658.00 lf	0.200	331.60 mh	7,605	2,698	-	-	-	7.05	11,664
		#57 Stone For Outlet Pipe Bedding (135 pcf)	336.00 tn	0.150	50.40 mh	1,219	2,999	-	-	-	13.80	4,538
	20		2,206.14 hrs			61,073	43,237	690,933	10,222	-		795,465
			2,206.14 hrs			61,073	43,237	690,933	10,222	-		795,465
	Ph 2 Operational Cost	Stage 1 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	255,189.00 cy	1,300,000	196.30 cd	399,461	-	-	-	-	3.09	788,149
		Dredge Ash	1,334,496.00 cy	-	-	-	-	2,043,113	-	-	1.53	2,043,113
		Stage 1 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf	0.200	2,299.00 mh	52,728	18,708	-	-	-	7.05	81,005
		Geotextile For Underdrain	9,579.00 sy	0.021	197.04 mh	4,724	18,072	-	-	-	2.55	24,483
		#57 Stone For Outlet Pipe Bedding (135 pcf)	2,338.00 tn	0.150	349.20 mh	8,447	20,777	-	-	-	13.80	32,135
		Solid Outlet Pipe ADS Drain 6" Diameter	2,586.00 lf	0.200	517.20 mh	11,862	4,209	-	-	-	7.05	18,224
		#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 tn	0.150	78.60 mh	1,901	4,577	-	-	-	13.80	7,233
	22		17,574.59 hrs			479,123	67,443	2,043,113	404,633	-		2,994,312
			17,574.59 hrs			479,123	67,443	2,043,113	404,633	-		2,994,312
	Ph 2 Operational Cost	Stage 2 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	263,403.00 cy	1,300,000	202.62 cd	412,319	-	-	-	-	3.09	813,518
		Dredge Ash	1,509,673.00 cy	-	-	-	-	2,311,309	-	-	1.53	2,311,309
		Stage 2 Disposal Life (Assume Dike & Dredge Ash)	3.70 yrs	-	-	-	-	-	-	-	0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	11,865.00 lf	0.200	2,373.00 mh	54,425	19,310	-	-	-	7.05	83,613
		Geotextile For Underdrain	9,888.00 sy	0.021	203.40 mh	4,876	19,687	-	-	-	2.55	25,241
		#57 Stone For Outlet Pipe Bedding (135 pcf)	2,403.00 tn	0.150	360.45 mh	8,719	3,004	-	-	-	13.80	33,170
		Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200	534.00 mh	12,247	4,345	-	-	-	7.05	18,916
		#57 Stone For Outlet Pipe Bedding (135 pcf)	541.00 tn	0.150	81.15 mh	1,963	4,828	-	-	-	13.80	7,468
	23		18,140.47 hrs			494,549	69,678	2,311,309	417,658	-		3,283,135
			18,140.47 hrs			494,549	69,678	2,311,309	417,658	-		3,283,135
	Ph 2 Operational Cost					494,549	69,678	2,311,309	417,658	-		3,293,135

Spreadsheet Report  
KIF/0509301/FLY&BOTTM.ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 2 Operational Cost											
		Stage 3 (3 To 1 Side Slopes)	1.00 lot								0.00	0
		Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	227,060.00 cy	1,300,000	174,70 cd	355,501			345,914		3.09	704,415
		Dredge Ash	1,344,918.00 cy					2,059,066			1.53	2,059,066
		Stage 3 Disposal Life (Assume Dike & Dredge Ast)	3.30 yrs								0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	10,230.00 lf	0.200	2,046.00 mh	46,925	16,649		8,516		7.05	72,091
		Geotextile For Underdrain	8,525.00 sy	0.021	175.38 mh	4,204	16,973		2,585		2.55	21,762
		#57 Stone For Outlet Pipe Bedding (135 pch)	2,072.00 ln	0.150	310.80 mh	7,518	18,493		2,590		13.80	28,601
		Solid Outlet Pipe ADS Drain 6" Diameter	2,302.00 lf	0.200	460.40 mh	10,359	3,747		1,916		7.05	16,222
		#57 Stone For Outlet Pipe Bedding (135 pch)	466.00 ln	0.150	69.90 mh	1,691	4,159		583		13.80	6,432
		Ph 2 Operational Cost			15,640.64 hrs	426,399	60,021	2,059,066	360,104			2,905,590
		24			15,640.64 hrs	426,399	60,021	2,059,066	360,104			2,905,590
ST FACILITY												
	Construct Facilities											
		Mobilization	0.00 ls	400,000	0.00 mh	0			0		0.00	0
		Admin Time (Employee proc, etc)	0.00 ls	256,000	0.00 mh	0			0		0.00	0
		General Clean Up	0.00 ls	600,000	0.00 mh	0			0		0.00	0
		Maintain Roads	0.00 ls	6,372,000	0.00 mh	0			0		0.00	0
		Drinking Water	0.00 ls	531,000	0.00 mh	0			0		0.00	0
		Hauling	0.00 ls	531,000	0.00 mh	0			0		0.00	0
		Portable Toilet Service	0.00 ls						0		0.00	0
		Demobilization	0.00 ls	240,000	0.00 mh	0			0		0.00	0
		Construct Facilities			0.00 hrs	0			0		0.00	0
		x-CONST FACILITY			0.00 hrs	0			0		0.00	0
MANUAL												
	Non-Manual			#####								
		Non Manual	0.00 ls		0.00 mh	0					0.00	0

\$27.18/mh  
\$38.97/EH

\$5,626,050  
x 11%

618,900  
L=65% \$402,300  
E=35% \$216,600

225,235  
x .125

28155

Apr 1 2005

Estimate Totals

Labor	8,447,195	310,743,974	hrs
Material	3,186,244		
Subcontract	19,882,019		
Equipment	8,883,976	228,534,338	hrs
Other	31,590		
	36,360,934		

Engineered Materials - Ph 2		100.000 %	C
Adjustment - Engr Materials		(100.000) %	C
Environmental Costs		100.000 %	C
Adjustment Environmental		(100.000) %	C
Demolition Costs		100.000 %	C
Adjustment Demolition		(100.000) %	C

Small Tools Expense	139,835	0.450 \$/hr	H
Consumables & Expendables	337,888	4.000 %	C
Office Supplies & Expense		3.000 %	C
Subcontract Fee	477,723		C

Escalation - Craft Labor	380,124	4.500 %	C
Escalation - Subcontract	427,465	2.700 %	C
Escalation - Subcontract Fee		0.350 %	C
Escalation - Perm Materials	54,166	1.700 %	C
Escalation - HED Equipment		2.000 %	C
Escalation - Tagged Equipment		2.000 %	C
Escalation - Small Tools	10,565	0.034 \$/hr	H
Escalation - Consumables	16,894	0.200 %	C
Escalation - Non-Manual Labor		3.400 %	C
Escalation - Office Supplies		0.200 %	C

Partner Insurance (FY04)	889,214	3.000 %	C
Partner Award Fee (FY04)	253,416	5.000 %	C
	422,350		
	675,776		

FPG Proj Engr - Phase 1	1	0.000 % @ 42.00 A	0
FPG Mech Engr - Phase 1	1	0.000 % @ 42.00 A	0
FPG Elec Engr - Phase 1	1	0.000 % @ 42.00 A	0
FPG Civil Engr - Phase 1	1	0.000 % @ 42.00 A	0
FPG Syst Engr - Phase 1	1	0.000 % @ 42.00 A	0
Non-TVA Engr - Phase 1	2	0.000 % @ 72.00 A	0
FPG Proj Cntrl Cost - Phase 1	1	0.000 % @ 42.00 A	0
FPG Proj Cntrl Sched - Phase 1	13	0.000 % @ 42.00 A	0
FPG Cost Estimating - Phase 1	1	0.000 % @ 42.00 A	0
Phase 1 Other/Other Org	22	0.000 % @ 42.00 A	L

FPG Proj Engr - Phase 2	1	0.000 % @ 42.00 A	0
FPG Mech Engr - Phase 2	1	0.000 % @ 42.00 A	0
FPG Elec Engr - Phase 2	1	0.000 % @ 42.00 A	0
FPG Civil Engr - Phase 2	1	0.000 % @ 42.00 A	0
FPG Syst Engr - Phase 2	2	0.000 % @ 72.00 A	0
Non-TVA Engr - Phase 2	1	0.000 % @ 42.00 A	0
FPG Proj Cntrl Cost - Phase 2	1	0.000 % @ 42.00 A	0
FPG Proj Cntrl Sched - Phase 2	1	0.000 % @ 42.00 A	0
FPG Cost Estimating - Phase 2	1	0.000 % @ 42.00 A	0
FPG Engr Records - Phase 2	1	0.000 % @ 42.00 A	0
Phase 2 Other/Other Org	11	0.000 % @ 42.00 A	L

FPG Proj Engr - Phase 3	1	0.000 % @ 42.00 A	0
FPG Mech Engr - Phase 3	1	0.000 % @ 42.00 A	0
FPG Elec Engr - Phase 3	1	0.000 % @ 42.00 A	0
FPG Civil Engr - Phase 3	1	0.000 % @ 42.00 A	0
FPG Syst Engr - Phase 3	2	0.000 % @ 72.00 A	0
Non-TVA Engr - Phase 3	1	0.000 % @ 42.00 A	0
FPG Proj Cntrl Cost - Phase 3	1	0.000 % @ 42.00 A	0
FPG Proj Cntrl Sched - Phase 3	1	0.000 % @ 42.00 A	0
FPG Engr Records - Phase 3	1	0.000 % @ 42.00 A	0
CAD Dwg Support - Phase 3	9	0.000 % @ ### A	0
Phase 3 Other/Other Org	19	0.000 % @ ### A	L

30,823  
50,000  
4,000  
2,000  
11,001



Estimate Totals

Rounding		L
	38,423,699	
Total	38,423,699	

KINGSTON FOSSIL PLANT  
OPTION 2 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)

Project name KIF/0509302/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 0509302  
PCN # KIFS30  
Requesting Engr Dan Smith  
Option 2  
Revision 0  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 12/20/2004  
Funding Type Capital  
Unit N

Dry ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (not TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by 'Location/Activity'  
Detail summary



**Spreadsheet Report**  
KJF/0609302/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	09				479.56 hrs	13,192	29,917		6,799			48,908
	Fencing	New Fencing (Including Grounding)	200.00 lf					4,100			20.50	4,100
		Personnel Swinging Gate	1.00 ea					360			360.00	360
		Sliding Gate, 20 Ft Wide, With Motorized Operator	1.00 ea					17,000			17,000.00	17,000
	10	Fencing			0.00 hrs	0	0	21,460	0			21,460
		Seed/Mulch	25.00 ac					60,500			2,420.00	60,500
	11	Seed/Mulch			0.00 hrs	0	0	60,500				60,500
		<b>Disposal Facility Construction</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>
		Cut And Fill Balance (189,719 bcy)	227,863.00 cy	2,800.000	81.31 cd	205,593			260,596		2.05	466,189
		Cut & Spoil Shred Cut For Future 1 Ft Clay Layer In Final Cover	145,001.00 cy	1,904.000	76.16 cd	139,646			192,675		2.29	332,320
		Riprap For Ditch	23,500.00 ln	0.644	4,700.00 mh	117,547	235,000		98,805		19.21	451,352
		Ditch For Riprap (24" wide x 2' deep)	7,300.00 lf	0.200	320.03 mh	8,169			12,651		2.99	21,821
		Geotextile (If Riprap Is Used)	19,500.00 sy	0.015	292.50 mh	7,076	25,594		975		1.73	33,644
		Perimeter Road Surfacing - Bottom Ash	2,400.00 cy	0.120	1.26 cd	2,565			3,057		2.34	5,622
		Perimeter Road Surfacing - Crushed Stone	2,800.00 ln	0.200	348.00 mh	9,512	25,883		3,350		13.36	38,744
		Drainage Layer (1 Ft Thick) For Liner (No. 57 Stone)	169,000.00 ln	0.096	16,128.00 mh	428,634	1,428,000		282,000		12.84	2,106,634
		Geotextile For Underdrain Pipes	5,700.00 sy	0.011	59.85 mh	1,448			200		7.09	9,128
		8" Dia. HDPE, SDR 17 Perforated Pipe	6,400.00 lf	0.200	1,280.00 mh	29,357	10,416		5,333		12.17	45,106
		8" Dia. HDPE Standard Fillopps	50.00 ea	0.200	10.00 mh	209	400		2,724		41.597	609
		Concrete Anchors For Underdrain Piping	85.00 ea	12.500	1,062.50 mh	28,865	9,888		2,724		11,140	41,597
		Preolith Subgrade	70.00 ac	7.000	10.00 cd	7,140			4,000		159.14	11,140
	13	Gypsum Disp Facility			36,560.74 hrs	984,779	1,742,761		836,366			3,563,906
					36,560.74 hrs	984,779	1,742,761		836,366			3,563,906
		<b>Gyp. On Peninsula Cst</b>										
		Cut For Underdrain System	4,407.00 cy	0.200	881.40 mh	21,321			7,345		6.51	28,666
		6" Dia Perforated HDPE Perimeter Underdrains	59,491.00 lf	0.200	11,898.20 mh	272,885	96,822		49,526		7.05	419,233
		Fill For Underdrain System	3,525.00 cy	0.250	881.25 mh	21,317			10,364		8.99	31,681
		1081 Crushed Stone, 6" Depth (110 pd)	3,272.00 ln	0.150	490.80 mh	1,872	29,203		4,080		13.80	45,163
		Cut For Lateral Outlet Pipes	551.00 cy	0.200	110.20 mh	2,868			818		3.94	3,686
		6" Dia Non-Perforated HDPE Lateral Outlet Pipes	7,438.00 lf	0.200	1,487.20 mh	34,109	12,102		6,159		7.95	52,001
		Fill For Lateral Outlet Pipes	441.00 cy	0.250	110.25 mh	2,867			1,297		8.99	3,963
		1081 Crushed Stone, 6" Depth (110 pd)	409.00 ln	0.150	61.35 mh	1,484	3,650		511		13.90	5,646
		<b>Gypsum Disposal Stack (Wet Sludge)</b>	<b>5,535,853.00 cy</b>								<b>0.00</b>	<b>0</b>
		Wet Cast Gypsum Gypsum Dike	1,011,947.00 cy	375.000	2,696.93 cd	665,601			1,847,502		2.49	2,513,103
		Cut Rim Ditches	114,875.00 cy	375.000	305.53 cd	75,406			209,303		2.49	284,709
		<b>Life Of Gypsum Disposal Stack</b>	<b>20.00 yrs</b>								<b>0.00</b>	<b>0</b>
		Allowance For Karst Geologic Features	1.00 ls									
		Addition Geotechnical Investigation	1.00 ls									
	14	Gyp On Peninsula Cst			39,940.32 hrs	1,109,329	141,777		2,137,046			3,728,151
					39,940.32 hrs	1,109,329	141,777		2,137,046			3,728,151
		<b>Construction Parking</b>										
		Silt Fence	1,000.00 lf	0.020	20.00 mh	442	315				0.76	757
		Cut And Fill Balance (500 bcy)	500.00 cy	2,800.000	0.21 cd	542			667		2.05	1,209
		Cut & Spoil Additional Material	400.00 cy	1,904.000	0.21 cd	385			532		2.28	917
		Crushed Stone Base	1,400.00 ln	0.120	168.00 mh	4,592	12,495		1,817		13.36	18,704
	15	Construction Parking			220.30 hrs	5,961	12,810		2,835			21,606
					220.30 hrs	5,961	12,810		2,835			21,606
		<b>Ph.2 Base Construct</b>										
		<b>Base Layers</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>
		Compacted Fly Ash Base (Fill)	573,650.00 cy	1,300.000	441.27 cd	697,985			873,748		3.09	1,771,714
		Preolith Subgrade	177,100.00 sy	28,111.100	6.30 cd	4,486			2,520		0.04	7,018
		2.5" Thick Bottom Ash Layer	152,717.00 cy	1,300.000	117.47 cd	239,096			232,609		3.09	471,665
		0.5" Thick Fly Ash Filter Layer	30,543.00 cy	1,300.000	23.49 cd	47,811			46,521		3.09	94,332
		18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	16,920.00 lf	1,400.000	126.50 cd	66,440			20,240		0.47	38,680
		Roll Tilt Fly Ash Layer	177,100.00 sy	1,300.000	0.00 cd	0			0		0.00	0
		<b>Bottom Ash Dike Fill</b>	<b>0.00 cy</b>								<b>0.00</b>	<b>0</b>
		4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	28,082.00 lf	0.070	1,825.74 mh	41,872	40,258		7,609		3.44	89,740
		Trenching For The Drain System (4" Dia Underdrains), 966 bcy	1,166.00 cy	0.200	232.00 mh	9,812			1,933		6.51	7,546
		Strip Existing 1" Soil Cover (Phase 1 Expansion), 19,133 bcy	22,660.00 cy	800.000	28.70 cd	11,873			14,637		1.16	26,510
		Anchor Trench Cut	1,306.00 cy	0.200	261.20 mh	6,318			3,263		7.34	9,583

Spreadsheet Report  
KIF/0509302/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 2 Base Construct	Anchor Trench Fill & Compact	1,242.00 cy	0.320	397.44 mh	9,614	-	-	9,642	-	15.50	19,256
		2.0" Thick Bottom Ash Blanket Drain	24,640.00 sf	1,300.000	18.95 cd	38,570	-	-	37,550	-	3.09	76,100
		1.0" Thick Filter Drain Ash Layer	12,320.00 sf	1,300.000	9.48 cd	18,765	-	-	18,765	-	3.09	38,550
		Geomembrane	35,950.00 sf	0.050	1,848.00 mh	44,302	81,312	-	4,118	-	3.52	130,234
		Perforated Pipe ADS Drain Tube, 6" Diameter	4,945.00 lf	0.200	989.20 mh	22,687	8,050	-	4,118	-	7.05	34,854
		Geotextile For Underdrain	4,121.00 sf	0.021	84.77 mh	2,032	8,205	-	283	-	2.55	10,520
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,001.00 cy	0.150	150.15 mh	3,632	8,934	-	1,251	-	13.80	19,917
		Solid Outlet Pipe ADS Drain 6" Diameter	1,238.00 lf	0.200	247.20 mh	5,670	2,812	-	1,029	-	7.95	9,710
		#57 Stone For Outlet Pipe Bedding (135 pcf)	250.00 lf	0.150	37.50 mh	907	2,231	-	313	-	13.80	3,451
		6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 760)	302.00 lf	0.200	60.40 mh	1,385	492	-	251	-	7.05	2,128
		10# Crushed Stone, Bedding 6" Depth	10.00 lf	0.500	5.00 mh	121	231	-	17	-	23.12	331
		6" Dia Perforated HDPE Drain (EL. 760)	1,512.00 lf	0.200	302.40 mh	6,936	2,461	-	1,259	-	7.05	10,655
		10#1 Crushed Stone	265.00 lf	0.500	132.50 mh	3,459	2,674	-	478	-	23.12	6,611
		Geotextile Woven Monofilament	1,175.00 sf	0.021	24.19 mh	560	2,341	-	81	-	3.002	2,555
		Cut For Underdrain System	224.00 cy	0.200	44.80 mh	1,084	-	-	373	-	6.51	1,457
		Backfill For Underdrain System	168.00 cy	0.250	42.00 mh	1,016	-	-	494	-	8.99	1,510
		Certification	1.00 ls	-	-	-	-	-	-	-	-	-
		QA/QC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	-	-	-	-	-
		Ph 2 Base Construct	53,297.57 hrs	-	53,297.57 hrs	1,478,727	159,062	457,884	1,283,586	31,500	31,500.00	457,884
		17	53,297.57 hrs	-	53,297.57 hrs	1,478,727	159,062	796,264	1,283,586	31,500	31,500.00	3,749,160
		Temp Slope Protect	6,978.00 cy	1,200.000	5.82 cd	9,228	-	-	11,804	-	3.01	21,032
		Cut For Ditch (5.815 box)	4,239.00 lf	0.320	1,356.48 mh	33,926	42,890	-	21,409	-	23.95	97,721
		D50 9" Riprap	6,978.00 sf	0.012	83.74 mh	2,007	5,373	-	419	-	0.50	3,489
		Seed Ditch	6,978.00 sf	-	-	-	-	-	-	-	-	-
		Jute Matting	6,978.00 sf	-	-	-	-	-	-	-	-	-
		Temp Slope Protect	17	-	1,765.86 hrs	45,161	47,763	3,489	33,632	-	1.12	7,798
		18	1,765.86 hrs	-	1,765.86 hrs	45,161	47,763	3,489	33,632	-	1.12	130,045
		Riprap Stilling Basin	2,344.00 lf	0.320	750.08 mh	18,750	23,440	-	11,838	-	23.05	54,038
		Cut For Basin (3.592 box)	4,300.00 cy	1,200.000	3.58 cd	5,686	-	-	7,274	-	3.01	12,960
		Riprap Stilling Basin	6,978.00 sf	-	980.75 hrs	24,446	23,440	-	19,112	-	-	66,998
		19	950.75 hrs	-	950.75 hrs	24,446	23,440	-	19,112	-	-	66,998
		Ph 2 Initial Constr	614,905.00 cy	1,100.000	559.91 cd	1,025,843	-	-	804,972	-	2.88	1,833,815
		Dry Stack Ash Quantities	1.30 yrs	-	-	-	-	-	-	-	0.00	0
		Initial Construction Disposal Life (Assume Dry Ash Stack)	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Ph 2 Initial Constr	577,613.00 cy	1,100.000	40,248.59 hrs	1,025,843	-	-	804,972	-	2.88	1,833,815
		Ph 3 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Dry Stack Ash Quantities	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Stage 4 Disposal Life (Assume Dike & Dry Stack Ash)	1.20 yrs	-	-	-	-	-	-	-	0.00	0
		Ph 3 Operational Cost	78,055.99 hrs	-	78,055.99 hrs	1,995,264	0	796,264	765,148	-	2.88	1,722,589
		20	78,055.99 hrs	-	78,055.99 hrs	1,995,264	0	796,264	765,148	-	2.88	1,722,589
		Ph 2 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Dry Stack Ash Quantities	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Stage 1 (3 To 1 Side Slopes)	1.589,685.00 cy	1,100.000	1,445.17 cd	2,659,803	-	-	2,081,042	-	2.88	4,740,845
		Ph 2 Operational Cost	104,052.11 hrs	-	104,052.11 hrs	2,659,803	-	-	2,081,042	-	0.00	0
		Haul Distance (Round Trip)	104,052.11 hrs	-	104,052.11 hrs	2,659,803	-	-	2,081,042	-	0.00	0
		Ph 2 Operational Cost	104,052.11 hrs	-	104,052.11 hrs	2,659,803	-	-	2,081,042	-	0.00	0
		22	104,052.11 hrs	-	104,052.11 hrs	2,659,803	-	-	2,081,042	-	0.00	0
		Ph 2 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Dry Stack Ash Quantities	3.70 yrs	-	-	-	-	-	-	-	0.00	0
		Stage 2 (3 To 1 Side Slopes)	1,773,076.00 cy	1,100.000	1,611.89 cd	2,995,646	-	-	2,321,118	-	2.88	5,287,764
		Ph 2 Operational Cost	116,055.88 hrs	-	116,055.88 hrs	2,995,646	-	-	2,321,118	-	0.00	0
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.70 yrs	-	-	-	-	-	-	-	0.00	0
		Ph 2 Operational Cost	116,055.88 hrs	-	116,055.88 hrs	2,995,646	-	-	2,321,118	-	0.00	0
		23	116,055.88 hrs	-	116,055.88 hrs	2,995,646	-	-	2,321,118	-	0.00	0
		Ph 2 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Dry Stack Ash Quantities	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Stage 3 (3 To 1 Side Slopes)	1,572,022.00 cy	1,100.000	1,428.11 cd	2,630,250	-	-	2,057,920	-	2.88	4,688,170
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		24	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Ph 2 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Dry Stack Ash Quantities	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Stage 3 (3 To 1 Side Slopes)	1,572,022.00 cy	1,100.000	1,428.11 cd	2,630,250	-	-	2,057,920	-	2.88	4,688,170
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		25	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Ph 2 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Dry Stack Ash Quantities	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Stage 3 (3 To 1 Side Slopes)	1,572,022.00 cy	1,100.000	1,428.11 cd	2,630,250	-	-	2,057,920	-	2.88	4,688,170
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		26	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Ph 2 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Dry Stack Ash Quantities	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Stage 3 (3 To 1 Side Slopes)	1,572,022.00 cy	1,100.000	1,428.11 cd	2,630,250	-	-	2,057,920	-	2.88	4,688,170
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		27	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Ph 2 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Dry Stack Ash Quantities	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Stage 3 (3 To 1 Side Slopes)	1,572,022.00 cy	1,100.000	1,428.11 cd	2,630,250	-	-	2,057,920	-	2.88	4,688,170
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		28	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Ph 2 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Dry Stack Ash Quantities	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Stage 3 (3 To 1 Side Slopes)	1,572,022.00 cy	1,100.000	1,428.11 cd	2,630,250	-	-	2,057,920	-	2.88	4,688,170
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Ph 2 Operational Cost	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		29	102,895.99 hrs	-	102,895.99 hrs	2,630,250	-	-	2,057,920	-	0.00	0
		Ph 2 Operational Cost	1.00 lot	-	-	-	-	-	-	-	0.00	0

Spreadsheet Report  
KIF/0509302/FLY&BOTTOM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub-Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
					102,895.99 hrs	2,630,250			2,057,920			4,688,170
	Dry Fly Ash Conver	Dry Fly Ash Conversion Capital Cost	1.00 ls		hrs			25,000,000				25,000,000
	Dry Fly Ash Conver	Dry Fly Ash Conver			hrs			25,000,000				25,000,000
ST FACILITY	Construct Facilities											
		Mobilization	0.00 ls	400,000	0.00 mh	0			0	0	0.00	0
		Admin Time (Employee proc, etc)	0.00 ls	256,000	0.00 mh	0			0	0	0.00	0
		General Clean Up	0.00 ls	600,000	0.00 mh	0			0	0	0.00	0
		Maintain. Roads	0.00 ls	6,372,000	0.00 mh	0			0	0	0.00	0
		Drinking Water	0.00 ls	531,000	0.00 mh	0			0	0	0.00	0
		Hauling	0.00 ls	531,000	0.00 mh	0			0	0	0.00	0
		Portable Toilet Service	0.00 ls						0		0.00	0
		Demobilization	0.00 ls	240,000	0.00 mh	0			0	0	0.00	0
		Construct Facilities			0.00 hrs	0			0			0
		XCONST FACILITY			0.00 hrs	0			0			0
MANUAL	Non-Manual			#####								
		Non Manual	0.00 ls		0.00 mh	0					0.00	0

Estimate Totals

\$25.93  
\$32.57  
\$4,104,099  
x 11%

Labor	23,965,216	924,464,149	hrs	
Material	2,498,999			
Subcontract	26,284,653			
Equipment	21,091,748			
Other	31,500			
	74,832,116	73,832,116		
Engineered Materials - Ph 2				
Adjustment - Engr Materials				
Environmental Costs				
Adjustment Environmental				
Demolition Costs				
Adjustment Demolition				
Small Tools Expense	416,009			
Consumables & Expendables	956,609			
Office Supplies & Expense				
Subcontract Fee				
	1,374,618	75,206,734		
Escalation - Craft Labor				
Escalation - Subcontract	1,078,435			
Escalation - Subcontract Fee	709,686			
Escalation - Perm Materials				
Escalation - HED Equipment	41,803			
Escalation - Tagged Equipment				
Escalation - Small Tools				
Escalation - Consumables	31,432			
Escalation - Non-Manual Labor	47,930			
Escalation - Office Supplies				
	1,909,286	77,116,020		
Partner Insurance (FY04)	718,956			
Partner Award Fee (FY04)	1,192,261			
	1,917,217	79,033,237		

452,000  
L = 65% 293,800  
E = 35% 158,200

\$40,426,235  
x 3%  
~~1,212,787~~  
1,213,000

FPG Proj Engr - Phase 1	4	0.000 % @ 42.00 A	0
FPG Mech Engr - Phase 1	4	0.000 % @ 42.00 A	0
FPG Elec Engr - Phase 1	4	0.000 % @ 42.00 A	0
FPG Civil Engr - Phase 1	4	0.000 % @ 42.00 A	0
FPG Syst Engr - Phase 1	4	0.000 % @ 42.00 A	0
Non-TVA Engr - Phase 1	4	0.000 % @ 42.00 A	0
FPG Proj Cntrl Cost - Phase 1	7	0.000 % @ 72.00 A	0
FPG Proj Cntrl Sched - Phase 1	4	0.000 % @ 42.00 A	0
FPG Proj Cntrl Sched - Phase 1	39	0.000 % @ 42.00 A	0
FPG Cost Estimating - Phase 1	4	0.000 % @ 42.00 A	1
Phase 1 Other/Other Org	4	0.000 % @ 42.00 A	0
	74		0
FPG Proj Engr - Phase 2	4	0.000 % @ 42.00 A	0
FPG Mech Engr - Phase 2	4	0.000 % @ 42.00 A	0
FPG Elec Engr - Phase 2	4	0.000 % @ 42.00 A	0
FPG Civil Engr - Phase 2	4	0.000 % @ 42.00 A	0
FPG Syst Engr - Phase 2	4	0.000 % @ 42.00 A	0
Non-TVA Engr - Phase 2	4	0.000 % @ 42.00 A	0
FPG Proj Cntrl Cost - Phase 2	7	0.000 % @ 72.00 A	0
FPG Proj Cntrl Sched - Phase 2	4	0.000 % @ 42.00 A	0
FPG Proj Cntrl Sched - Phase 2	4	0.000 % @ 42.00 A	0
FPG Cost Estimating - Phase 2	4	0.000 % @ 42.00 A	0
FPG Engr Records - Phase 2	4	0.000 % @ 42.00 A	0
Phase 2 Other/Other Org	4	0.000 % @ 42.00 A	0
	74		0
FPG Proj Engr - Phase 3	4	0.000 % @ 42.00 A	0
FPG Mech Engr - Phase 3	4	0.000 % @ 42.00 A	0
FPG Elec Engr - Phase 3	4	0.000 % @ 42.00 A	0
FPG Civil Engr - Phase 3	4	0.000 % @ 42.00 A	0
FPG Syst Engr - Phase 3	4	0.000 % @ 42.00 A	0
Non-TVA Engr - Phase 3	4	0.000 % @ 42.00 A	0
FPG Proj Cntrl Cost - Phase 3	7	0.000 % @ 72.00 A	0
FPG Proj Cntrl Sched - Phase 3	4	0.000 % @ 42.00 A	0
FPG Engr Records - Phase 3	4	0.000 % @ 42.00 A	0
CAD Draw Support - Phase 3	4	0.000 % @ 42.00 A	0
Phase 3 Other/Other Org	28	0.000 % @ 42.00 A	0
	67		0

Rounding

79,033,421

Total 79,033,421

L

$$\begin{array}{r}
 161,820 \\
 \times 125 \\
 \hline
 20,228
 \end{array}$$



Spreadsheet Report  
KIF/0509303/FLY&BOTTM ASH

KINGSTON FOSSIL PLANT  
OPTION 3 - WET ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)

Project name KIF/0509303/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Plant Ash  
 Estimate # KIF 0509303  
 PCN # KIF530  
 Requesting Engr Dan Smith  
 Option 3  
 Revision 0  
 Phase 2  
 Estimate Type Preliminary  
 Estimate Accuracy +/- 20%  
 Est. Issue Date 12/20/2004  
 Funding Type Capital  
 Unit N

(Wet ash in dredge cell)Phase 1. Wet gypsum in Phase 2. Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually installed for dredge cell seepage retrofit.
- (6) Single phase power is assumed for pump. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity  
Detail summary

Spreadsheet Report  
KIF/060903/FLY&BOTTWASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
Erosion Controls P	Erod. Silt Fence		1,000.00 lf	0.069	68.37 mh	1,075	494	311			2.48	2,480	
	Geotextile (Nonwoven) Erosion Protection Channel		4,500.00 sy	0.016	68.80 mh	1,646	5,676	172			1.74	1,740	
	D50 9" Riprap		5,215.00 tn	0.320	1,668.80 mh	41,737	52,150	26,338			23.05	120,229	
	3" Stone, 1" Thick To Prevent Erosion (Assume 105 tcd)		2,004.00 tn	0.096	192.38 mh	5,089	17,886	3,006			12.96	25,981	
	Sig 1-6 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 F/Ea)		4.00 ea	186.084	684.33 mh	17,166	19,860	2,740			9,948.25	39,785	
	3" Diameter CMP Culvert		52.00 cy	0.400	20.80 mh	503	781	173			13.01	679	
	Cut/Excavation For Placement Of 48" Dia Half-Round Pipe @ 43 bcy		93.00 ln	0.400	37.20 mh	930	26,000	587			44.30	44,304	
	Fill With 1032 Compacted/Crushed Stone		1,000.00 lf	0.600	600.00 mh	14,855	28,000	225			3.121	34,923	
	30" Diameter CMP Culvert		135.00 ln	0.500	67.50 mh	1,633	1,262	2,235			48.51	1,222	
	Bedding For 30" CMP, 6" Thick		720.00 lf	0.750	540.00 mh	13,969	16,720	268			786.12	12,610	
	D50 9" Riprap Outlet For Metal Spillway		53.00 ea	0.320	16.96 mh	424	530	1,540			2.308	2,308	
	Galvanized Corrugated Metal Anti-Seep Collar		16.00 ea	16.000	256.00 mh	6,270	4,800	41,205			44.30	44,304	
	Erosion Controls P				4,201.35 hrs	105,759	148,168	41,205			2,308	2,308	
						105,759	148,168	41,205				2,308	2,308
						0	0	0				2,420.00	62,920
					0.00 hrs	0	0				2,420.00	62,920	
					0.00 hrs	0	0				2,420.00	62,920	
Seed/Mulch	Seed/Mulch Disturbed Areas		26.00 ac										
	Seed/Mulch												
South Access Road	1032 Crushed Stone Base, 6" Depth		3,520.00 tn	0.120	422.40 mh	11,545	31,416	4,066			13.36	47,027	
	South Access Road				422.40 hrs	11,545	31,416	4,066				47,027	
Perimeter Road	1032 Roller Compacted Crushed Stone Base, 6" Depth		6,885.00 tn	0.120	826.20 mh	22,582	61,449	7,953			13.36	91,983	
	Perimeter Road				826.20 hrs	22,582	61,449	7,953				91,983	
Install Drains/Swamp Pond	6" Dia Pipe Bollards		24.00 ea	1.500	36.00 mh	871	4,800	240			200.00	12,000	
	PVC Monitoring Wells		6.00 ea			2,174	771	395			370	3,700	
Erosion Controls P	6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 772)		474.00 lf	0.200	94.80 mh	194	150	27			23.12	3,664	
	Crushed Stone, Bedding 6" Depth		526.00 lf	0.200	105.20 mh	2,395	846	433			23.12	3,460	
	6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 780)		18.00 ln	0.500	9.00 mh	218	168	409			7.05	3,693	
	Crushed Stone, Bedding 6" Depth		491.00 lf	0.200	98.20 mh	2,262	799	28			23.12	9,034	
	6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 792)		17.00 ln	0.500	8.50 mh	208	159	1,067			23.12	8,951	
	Crushed Stone, Bedding 6" Depth		1,282.00 lf	0.200	256.40 mh	5,881	402	72			7.05	946	
	6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 810)		43.00 ln	0.500	21.50 mh	520	402	1,014			23.12	8,315	
	Crushed Stone, Bedding 6" Depth		1,218.00 lf	0.200	243.60 mh	5,587	383	68			9.25	925	
	6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 817)		1,180.00 lf	0.500	236.00 mh	4,988	374	982			23.12	8,715	
	Crushed Stone, Bedding 6" Depth		1,160.00 lf	0.500	232.00 mh	5,321	1,889	65			7.05	901	
	6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 825)		39.00 ln	0.500	19.50 mh	102.517	365	35.318			6.51	137,836	
	Crushed Stone, Bedding 6" Depth		21,190.00 cy	0.200	4,238.00 mh	89,703	6,443	43,609			8.99	141,960	
	6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 832)		14,833.00 sy	0.250	3,708.25 mh	105,585	36,375	44,911			7.05	137,793	
	Cut For 6" Dia Non-Perforated HDPE (17,658 bcy)		21,824.00 sy	0.250	4,364.60 mh	92,362	44,911	1,695			13.80	5,218	
	Backfill For 6" Dia Non-Perforated HDPE (18,186 bcy)		15,275.00 sy	0.200	3,055.00 mh	9,174	3,255	473			3.972	26,708	
	Cut For 6" Dia Perforated HDPE (12,730 bcy)		2,000.00 lf	0.150	300.00 mh	1,372	3,674	107			7.05	9,883	
	Backfill For 6" Dia Perforated HDPE (12,730 bcy)		378.00 ln	0.021	32.01 mh	767	6,168	3,155			13.80	7,525	
	6" Dia Perforated HDPE Perimeter Underdrain (EL. 763)		1,558.00 sy	0.200	758.00 mh	17,385	6,390	895			2.55	29,316	
	1081 Crushed Stone		3,790.00 lf	0.021	78.58 mh	2,588	202	202			7.05	10,850	
	Geotextile Woven Monofilament		716.00 lf	0.150	107.40 mh	1,454	5,889	3,463			13.80	10,850	
	6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)		2,648.00 sy	0.021	55.40 mh	1,882	222	222			2.55	27,659	
	1081 Crushed Stone		4,160.00 lf	0.150	624.00 mh	8,982	7,015	983			7.05	10,242	
	Geotextile Woven Monofilament		786.00 sy	0.021	15.96 mh	1,996	6,388	3,289			13.80	7,793	
	6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)		3,236.00 sy	0.021	66.55 mh	1,804	6,388	2,59			2.55	45,171	
	1081 Crushed Stone		3,925.00 lf	0.150	785.00 mh	16,004	6,522	209			7.05	16,716	
Geotextile Woven Monofilament		742.00 lf	0.021	15.06 mh	1,506	6,079	3,08			13.80	12,728		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)		3,053.00 sy	0.021	62.80 mh	25,403	10,432	1,514			2.55	42,916		
1081 Crushed Stone		5,410.00 lf	0.150	1,828.00 mh	4,394	10,808	342			7.05	15,888		
Geotextile Woven Monofilament		1,211.00 lf	0.021	181.55 mh	2,459	9,927	5,070			7.05	15,888		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)		4,986.00 sy	0.021	102.59 mh	27,935	9,311	1,433			2.55	12,082		
1081 Crushed Stone		6,060.00 lf	0.150	1,216.00 mh	4,176	10,273	943			7.05	15,371		
Geotextile Woven Monofilament		1,151.00 lf	0.021	172.65 mh	4,176	10,273	323			2.55	41,577		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)		4,737.00 sy	0.021	97.44 mh	2,336	9,602	4,912			7.05	15,391		
1081 Crushed Stone		5,900.00 lf	0.200	1,180.00 mh	27,063	9,602	1,394			13.80	15,391		
Geotextile Woven Monofilament		1,115.00 lf	0.150	167.25 mh	4,046	9,951							
6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)													
1081 Crushed Stone													



Spreadsheet Report  
KIF/0508303/FLY&BOTTM ASH

te Company

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
07	Temp Slope Protect	Cut For Ditch (3,815 bcy) D50 9" Riprap Seed Ditch Jute Matting Temp Slope Protect	6,978.00 cy 4,239.00 ln 6,978.00 sy 6,978.00 sy	1,200.000 0.320 0.012	106,279.60 hrs 5.82 cd 1,355.48 mh 83.74 mh 1,765.86 hrs 1,765.86 hrs	2,957,262 9,228 33,926 2,007 45,161 45,161	252,497 42,390 5,373 47,763 47,763	1,065,200 3,489 3,489	2,610,339 11,804 21,493 33,632 33,632	50,000 3,01 23,05 0.50 1.12	6,935,298 21,092 97,724 3,489 7,799 130,045 130,045	
08	Riprap Stilling Basin	Riprap D50 Size 9" Cut For Basin (3,582 bcy) Riprap Stilling Basin	2,344.00 ln 4,300.00 cy	0.320 1,200.000	750.08 mh 3.56 cd 980.75 hrs 950.75 hrs	18,760 5,666 24,446 24,446	23,440 23,440 23,440	-	11,838 7,274 19,112 19,112	23,05 3,01	54,038 12,960 66,998 66,998	
09	Ph 2 Initial Constr	Wet Sluice Sedimented Gypsum Quantities Initial Disposal Life Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Initial Constr	451,295.00 cy 1.40 yrs 7,370.00 lf 6,142.00 sy 1,432.00 ln 1,658.00 lf 336.00 ln	0.200 0.021 0.150 0.200 0.150	1,474.00 mh 126.34 mh 223.60 mh 331.60 mh 50.40 mh 2,206.14 hrs 2,206.14 hrs	33,805 3,029 5,414 7,605 1,248 51,073 51,073	11,895 12,229 13,315 2,688 2,899 43,237 43,237	-	6,136 421 1,865 1,380 420 10,222 10,222	7.05 2.55 13.80 7.05 13.80	51,936 15,679 20,595 11,664 4,638 104,532 104,532	
10	Rim Ditches	Cut (111,899 bcy) Rim Ditches	134,279.00 cy	375.000	358.08 cd 2,864.62 hrs 2,864.62 hrs	88,373 88,373 88,373	-	-	245,297 245,297 245,297	2.49 0.00 2.49	333,671 333,671 333,671	
11	Ph 2 Operational Cost	Stage 1 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 1 Disposal Life (Assumes Dikes & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Operational Cost	1.00 lot 255,189.00 sy 1,334,496.00 cy 4.90 yrs 11,495.00 lf 9,579.00 sy 2,328.00 ln 2,586.00 lf 524.00 ln	0.200 0.021 0.150 0.200 0.150	2,289.00 mh 4.724 349.20 mh 517.20 mh 78.60 mh 8,885.07 hrs 8,885.07 hrs	52,728 8,477 11,882 247,610 247,610	18,708 19,072 20,771 4,209 4,677 67,443 67,443	-	9,570 657 2,910 655 482,117 482,117	7.05 2.55 13.80 7.05 13.80	81,005 24,453 32,135 18,224 7,233 797,170 797,170	
12	Ph 2 Operational Cost	Stage 2 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 2 Disposal Life (Assumes Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Operational Cost	1.00 lot 263,403.00 sy 1,509,673.00 cy 5.40 yrs 11,865.00 lf 9,888.00 sy 2,403.00 ln 2,670.00 lf 941.00 ln	0.200 0.021 0.150 0.200 0.150	2,373.00 mh 203.40 mh 360.45 mh 534.00 mh 81.15 mh 9,171.28 hrs 9,171.28 hrs	54,425 4,376 8,719 12,247 1,963 255,585 255,585	19,310 19,697 2,223 4,345 4,828 69,618 69,618	-	9,878 3,004 2,223 676 497,636 497,636	7.05 2.55 13.80 7.05 13.80	83,913 25,241 33,170 18,816 7,469 822,839 822,839	
13	Ph 3 Initial Constr	Dry Ash Slack Disposal Life (Assumes Dry Stack Ash) Ph 3 Initial Constr	569,783.00 cy 1.20 yrs	1,100.000	517.98 cd 37,294.89 hrs 37,294.89 hrs	953,340 953,340 953,340	-	-	745,998 745,998 745,998	0.00 0.00	1,699,238 1,699,238 1,699,238	
14	Ph 3 Operational Cost	Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,349,180.00 sy	1,100.000	1,226.53 cd	2,257,399	-	-	1,766,199	0.00 2.98	4,023,598 4,023,598	

Spreadsheet Report  
KIF/0509303/FLY&BOTT MASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 3 Operational Cost	Stage 1 Disposal Life (Assume Dike Stack) Ph 3 Operational Cost	2.80 yrs		88,309.96 hrs 88,309.96 hrs	2,257,399 2,257,399	0 0	0 0	1,766,199 1,766,199	0 0	0.00	4,023,598 4,023,598
	Ph 3 Operational Cost	Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,504,825.00 cy	1,100,000	1,368.02 cd	2,517,818	0	0	1,969,953	0	2.98	4,487,771
	Ph 3 Operational Cost	Stage 2 Disposal Life (Assume Dry Stack) Ph 3 Operational Cost	3.20 yrs		98,497.64 hrs 98,497.64 hrs	2,517,818 2,517,818	0 0	0 0	1,969,953 1,969,953	0 0	0.00	4,487,771
	Ph 3 Operational Cost	Stage 3 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill	1.00 lot 227,106.00 cy	1,100,000	1,212.90 cd	2,232,317	0	0	1,746,575	0	0.00	3,978,891
	Ph 3 Operational Cost	Stage 3 Disposal Life (Assume Dry Stack) Ph 3 Operational Cost	2.80 yrs		87,328.73 hrs 87,328.73 hrs	2,232,317 2,232,317	0 0	0 0	1,746,575 1,746,575	0 0	0.00	3,978,891
	Ph 2 Operational Cost	Stage 3 (3 To 1 Side Slopes) Wet Sluice Gypsum Quantities	1.00 lot 227,106.00 cy	375,000	605.62 cd	149,486	0	0	414,871	0	0.00	584,337
	Ph 2 Operational Cost	Stage 3 Disposal Life (Assume Dike & Sluice Ash & Gypsum)	4.80 yrs		2,046.00 mh 175.36 mh 310.80 mh 460.40 mh 69.60 mh 7,907.39 hrs 7,907.39 hrs	46,925 4,204 7,518 10,559 1,691 220,363 220,363	16,649 16,673 18,093 3,747 4,159 60,021 60,021	2,762 2,590 1,916 683 429,061 429,061	8,516 585 1,916 683 429,061 429,061	0 0 0 0 0 0	7.05 2.55 13.80 13.80	72,091 28,601 16,222 6,432 709,445 709,445
	Ph 2 Operational Cost	Stage 4 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill	1.00 lot 189,831.00 cy	375,000	450.22 cd	111,113	0	0	308,416	0	0.00	419,529
	Ph 2 Operational Cost	Stage 4 Disposal Life (Assume Dike & Sluice Ash)	2.70 yrs		1,521.00 mh 130.37 mh 6,398.00 sy 1,540.00 in 1,711.00 in 347.00 in	34,864 3,125 5,588 7,848 1,259 163,818	12,377 12,619 1,925 1,424 3,091 44,622	6,331 435 1,925 1,424 434 318,965	6,331 435 1,925 1,424 434 318,965	0 0 0 0 0 0	2.55 13.80 13.80	33,502 16,179 21,257 12,057 4,790 527,406
	Ph 3 Operational Cost	Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 577,813.00 cy	1,100,000	525.10 cd	966,609	0	0	756,148	0	0.00	1,722,757
	Ph 3 Operational Cost	Stage 4 Disposal Life (Dry Stack Ash) Ph 3 Operational Cost	1.20 yrs		37,807.40 hrs 37,807.40 hrs	966,609 966,609	0 0	0 0	756,148 756,148	0 0	0.00	1,722,757
	Dry Fly Ash Conver	Dry Fly Ash Conversion Capital Cost Dry Fly Ash Conver	1.00 ls		hrs hrs	0 0	0 0	0 0	0 0	0 0	0.00	0
	Construct Facilities	Mobilization Admin Time (Employee proc, etc) General Clean Up Maintain Roads Drinking Water Hauling Portable Toilet Service	0.00 ls 0.00 ls 0.00 ls 0.00 ls 0.00 ls 0.00 ls 0.00 ls	400,000 256,000 600,000 6,372,000 531,000 531,000	0.00 mh 0.00 mh 0.00 mh 0.00 mh 0.00 mh 0.00 mh	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0.00 0.00 0.00 0.00 0.00 0.00	0 0 0 0 0 0
												21,400,000 21,400,000 21,400,000

Spreadsheet Report  
KIF/0509303/FL Y&BOTTMA SH

imate Company

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount
	Construct Facilities	Demobilization Construct Facilities XCONST FACILITY	0.00 Is	240.000	0.00 mh 0.00 hrs 0.00 hrs	0 0 0			0 0 0	0	0.00	0 0 0
VON MANUAL	Non-Manual	Non Manual	0.00 Is	#####	0.00 mh	0					0.00	0

Estimate Totals

Labor	15,395,971	595,341,621	hrs	
Material	1,330,600			
Subcontract	29,974,953			
Equipment	14,132,465			
Other	50,000			
	60,889,589	60,889,589		

\$ 26,30  
\$ 33,96  
\$ 5,113,378  
x .11%

Engineered Materials - PH 2				
Adjustment - Engr Materials				
	60,889,589	60,889,589		

Environmental Costs				
Adjustment Environmental				
	60,889,589	60,889,589		

Demolition Costs				
Adjustment Demolition				
	60,889,589	60,889,589		

Small Tools Expense	263,404			
Consumables & Expendables	615,830			
Office Supplies & Expense				
Subcontract Fee				
	879,234	61,768,832		

Escalation - Craft Labor	662,819			
Escalation - Subcontract	809,313			
Escalation - Subcontract Fee				
Escalation - Perm Materials				
Escalation - PLED Equipment				
Escalation - Tagged Equipment				
Escalation - Small Tools				
Escalation - Consumables				
Escalation - Non-Manual Labor				
Escalation - Office Supplies				
	1,575,548	63,344,380		

Partner Insurance (FY04)	461,879			
Partner Award Fee (FY04)	769,799			
	1,231,678	64,576,058		

FPG Proj Engr - Phase 1	2	0.000 % @ 42.00 A		
FPG Mech Engr - Phase 1	2	0.000 % @ 42.00 A		
FPG Elec Engr - Phase 1	2	0.000 % @ 42.00 A		
FPG Civil Engr - Phase 1	2	0.000 % @ 42.00 A		
FPG Syst Engr - Phase 1	2	0.000 % @ 42.00 A		
Non-TVA Engr - Phase 1	4	0.000 % @ 42.00 A		
FPG Proj Cntrl Cost - Phase 1	2	0.000 % @ 72.00 A		
FPG Proj Cntrl Sched - Phase 1	25	0.000 % @ 42.00 A		
FPG Cost Estimating - Phase 1	2	0.000 % @ 42.00 A		
Phase 1 Other/Other Org	43	0.000 % @ 42.00 A		
				64,576,101

FPG Proj Engr - Phase 2	2	0.000 % @ 42.00 A		
FPG Mech Engr - Phase 2	2	0.000 % @ 42.00 A		
FPG Elec Engr - Phase 2	2	0.000 % @ 42.00 A		
FPG Civil Engr - Phase 2	2	0.000 % @ 42.00 A		
FPG Syst Engr - Phase 2	2	0.000 % @ 42.00 A		
Non-TVA Engr - Phase 2	4	0.000 % @ 42.00 A		
FPG Proj Cntrl Cost - Phase 2	2	0.000 % @ 72.00 A		
FPG Proj Cntrl Sched - Phase 2	2	0.000 % @ 42.00 A		
FPG Cost Estimating - Phase 2	2	0.000 % @ 42.00 A		
FPG Engr Records - Phase 2	2	0.000 % @ 42.00 A		
Phase 2 Other/Other Org	22	0.000 % @ 42.00 A		
				64,576,123

FPG Proj Engr - Phase 3	2	0.000 % @ 42.00 A		
FPG Mech Engr - Phase 3	2	0.000 % @ 42.00 A		
FPG Elec Engr - Phase 3	2	0.000 % @ 42.00 A		
FPG Civil Engr - Phase 3	2	0.000 % @ 42.00 A		
FPG Syst Engr - Phase 3	2	0.000 % @ 42.00 A		
Non-TVA Engr - Phase 3	4	0.000 % @ 42.00 A		
FPG Proj Cntrl Cost - Phase 3	2	0.000 % @ 72.00 A		
FPG Proj Cntrl Sched - Phase 3	2	0.000 % @ 42.00 A		
FPG Engr Records - Phase 3	2	0.000 % @ 42.00 A		
CAD Dwg Support - Phase 3	2	0.000 % @ 42.00 A		
Phase 3 Other/Other Org	16	0.000 % @ ### A		
	38			64,576,181

\$ 562,000  
L = 65% \$ 365,300  
E = 35% \$ 196,700

206,490  
x .125  
25,811  
38,311 should be 25,811  
39,291,000  
x 32  
\$ 1,179,000

Rounding

64,576,161

64,576,161

Total

Estimate Totals

L



KIF/0509304/FLY&BOTTM ASH

**KINGSTON FOSSIL PLANT**  
**OPTION 4 - DRY ASH IN POND & GYPSUM IN POND**  
**(WITHOUT BUFFER OPTION)**

Project name KIF/0509304/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 0509304  
PCN # KIF530  
Requesting Engr Dan Smith  
Revision 4  
0  
2  
Phase Preliminary  
Estimate Type +/- 20%  
Estimate Accuracy 12/20/2004  
EST. Issue Date Capital  
Funding Type N  
Unit

All costs are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Notes

Report format

Sorted by 'Location/Activity'  
'Detail' summary





Spreadsheet Report  
KIF:0509304/FLY&BOT/TM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount				
16	Ph 3 Operational Cost	Stage 1 (3 To 1 Side Slopes)	1.00 lot								0.00	0				
		Dry Stack Ash Quantities	1,349,186.00 cy	1,100,000	1,226.53 cd	2,257,399			1,766,199			2.96	4,023,566			
		Stage 1 Disposal Life (Assume Dry Stack Area)	2.80 yrs									0.00	0			
	Ph 3 Operational Cost	Haul Distance (Round Trip)	0.50 mile									0.00	0			
		Ph 3 Operational Cost				88,309.96 hrs	2,257,399			1,766,199			4,023,566			
		15				88,309.96 hrs	2,257,399			1,766,199			4,023,566			
	17	Ph 3 Operational Cost	Stage 2 (3 To 1 Side Slopes)	1.00 lot								0.00	0			
			Dry Stack Ash Quantities	1,504,824.00 cy	1,100,000	1,368.02 cd	2,517,818			1,969,953			2.98	4,487,771		
			Stage 2 Disposal Life (Assume Dry Stack)	3.20 yrs									0.00	0		
		Ph 3 Operational Cost	Haul Distance (Round Trip)	0.50 mile									0.00	0		
			Ph 3 Operational Cost				98,497.64 hrs	2,517,818			1,969,953			4,487,771		
			16				98,497.64 hrs	2,517,818			1,969,953			4,487,771		
		17	Ph 2 Operational Cost	Wet Cast Gypsum Dike Fill	227,106.00 cy	375,000	605.62 cd	145,466					2.49	564,337		
				Wet Sluice Gypsum Quantities	1,344,916.00 cy									0.00	0	
				Stage 3 Disposal Life (Assume Dike & Sluice Gypsum)	4.80 yrs									0.00	0	
18			Ph 3 Operational Cost	Perforated Pipe ADS Drain Tube, 6" Diameter	10,230.00 lf	0.200	2,046.00 mh	46,925	16,649				7.05	72,091		
				Geotextile For Underdrain	8,625.00 sy	0.021	175.35 mh	4,204	16,973					2.55	16,762	
				#57 Stone For Outlet Pipe Bedding (135 pcf)	2,072.00 in	0.150	310.80 mh	7,518	18,493					13.80	28,601	
			19	Ph 2 Operational Cost	Solid Outlet Pipe ADS Drain 6" Diameter	2,392.00 lf	0.200	469.49 mh	10,559	2,747				7.05	16,222	
					#57 Stone For Outlet Pipe Bedding (135 pcf)	466.00 in	0.150	69.90 mh	1,691	4,159					13.80	6,432
					Ph 2 Operational Cost			7,907.39 hrs	220,363	60,021			429,061			709,445
	20			Ph 3 Operational Cost	Stage 3 (3 To 1 Side Slopes)	1.00 lot								0.00	0	
					Dry Stack Ash Quantities	1,334,186.00 cy	1,100,000	1,212.90 cd	2,232,317				1,746,575		2.93	3,978,891
					Stage 3 Disposal Life (Assume Dry Stack Area)	2.80 yrs									0.00	0
				Ph 3 Operational Cost	Haul Distance (Round Trip)	0.50 mile									0.00	0
					Ph 3 Operational Cost				87,328.74 hrs	2,232,317			1,746,575			3,978,891
					18				87,328.74 hrs	2,232,317			1,746,575			3,978,891
		20		Ph 2 Operational Cost	Stage 4 (3 To 1 Side Slopes)	1.00 lot								0.00	0	
					Wet Cast Gypsum Dike Fill	168,631.00 cy	375,000	450.22 cd	111,113						2.49	419,529
					Wet Sluice Gypsum Quantities	702,654.00 cy									0.00	0
Ph 2 Operational Cost				Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum)	2.70 yrs									0.00	0	
				Perforated Pipe ADS Drain Tube, 6" Diameter	7,605.00 lf	0.200	1,521.00 mh	34,884	12,377					7.05	53,592	
				Geotextile For Underdrain	6,338.00 sy	0.021	130.37 mh	3,125	12,619					2.55	16,179	
25			Ph 3 Operational Cost	#57 Stone For Outlet Pipe Bedding (135 pcf)	1,540.00 in	0.150	231.00 mh	5,588	13,745					13.80	21,257	
				Solid Outlet Pipe ADS Drain 6" Diameter	1,711.00 lf	0.200	342.20 mh	7,848	2,785					7.05	12,057	
				#57 Stone For Outlet Pipe Bedding (135 pcf)	347.00 in	0.150	52.05 mh	1,259	3,097					13.80	4,790	
	Ph 3 Operational Cost		Ph 2 Operational Cost				5,878.36 hrs	163,818	44,622					527,406		
			19				5,878.36 hrs	163,818	44,622					527,406		
			20				5,878.36 hrs	163,818	44,622					527,406		
	25		Ph 3 Operational Cost	Stage 4 (3 To 1 Side Slopes)	1.00 lot								0.00	0		
				Dry Stack Ash Quantities	577,613.00 cy	1,100,000	525.10 cd	965,441				756,148		2.98	1,722,589	
				Stage 4 Disposal Life (Assume Dike & Dry Stack Ash)	1.20 yrs									0.00	0	
		Ph 3 Operational Cost	Haul Distance (Round Trip)	0.50 mile									0.00	0		
			Ph 3 Operational Cost				37,807.40 hrs	965,441			756,148			1,722,589		
			20				37,807.40 hrs	965,441			756,148			1,722,589		
		Dry Fly Ash Conver	Dry Fly Ash Conversion Capital Cost		1.00 ls					25,000,000			25,000,000.00	25,000,000		
			Dry Fly Ash Conver							25,000,000			25,000,000.00	25,000,000		
			25							25,000,000			25,000,000.00	25,000,000		
xCONST FACILITY		Construct Facilities	Mobilization	0.00 ls	400,000	0.00 mh	0					0.00	0			
			Admin Time (Employee proc, etc)	0.00 ls	256,000	0.00 mh	0						0.00	0		
			25										0.00	0		

Spreadsheet Report  
 KIF/0509304/FLY&BOTTW ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount
	Construct Facilities											
		General Clean Up	0.00 Is	600.000	0.00 mh	0			0	0	0.00	0
		Maintain Roads	0.00 Is	6,372.000	0.00 mh	0			0	0	0.00	0
		Drinking Water	0.00 Is	531.000	0.00 mh	0			0	0	0.00	0
		Hauling	0.00 Is	531.000	0.00 mh	0			0	0	0.00	0
		Portable Toilet Service	0.00 Is						0		0.00	0
		Demobilization	0.00 Is	240.000	0.00 mh	0			0	0	0.00	0
		Construct Facilities			0.00 hrs	0			0	0		0
		xCONST FACILITY			0.00 hrs	0			0	0		0
zNON MANUAL	Non-Manual	Non Manual	0.00 Is	#####	0.00 mh	0					0.00	0

Estimate Totals

\$25.43  
32.37

Labor 22,549,179  
Material 849,673  
Subcontract 26,131,809  
Equipment 19,901,758  
Other 50,000  
69,482,219

Engineered Materials - Ph 2  
Adjustment - Engr Materials

867,670.173 hrs  
614,817.004 hrs

100.000 %  
(100.000) %

C C

Environmental Costs  
Adjustment Environmental

69,482,219

100.000 %  
(100.000) %

C C

Demolition Costs  
Adjustment Demolition

69,482,219

100.000 %  
(100.000) %

C C

Small Tools Expense 390,452  
Consumables & Expendables 901,867  
Office Supplies & Expense  
Subcontract Fee

70,774,538

0.450 \$/hr  
4.000 %  
3.000 %

H C C C

Escalation - Craft Labor 1,014,713  
Escalation - Subcontract 705,553  
Escalation - Subcontract Fee  
Escalation - Perm Materials 14,444  
Escalation - HED Equipment  
Escalation - Tagged Equipment  
Escalation - Small Tools 29,501  
Escalation - Consumables 45,098  
Escalation - Non-Manual Labor  
Escalation - Office Supplies

72,563,947

4.500 %  
2.700 %  
0.350 %  
1.700 %  
2.000 %  
2.000 %  
0.034 \$/hr  
0.200 %  
3.400 %  
0.200 %

C C C C C C H C C C

Partner Insurance (FY04) 676,475  
Partner Award Fee (FY04) 1,127,459  
1,803,934

74,387,881

3.000 %  
5.000 %

C C

FPG Proj Engr - Phase 1 4  
FPG Mech Engr - Phase 1 4  
FPG Elec Engr - Phase 1 4  
FPG Civil Engr - Phase 1 4  
FPG Syst Engr - Phase 1 4  
Non-TVA Engr - Phase 1 6  
FPG Proj Cntrl Cost - Phase 1 4  
FPG Proj Cntrl Sched - Phase 1 36  
FPG Cost Estimating - Phase 1 4  
Phase 1 Other/Other Org 70

0.000 % @ 42.00 A  
0.000 % @ 42.00 A  
0.000 % @ 42.00 A  
0.000 % @ 42.00 A  
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FPG Proj Engr - Phase 2 4  
FPG Mech Engr - Phase 2 4  
FPG Elec Engr - Phase 2 4  
FPG Civil Engr - Phase 2 4  
FPG Syst Engr - Phase 2 4  
Non-TVA Engr - Phase 2 6  
FPG Proj Cntrl Cost - Phase 2 4  
FPG Proj Cntrl Sched - Phase 2 4  
FPG Cost Estimating - Phase 2 4  
FPG Engr Records - Phase 2 4  
Phase 2 Other/Other Org 42

0.000 % @ 42.00 A  
0.000 % @ 42.00 A  
0.000 % @ 42.00 A  
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FPG Proj Engr - Phase 3 4  
FPG Mech Engr - Phase 3 4  
FPG Elec Engr - Phase 3 4  
FPG Civil Engr - Phase 3 4  
FPG Syst Engr - Phase 3 4  
Non-TVA Engr - Phase 3 6  
FPG Proj Cntrl Cost - Phase 3 4  
FPG Proj Cntrl Sched - Phase 3 4  
FPG Engr Records - Phase 3 4  
CAD Dwg Support - Phase 3 26  
Phase 3 Other/Other Org 64

0.000 % @ 42.00 A  
0.000 % @ 42.00 A  
0.000 % @ 42.00 A  
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L L L L L L L L L L L L L

#4,079,694  
X 11%

449,000

L=65% \$292,000

E=35% \$157,000

162,452

.125

20,307

\$40,746,283  
X 370

1,222,388

Rounding

74,388,857

Total 74,388,057

Estimate Totals

L

Spreadsheet Report  
KIF/0509305/FLY&BOTTM ASH

KINGSTON FOSSIL PLANT  
OPTION 5 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)

Project name  
KIF/0509305/FLY&BOTTM ASH

Engineer  
DAN SMITH

Estimator  
C. L. Toney

Labor rate table  
KIF 40 2004

Equipment rate table  
TVA Equipment

Ash

KIF

0509305

KIF530

Dan Smith

5

0

2

Preliminary

+/- 20%

12/20/2004

Capital

N

Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed, Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by 'Location/Activity'  
Detail' summary



Spreadsheet Report  
KJF/0509305/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
01	Erosion Controls/S P	Erect Sill Fence	1,000.00 lf	0.069	68.57 mh	1,675	484	-	311	-	2.48	2,480
		Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.016	68.80 mh	1,649	5,676	-	172	-	1.74	7,497
		D50 # Riprap	5,215.00 ln	0.320	1,668.80 mh	41,737	52,150	-	26,338	-	23.05	120,225
		3" Stone, 1" Thick To Prevent Erosion (Assume 105 pct)	2,004.00 ln	0.096	192.38 mh	5,089	17,886	-	3,009	-	12.96	23,961
		Sig 1/8 CMP Mill Spillway (1/2 of 48" Dia Half-Round Pipe) 43 bcy	4.00 ea	166.084	664.33 mh	17,185	19,860	-	2,740	-	9,846.25	39,785
		Cul. Excavation For Placement Of 48" Dia Half-Round Pipe) 43 bcy	52.00 cy	0.400	20.80 mh	503	173	-	173	-	13.01	676
		Fill With 1032 Compacted/Crushed Stone	93.00 ln	0.400	37.20 mh	930	781	-	248	-	24.82	2,308
		30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	14,693	26,000	-	3,610	-	44.30	44,304
		Bedding For 30" CMP, 6" Thick	135.00 lf	0.500	67.50 mh	1,633	1,262	-	225	-	23.12	3,121
		30" Diameter CMP Stand Pipe (4Pipes @ 6 Stages w/30" Per Stage)	720.00 lf	0.750	540.00 mh	13,959	18,720	-	2,858	-	48.51	34,923
		D50 # Riprap Outlet For Metal Spillway	53.00 ln	0.320	16.96 mh	424	530	-	266	-	23.05	1,222
		Cast-in-Place Concrete Metal Anti-Seep Collar	16.00 ea	16.000	256.00 mh	4,800	4,800	-	1,540	-	786.12	12,610
		Erosion Controls/S P	16.00 ea	16.000	4,201.35 hrs	105,759	148,168	-	41,205	-	295.132	295,132
02	Seed/Mulch	Seed/Mulch Disturbed Areas	26.00 ac		0.00 hrs	0	0	62,920	-	-	2,420.00	62,920
		Seed/Mulch			0.00 hrs	0	0	62,920	-	-	0	62,920
03	South Access Road	1032 Crushed Stone Base, 6" Depth	3,520.00 ln	0.120	422.40 mh	11,545	31,416	-	4,066	-	13.36	47,027
		South Access Road			422.40 hrs	11,545	31,416	-	4,066	-	47,027	47,027
		Perimeter Road			422.40 hrs	11,545	31,416	-	4,066	-	47,027	47,027
04	Perimeter Road	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 ln	0.120	826.20 mh	22,582	61,449	-	7,953	-	13.36	91,983
		Perimeter Road			826.20 hrs	22,582	61,449	-	7,953	-	91,983	91,983
		Perimeter Road			826.20 hrs	22,582	61,449	-	7,953	-	91,983	91,983
05	Instl Dms/Swan Pond	6" Dia Pipe Bollards	24.00 ea	1.500	36.00 mh	871	4,800	-	240	-	246.29	5,911
		PVC Monitoring Wells	6.00 ea					12,000	-	-	2,000.00	12,000
		6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.200	94.80 mh	2,174	771	-	395	-	7.05	3,340
		Crushed Stone, Bedding 6" Depth	16.00 ln	0.500	8.00 mh	194	150	-	27	-	23.12	370
		6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 780)	520.00 lf	0.200	104.00 mh	2,385	848	-	433	-	7.05	3,664
		Crushed Stone, Bedding 6" Depth	18.00 ln	0.500	9.00 mh	218	168	-	30	-	23.12	416
		6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 792)	481.00 lf	0.200	96.20 mh	2,252	799	-	409	-	7.05	3,460
		Crushed Stone, Bedding 6" Depth	17.00 ln	0.500	8.50 mh	206	159	-	28	-	23.12	393
		6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 810)	1,282.00 lf	0.200	256.40 mh	5,881	2,086	-	1,067	-	7.05	9,034
		Crushed Stone, Bedding 6" Depth	43.00 ln	0.500	21.50 mh	520	402	-	72	-	23.12	964
		6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.200	243.60 mh	5,957	1,982	-	1,014	-	7.05	8,583
		Crushed Stone, Bedding 6" Depth	41.00 ln	0.500	20.50 mh	496	383	-	66	-	23.12	831
		6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 825)	1,160.00 lf	0.200	232.00 mh	5,413	1,920	-	982	-	7.05	8,315
		Crushed Stone, Bedding 6" Depth	40.00 ln	0.500	20.00 mh	484	374	-	67	-	23.12	825
		6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 832)	1,160.00 lf	0.200	232.00 mh	5,413	1,920	-	982	-	7.05	8,315
		Crushed Stone, Bedding 6" Depth	39.00 ln	0.500	19.50 mh	472	365	-	65	-	23.12	815
		Cul For 6" Dia Non-Perforated HDPE (17.658 bcy)	21,180.00 cy	0.200	4,236.00 mh	102,517	472	-	35,318	-	6.51	137,836
		Backfill For 6" Dia Non-Perforated HDPE (12.361 bcy)	14,833.00 cy	0.250	3,708.25 mh	89,703	43,609	-	43,609	-	8.99	133,312
		Cul For 6" Dia Perforated HDPE (18.168 bcy)	21,824.00 cy	0.200	4,364.80 mh	105,855	36,575	-	36,575	-	6.51	141,960
		Backfill For 6" Dia Perforated HDPE (12,730 bcy)	15,276.00 cy	0.250	3,819.00 mh	92,382	44,911	-	44,911	-	8.99	137,293
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 763)	2,000.00 lf	0.200	400.00 mh	8,174	3,255	-	1,665	-	7.05	14,094
		1081 Crushed Stone	378.00 ln	0.150	56.70 mh	1,372	3,374	-	473	-	13.80	5,218
		Geotextile Woven Monofilament	1,596.00 sy	0.021	32.01 mh	767	3,098	-	107	-	2.55	3,972
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,780.00 lf	0.200	756.00 mh	17,385	5,188	-	3,155	-	7.05	26,708
		1081 Crushed Stone	716.00 ln	0.150	107.40 mh	2,598	6,390	-	895	-	13.80	9,883
		Geotextile Woven Monofilament	2,948.00 sy	0.021	60.64 mh	1,454	5,969	-	202	-	2.35	7,525
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,166.00 lf	0.200	833.20 mh	19,082	7,015	-	3,463	-	7.05	29,316
		1081 Crushed Stone	786.00 ln	0.150	117.90 mh	2,852	7,015	-	983	-	13.80	10,850
		Geotextile Woven Monofilament	3,236.00 sy	0.021	66.56 mh	1,596	6,443	-	222	-	2.55	8,251
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	742.00 lf	0.200	148.40 mh	18,004	6,388	-	3,268	-	7.05	27,659
		1081 Crushed Stone	3,053.00 sy	0.021	63.80 mh	2,682	6,922	-	928	-	13.80	10,242
		Geotextile Woven Monofilament	6,410.00 lf	0.021	128.20 mh	2,906	6,079	-	208	-	2.55	7,793
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	1,211.00 lf	0.200	242.20 mh	9,514	10,808	-	5,336	-	7.05	45,171
		1081 Crushed Stone	4,986.00 ln	0.021	102.56 mh	2,459	9,927	-	342	-	13.80	16,716
		Geotextile Woven Monofilament	6,090.00 lf	0.021	121.80 mh	2,793	9,911	-	5,070	-	2.55	12,728
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	1,151.00 lf	0.150	172.65 mh	4,176	10,273	-	1,439	-	7.05	42,916
		1081 Crushed Stone	4,737.00 sy	0.021	97.44 mh	2,336	9,431	-	439	-	13.80	15,888
		Geotextile Woven Monofilament	5,900.00 lf	0.020	118.00 mh	27,063	9,602	-	4,912	-	2.55	41,577
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	1,115.00 lf	0.150	167.25 mh	4,046	9,951	-	1,394	-	7.05	41,577

Spreadsheet Report  
KIF/0509305/FLY&BOTTMAH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
05	Instl Drms/Swan Pond	Geotextile Woven Monofilament	4,589.00 sy	0.021	94.40 mh	2,283	9,137	-	-	-	-	2.55	11,714
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200	1,160.00 mh	26,505	9,440	4,829	-	-	-	7.05	40,673
		1081 Crushed Stone	1,095.00 ln	0.150	164.40 mh	3,977	1,370	1,370	-	-	-	13.80	15,128
		Geotextile Woven Monofilament	4,511.00 sy	0.021	92.78 mh	2,224	8,981	309	-	-	-	2.55	11,515
		12" Dia Force Main HDPE Perimeter Underdrain (EL. 763)	2,580.00 lf	0.250	645.00 mh	14,793	12,868	2,688	-	-	-	11.78	30,349
		1081 Crushed Stone	575.00 ln	0.150	86.25 mh	2,089	5,132	719	-	-	-	13.80	7,937
		Submersible Pumping Station Equipment Package	1.00 ea	96.000	96.00 mh	1,905	5,000	205	-	-	-	7,109.60	7,110
		60" Diameter Catch Basin (Precast)	1.00 ea	60.000	60.00 mh	1,521	3,000	488	-	-	-	4,989.02	4,989
		Geotextile Woven Monofilament	2,293.00 sy	0.021	47.17 mh	1,131	4,585	2.95	-	-	-	2.95	5,652
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	54.00 cy	1.000	54.00 mh	1,273	2,808	488	-	-	-	84.64	4,571
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000	8.00 mh	255	78	78	-	-	-	217.09	434
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000	8.00 mh	255	78	78	-	-	-	217.09	434
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	23.00 sy	1.000	23.00 mh	542	1,196	208	-	-	-	84.64	1,947
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000	8.00 mh	255	78	78	-	-	-	217.09	434
		Seal Weir 1/4" Thick A-38 Steel Plate	36.00 lf	0.480	18.24 mh	418	67	67	-	-	-	32.77	1,245
		Excavation For 24" Dia Pipe (25 boy)	30.00 cy	0.320	9.60 mh	145	75	75	-	-	-	7.34	220
		Backfill For 24" Diameter CMP (17 boy)	21.00 cy	0.500	6.72 mh	163	163	163	-	-	-	15.50	328
		Bedding For 24" Culvert	4.00 ln	0.600	2.40 mh	48	7	7	-	-	-	23.12	92
		35" CMP Storm Drain	72.00 lf	0.500	43.20 mh	1,059	2,654	260	-	-	-	55.30	3,982
		Excavation For 36" Dia Pipe (67 boy)	81.00 cy	0.320	26.72 mh	382	203	203	-	-	-	7.34	594
Backfill For 36" Diameter CMP (47 boy)	57.00 cy	0.500	18.24 mh	441	15	15	-	-	-	15.50	884		
Bedding For 36" Culvert	9.00 ln	0.500	4.50 mh	109	34	34	-	-	-	23.12	208		
Anchor Trench - Excavate into Borrow Area (8,650 boy)	10,380.00 cy	0.200	2,076.00 mh	50,218	-	26,950	-	-	-	7.34	76,168		
Upper & Lower LDPE Geomembrane	110,888.00 sy	0.050	5,534.40 mh	132,676	243,514	13,836	-	-	-	3.52	390,026		
Sediment Trap (3,630 boy)	4,358.00 cy	0.040	174.24 mh	4,880	4,880	4,880	-	-	-	2.15	9,372		
Instl Drms/Swan Pond			35,789.66 hrs	853,837	486,927	269,959	-	-	-	12,000	259,959	1,612,723	
					853,837	486,927		12,000	259,959			1,612,723	
06	Drig CellulP1 Opr Cost		1.00 lot								0.00	0	
	EV. 810 To Elev. 866		622,416.00 cy	1,300,000	974,301	-	-	-	-	-	3.09	1,922,327	
	Bottom Ash Dike Fill		4,853,654.00 cy			948,026	-	7,430,944	-	-	1.53	7,430,944	
	Dredge		678,849.00 cy	375,000	446,773	-	-	-	-	-	2.49	1,685,874	
	Wet Dip And Stack										0.00	0	
	Disposal Life (Assume Dike & Dredge Ash)		12.90 yr			1,421,074	-	7,430,944	-	-	0.00	11,040,145	
	Drig CellulP1 Opr Cost							7,430,944				11,040,145	
07	Gypsum Stk Peninsula		1.00 lot								0.00	0	
	Clear And Grub		90.00 ac	72,000	6,480.00 mh	162,836	-	-	157,788	-	3,582.49	320,624	
	Clear And Grub		129,000.00 cy	0.020	2,580.00 mh	66,706	-	-	80,625	-	1.14	147,331	
	Strip 1 ft Vegetation And Topsoil - Spot At Stockpile				9,060.00 hrs	229,542	-	-	238,413	-		467,955	
	Gypsum Stk Peninsula				9,060.00 hrs	229,542	0	-	238,413	-		467,955	
08	Erosion Controls		4,900.00 lf	0.068	335.98 mh	6,209	2,421	-	-	-	2.48	12,153	
	Ered Silt Fence (Trench Bottom Of Fence, 10% Hay Bales)		2,400.00 cy	300,000	3,000	2,688	-	-	-	-	2.15	5,164	
	Cut For Stormwater Runoff Pond (2,000 boy)		2,760.00 cy	383,333	7,200	3,228	-	-	-	-	2.00	5,530	
	Cleanout Stormwater Runoff Pond (2,300 boy)		14,400.00 cy	1,904,000	7,960	19,124	-	-	-	-	3.01	43,363	
	Fill For Stormwater Runoff Pond (12,000 boy)		4,300.00 ln	0.200	860.00 mh	21,509	43,000	-	24,240	-	19.21	82,589	
	Riprap For Stormwater Runoff Pond		20.00 ln	0.500	10.00 mh	242	33	-	16,079	-	23.54	1,771	
	Pipe Bedding		6.00 lf	2.000	12.00 mh	283	196	-	33	-	361.90	2,171	
	72" Dia. CMP For Outlet Structure		7.00 lf	1.091	7.64 mh	180	920	-	44	-	1,144	2,171	
	48" Dia. CMP For Riser For Outlet Structure		150.00 lf	0.620	93.00 mh	2,193	7,280	-	531	-	65.70	10,005	
	48" Dia. CMP Outlet Pipe (Pinnacle Spillway)		3.00 ea	1.000	3.00 mh	63	15	-	76	-	25.66	76	
	Cul. Holes In Riser		4.00 cy	10,000	1,087	809	103	-	499.70	-	499.70	2,061.0	
	Composite Concrete For Riser Base (Assume 7' x 7' x 2')		4.00 cy	75,000	14,273	4,991	1,346	-	2,844.23	-	2,844.23	20,610	
	Anti-Sleep Collars (Assume Concrete)		7.00 ea		2,763.38 hrs	61,436	50,762	-	50,762	-		185,274	
	Erosion Controls				2,763.38 hrs	73,077	61,436	-	50,762	-		185,274	
09	Roads		2,400.00 cy	1,904,000	1,260	2,565	-	-	-	-	2.34	5,622	
	Bottom Ash (South Access Road)		2,900.00 ln	0.120	348.00 mh	9,512	25,883	-	3,057	-	13.36	38,744	
	Crushed Stone Base (South Access Road)		340.00 ln	0.120	40.80 mh	1,115	3,035	-	3,350	-	13.36	4,542	
	Crushed Stone Base (Permanent Parking Lot Paved Stone)				479.56 hrs	13,192	28,917	-	6,799	-		48,908	
	Roads				479.56 hrs	13,192	28,917	-	6,799	-		48,908	
10	Fencing		200.00 lf					4,100			20.50	4,100	
	New Fencing (Including Grounding)		1.00 ea					360			360.00	360	
	Personnel Swinging Gate												

Location	Activity	Description	Takeoff Quantity	Unit	Material	Productivity	Quantity	Unit	Material	Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
11	Fencing	Sliding Gate, 20 Ft Wide, With Motorized Operator Fencing	1.00 ea				0.00 hrs				17,000.00			17,000.00	17,000
	Seed/Mulch	Seed/Mulch Disturbed Areas	25.00 ac				0.00 hrs				60,500			2,420.00	60,500
	Borrow Area Develop	Disc Future Borrow Area (Assumed For Compacted Clay Material)	20.00 ac				53.33 hrs			46,464				2,323.20	46,464
		Seed / Perimeter / Lime Future Borrow Area	20.00 ac				53.33 hrs			46,464				2,323.20	46,464
		Borrow Area Develop					53.33 hrs			0				0	48,976
12															
13	Gypsum Disp Facility	Disposal Facility Construction	1.00 lot											0.00	0
		Cut And Fill Balance (189,718 bcy)	227,663.00 cy				81.31 cd			205,593				2.05	466,189
		Cut & Spoil Select Cut For Future 1 Ft Clay Layer In Final Cover	145,000.00 cy				76.16 cd			139,946				2.29	332,320
		Rinsep For Ditch	23,500.00 lf				4,700.00 mh			117,547				16.21	451,352
		Ditch For Piles (24' wide x 2' deep)	7,300.00 lf				320.03 mh			9,169				2.98	21,821
		Geotextile (If Required Is Used)	19,500.00 sy				292.50 mh			7,076				1.73	33,644
		Perimeter Road Surfacing - Crushed Stone	2,400.00 cy				1.26 cd			2,565				2.34	5,622
		Perimeter Road Surfacing - Crushed Stone	2,900.00 cy				348.00 mh			3,350				13.36	38,744
		Compacted Clay Liner, 6" Lifts (339,000 bcy)	405,800.00 cy				16,128.00 mh			857,182				4.78	1,943,690
		Drainage Layer (1 Ft Thick) For Liner (No. 97 Stone)	169,000.00 in				0.996			426,634				12.54	2,106,634
		Geotextile For Underdrain Pipe	5,700.00 sy				0.011			7,481				1.60	9,129
		8" Dia. HDPE SDR 17 Perforated Pipe	5,400.00 lf				159.85 mh			29,352				7.05	45,106
		8" Dia. HDPE Standard Fillings	85.00 ea				10.00 mh			400				12.17	609
		Concrete Anchors For Underdrain Piping	85.00 ea				1,062.50 mh			28,685				489.37	41,597
		Profilrol Subgrade	70.00 ac				10.00 cd			7,140				158.14	11,140
		Gypsum Disp Facility					66,392.74 hrs			1,841,961				1,922.873	5,507,598
							66,392.74 hrs			1,742,761				1,922.873	5,507,595
14	Gyp On Peninsula Cst														
		Cut For Underdrain System	4,407.00 cy				0.200			21,321				6.51	28,666
		6" Dia Perforated HDPE Perimeter Underdrains	59,481.00 lf				0.200			272,665				7.05	419,233
		Fill For Underdrain System	3,525.00 cy				0.250			21,317				8.99	31,681
		1081 Crushed Stone, 6" Depth (110 pct)	3,272.00 in				0.150			11,972				13.80	45,165
		Cut For Lateral Outlet Pipes	351.00 cy				0.200			2,666				6.51	3,584
		6" Dia Mon. Perforated HDPE Lateral Outlet Pipes	7,436.00 lf				0.200			34,109				7.05	52,401
		Fill For Lateral Outlet Pipes	441.00 cy				0.250			2,667				8.99	3,963
		1081 Crushed Stone, 6" Depth (110 pct)	409.00 in				0.150			1,464				13.80	5,648
		Gypsum Disposal Stack (Wet Sluice)	5,535,653.00 cy											0.00	0
		Wet Cast Gypsum Gypsum Dike	1,011,347.00 cy				375.000			665,601				2.49	2,513,103
		Cut Rim Ditches	114,575.00 cy				305.53 cd			75,406				2.49	284,708
		Life Of Gypsum Disposal Stack	20.00 yrs											0.00	0
		Allowance For Karst Geologic Features	1.00 ls											0.00	0
		Addition Geotechnical Investigation	1.00 ls											0.00	0
		Gyp On Peninsula Cst					39,940.32 hrs			1,109,329				2,137,046	100,000
							39,940.32 hrs			1,109,329				2,137,046	340,000
										141,777				100,000.00	100,000
										141,777				3,728,161	3,728,161
														3,728,161	3,728,161
15	Construction Parking														
		Shl Fence	1,000.00 lf				0.020			442				0.76	757
		Cut And Fill Balance (500 bcy)	600.00 cy				0.21 cd			542				2.05	1,229
		Cut & Spoil Additional Material	1,400.00 in				1,804.000			385				2.29	917
		Crushed Stone Base	1,400.00 in				0.120			4,592				13.36	18,704
		Construction Parking					220.30 hrs			5,961				3.09	471,665
							220.30 hrs			5,961				3.09	94,332
										47,811				20.00	338,400
										62,440				6.47	82,680
										256,114				3.09	505,321
17	Ph 2 Base Construct														
		Base Layers	1.00 lot											0.00	0
		Cut For Dredge Cell (288 500 bcy)	322,200.00 cy				0.040			360,928				2.15	693,220
		Compacted Fly Ash Base (Fill)	579,650.00 cy				1,300.000			697,965				3.09	1,771,714
		Profilrol Subgrade	177,100.00 sy				28,111.100			4,920				0.04	7,018
		2.5" Thick Bottom Ash Layer	152,717.00 cy				1,900.000			239,055				3.09	471,665
		0.5" Thick Fly Ash Filter Layer	30,543.00 cy				1,900.000			47,811				3.09	94,332
		18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	177,100.00 sy				1,400.000			62,440				20.00	338,400
		Ratio Top Fly Ash Layer	177,100.00 sy				1,400.000			62,440				6.47	82,680
		Bottom Ash Dike Fill	163,614.00 cy				1,300.000			256,114				3.09	505,321

Spreadsheet Report  
KIF/0509305/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount		
18	Ph 2 Base Construct	1.0' Layer Of Bottom Ash	61,087.00 cy	1,300,000	46.99 cd	95,623	-	-	-	93,044	-	188,667		
		Geosynthetic Clay Liner	183,260.00 sy	0.026	4,764.76 mh	114,276	432,952	-	-	-	11,912	-	559,089	
		4" Diameter Perforated PVC Pipe (Underdrains) SDR 7.5	28,062.00 lf	0.070	1,895.74 mh	41,873	7,609	-	-	-	7,609	-	89,740	
		Trenching For The Drain System (2" Dia Underdrains), 966' boy	1,160.00 cy	0.200	232.00 mh	5,612	-	-	-	-	-	-	7,546	
		Slip Existing 1 Soil Cover (Phase 1 Expansion), 19,133' boy	22,960.00 cy	300,000	28.70 cd	11,873	-	-	-	-	-	-	26,510	
		Anchor Trench Cut	1,306.00 cy	0.200	6.318	261.20 mh	9,914	-	-	-	-	-	9,983	
		2.0' Thick Bottom Ash Blanket Drain	1,242.00 cy	0.320	397.44 mh	9,614	-	-	-	-	-	-	13,295	
		1.0' Thick Filter Drain Ash Layer	24,640.00 cy	1,300,000	18.55 cd	38,570	-	-	-	-	-	-	76,100	
		Geomembrane	36,960.00 sy	0.050	1,848.00 mh	4,302	81,312	-	-	-	-	-	130,234	
		Perforated Pipe ADS Drain Tube, 6" Diameter	4,121.00 lf	0.021	86.27 mh	2,032	8,205	-	-	-	-	-	34,854	
		Geotextile For Underdrain	1,001.00 lf	0.150	150.15 mh	3,632	8,534	-	-	-	-	-	13,817	
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,236.00 lf	0.200	247.20 mh	5,670	2,012	-	-	-	-	-	8,710	
		Solid Outlet Pipe ADS Drain, 6" Diameter	250.00 lf	0.150	37.50 mh	907	2,231	-	-	-	-	-	3,451	
		#57 Stone For Outlet Pipe Bedding (135 pcf)	10,000 lf	0.200	2,000.00 mh	1,385	492	-	-	-	-	-	2,128	
		8" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 760)	15.00 lf	0.500	7.50 mh	121	94	-	-	-	-	-	231	
		1081 Crushed Stone, Bedding 6" Depth	1,512.00 lf	0.200	302.40 mh	6,936	2,461	-	-	-	-	-	10,655	
		1081 Crushed Stone	286.00 lf	0.500	143.00 mh	3,459	2,674	-	-	-	-	-	6,611	
Geotextile Woven Monofilament	1,176.00 sy	0.021	24.19 mh	580	2,341	-	-	-	-	-	3,002			
Cut For Underdrain System	224.00 cy	0.200	44.80 mh	1,084	373	-	-	-	-	-	1,457			
Backfill For Underdrain System	168.00 cy	0.250	42.00 mh	1,016	484	-	-	-	-	-	1,510			
Certification	1.00 ls					-	-	31,500	-	-	31,500	31,500		
QA/QC For Construction Of Disposal Facility	1.00 ls					-	-	457,884	-	-	457,884	457,884		
Ph 2 Base Construct					83,395.31 hrs	2,305,618	592,014	796,284	1,970,040	-	457,884	5,695,456		
17					63,395.37 hrs	2,305,618	592,014	796,284	1,970,040	-	457,884	5,695,456		
19	Temp Slope Protect	Cut For Ditch (5.816' boy)	6,976.00 cy	1,200,000	5.82 cd	9,228	-	-	-	-	-	3.01	21,032	
		D50 8" Riprap	4,239.00 sy	0.320	1,356.48 mh	33,926	42,390	-	-	-	-	-	97,724	
		Seed Ditch	6,976.00 sy	0.012	83.74 mh	2,007	5,373	-	-	-	-	-	3,489	
		Julie Matting	6,976.00 sy		1,765.86 hrs	45,161	47,763	-	-	-	-	-	7,799	
		Temp Slope Protect			1,765.86 hrs	45,161	47,763	-	-	-	-	-	130,045	
		18											130,045	
		Riprap Stilling Basin											130,045	
		Riprap D50 Size 9"	2,344.00 lf	0.320	750.08 mh	18,760	23,440	-	-	-	-	-	23.05	54,038
		Cut For Basin (3.582' boy)	4,300.00 cy	1,200,000	3.58 cd	5,686	-	-	-	-	-	-	3.01	12,960
		Riprap Stilling Basin											66,998	
19											66,998			
20	Ph 2 Initial Const	Dredge Ash	451,295.00 cy						690,933	-	-	1.53	690,933	
		Initial Disposal Life	0.90 yrs									0.00	0	
		Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	33,685	11,985	-	-	-	-	-	51,836	
		Geotextile For Underdrain	6,142.00 sy	0.021	126.34 mh	3,029	12,229	-	-	-	-	-	15,679	
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,492.00 lf	0.150	223.80 mh	5,414	13,316	-	-	-	-	-	20,995	
		Solid Outlet Pipe ADS Drain, 6" Diameter	1,658.00 lf	0.200	331.60 mh	8,905	2,698	-	-	-	-	-	11,684	
		#57 Stone For Outlet Pipe Bedding (135 pcf)	336.00 lf	0.150	50.40 mh	1,219	2,999	-	-	-	-	-	4,639	
		Ph 2 Initial Const							690,933	-	-	-	795,465	
		20											795,465	
		22	Ph 2 Operational Cost	1.00 lot										
Compacted Fly Ash Dike Fill (60% F. A. & 50% B. A.)	255,199.00 cy			1,300,000	196.30 cd	399,461	-	-	-	-	-	-	0.00	
Dredge Ash	1,334,496.00 cy								2,043,113	-	-	-	2,043,113	
Stage 1 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs												0.00	
Perforated Pipe ADS Drain Tube, 6" Diameter	11,485.00 lf			0.200	2,299.00 mh	52,729	18,708	-	-	-	-	-	81,005	
Geotextile For Underdrain	9,579.00 sy			0.021	197.04 mh	4,124	19,072	-	-	-	-	-	24,453	
#57 Stone For Outlet Pipe Bedding (135 pcf)	2,328.00 lf			0.150	349.20 mh	8,447	20,777	-	-	-	-	-	32,135	
Solid Outlet Pipe ADS Drain, 6" Diameter	2,586.00 lf			0.200	517.20 mh	11,952	4,209	-	-	-	-	-	18,224	
#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 lf			0.150	78.60 mh	1,901	4,677	-	-	-	-	-	7,293	
Ph 2 Operational Cost									2,043,113	-	-	-	2,994,312	
22											2,994,312			
23	Ph 2 Operational Cost	1.00 lot												
		Compacted Fly Ash Dike Fill (60% F. A. & 50% B. A.)	263,403.00 cy	1,300,000	202.62 cd	412,319	-	-	-	-	-	-	0.00	
		Dredge Ash	1,509,673.00 cy						2,311,309	-	-	-	2,311,309	
		Stage 2 Disposal Life (Assume Dike & Dredge Ash)	3.70 yrs										0.00	

Spreadsheet Report  
KJF/0509305/FLY&BOTTM ASH

Estimate Company

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 2 Operational Cost	Perforated Pipe ADS Drain Tube, 6" Diameter	11,865.00 lf	0.200	2,373.00 mh	54,425	19,310	-	9,878	-	7.05	83,613
		Geotextile For Underdrain	9,685.00 sq	0.021	203.40 mh	4,876	19,667	-	678	-	2.55	25,241
		#57 Stone For Outlet Pipe Bedding (135 pct)	2,403.00 lf	0.150	360.45 mh	8,719	21,447	-	3,004	-	13.80	33,170
		Solid Outlet Pipe ADS Drain 6" Diameter	2,870.00 lf	0.200	574.00 mh	12,247	4,345	-	2,223	-	7.05	18,816
		#57 Stone For Outlet Pipe Bedding (135 pct)	541.00 in	0.150	81.15 mh	2,963	4,068	-	676	-	13.80	7,468
		Ph 2 Operational Cost			18,140.47 hrs	494,549	69,618	2,311,309	417,668	-		3,293,135
		23			18,140.47 hrs	494,549	69,618	2,311,309	417,668	-		3,293,135
	Ph 2 Operational Cost	Stage 3 (3 To 1 Side Slopes)	1.00 lot								0.00	0
		Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	227,106.00 sq	1,300.000	174.70 cd	355,501	-	-	345,914	-	3.09	701,415
		Dredge Ash	1,344,916.00 sq					2,059,066			1.53	2,059,066
	Stage 3 Disposal Life (Assume Dike & Dredge Ash)		3.30 yrs								0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	10,230.00 lf	0.200	2,046.00 mh	48,925	16,649	-	8,516	-	7.05	72,091
		Geotextile For Underdrain	8,525.00 sq	0.021	175.36 mh	4,204	16,973	-	585	-	2.55	21,762
		#57 Stone For Outlet Pipe Bedding (135 pct)	2,072.00 in	0.150	310.80 mh	7,518	18,493	-	2,590	-	13.80	28,601
		Solid Outlet Pipe ADS Drain 6" Diameter	2,302.00 lf	0.200	460.40 mh	10,559	3,747	-	1,916	-	7.05	16,222
		#57 Stone For Outlet Pipe Bedding (135 pct)	466.00 in	0.150	69.90 mh	1,691	4,159	-	583	-	13.80	6,432
		Ph 2 Operational Cost			15,640.64 hrs	426,399	60,021	2,059,066	360,104	-		2,905,590
		24			15,640.64 hrs	426,399	60,021	2,059,066	360,104	-		2,905,590
xCONST FACILITY	Construct Facilities	Mobilization	0.00 ls	400.000	0.00 mh	0	0	-	0	0	0.00	0
		Admin Time (Employee proc, etc)	0.00 ls	256.000	0.00 mh	0	0	-	0	0	0.00	0
		General Clean Up	0.00 ls	600.000	0.00 mh	0	0	-	0	0	0.00	0
		Maintain Roads	0.00 ls	6,372.000	0.00 mh	0	0	-	0	0	0.00	0
		Drinking Water	0.00 ls	531.000	0.00 mh	0	0	-	0	0	0.00	0
		Hauling	0.00 ls	531.000	0.00 mh	0	0	-	0	0	0.00	0
		Portable Toilet Service	0.00 ls	240.000	0.00 mh	0	0	-	0	0	0.00	0
		Demobilization	0.00 ls	0	0.00 hrs	0	0	-	0	0	0.00	0
		Construct Facilities			0.00 hrs	0	0	-	0	0	0.00	0
		xCONST FACILITY			0.00 hrs	0	0	-	0	0	0.00	0
zNON MANUAL	Non-Manual	Non Manual	0.00 ls	#####	0.00 mh	0	0	-	0	0	0.00	0



Rounding

L

41,369,618

Total 41,369,618

Estimate Totals

**KINGSTON FOSSIL PLANT  
OPTION 6 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)**

Project name KIF/0509306/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Ash  
KIF  
0509306  
KIF530  
Dan Smith  
6  
0  
2  
Preliminary  
+/- 20%  
12/20/2004  
Capital  
N

Dry ash in pond & gypsum on peninsula (incl ash in dredge call/Phase 1, and Phase2. Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/wash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge call seepage retrofit. 3-phase power is assumed not to be required.

Notes

Report format Sorted by 'Location/Activity'  
Detail summary





Spreadsheet Report  
KIF/0509306/FLY&BOT/IM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub-Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
10	Fencing	New Fencing (Including Grounding) Personnel Swinging Gate Sliding Gate, 20 Ft Wide, With Motorized Operator Fencing	200.00 lf 1.00 ea 1.00 ea		479.56 hrs	13,192	28,977		6,799			48,908
11	Seed/Mulch	Seed/Mulch Disturbed Areas Seed/Mulch	25.00 ac		0.00 hrs	0	0	60,500			2,420.00	60,500
12	Borrow Area Develop	Disc Future Borrow Area (Assumed For Compacted Clay Material) Seed / Fertilize / Lime Future Borrow Area Borrow Area Develop	20.00 ac 20.00 ac	6.000	3.33 cd 53.33 hrs 53.33 hrs	1,645 1,645 1,645		46,464 46,464 46,464	867 867 867		125.60 2,323.20	2,512 46,464 48,976
13	Gypsum Disp Facility	Disposal Facility Construction Cut And Fill Balance (189,719 bcy) Cut & Spoil Select Cut For Future 1 Ft Clay Layer In Final Cover Riwrap For Ditch Ditch For Riprap (24' wide x 2' deep) Geotextile (1 Riprap Is Used) Perimeter Road Surfacing - Bottom Ash Perimeter Road Surfacing - Crushed Stone Compacted Clay Liner, 6" Lifts (339,000 bcy) Drainage Layer (1 Ft Thick) For Liner (No. 57 Stone) Geotextile For Underdrain Pipe 8" Dia. HDPE SDR 17 Perforated Pipe 8" Dia. HDPE Standard Fittings Concrete Anchors For Underdrain Piping Proofroll Subgrade Gypsum Disp Facility	1.00 lot 227,663.00 cy 145,001.00 cy 23,500.00 ln 7,300.00 lf 19,500.00 sy 2,400.00 cy 2,900.00 ln 408,800.00 sy 169,000.00 ln 3,700.00 sy 6,400.00 lf 85.00 ea 70.00 ac	2,800.000 1,904.000 0.200 0.044 0.016 1,904.000 0.120 1,200.000 0.086 0.011 0.200 0.200 12.500 7.000	81.31 cd 76.16 cd 4,700.00 mh 320.03 mh 292.50 mh 1.26 cd 348.00 mh 339.00 cd 16,128.00 mh 59.85 mh 10.00 mh 1,092.50 mh 66,392.74 hrs 10.00 cd 7.140	205,593 139,646 117,547 98,905 12,651 25,594 2,957 857,182 426,634 1,441 29,357 209 1,841,961 1,841,961		260,596 162,675 98,905 12,651 975 3,057 3,350 1,086,509 252,000 200 5,333 2,724 4,000 1,922,873 1,922,873		2.05 3.29 19.21 2.99 1.73 2.34 13.36 4.78 12.54 1.60 7.05 13.17 489.37 159.14	466,180 332,330 451,332 33,644 5,622 38,744 1,943,690 2,106,634 9,129 45,106 609 41,597 11,140 6,807,595 5,507,595	
14	Gyp On Peninsula Cst	Cut For Underdrain System 6" Dia Perforated HDPE Perimeter Underdrains Fill For Underdrain System 1081 Crushed Stone, 6" Depth (110 pcf) Cut For Lateral Outlet Pipes 6" Dia Non-Perforated HDPE Lateral Outlet Pipes Fill For Lateral Outlet Pipes 1081 Crushed Stone, 6" Depth (110 pcf) Gypsum Disposal Stack (Wet Sluice) Wet Cast Gypsum Gypsum Dike Cut Rim Ditches	4,407.00 cy 59,481.00 lf 3,525.00 cy 3,272.00 ln 351.00 cy 7,436.00 lf 441.00 cy 409.00 ln 5,535,853.00 cy 1,011,347.00 cy 114,575.00 cy	0.200 0.200 0.250 0.150 0.200 0.200 0.250 0.150 375.000 375.000	881.40 mh 11,898.20 mh 881.25 mh 490.80 mh 110.20 mh 1,487.29 mh 110.25 mh 61.35 mh 2,696.93 cd 305.53 cd	21,321 272,885 21,317 11,872 2,666 34,109 2,687 1,494 665,601 5,406		7,345 49,526 10,364 4,090 818 6,190 1,297 511 1,847,502 209,303		5.51 7.05 8.99 13.80 6.51 7.05 8.99 13.80 2.49 2.49	28,868 419,233 31,891 45,165 3,584 52,401 3,963 5,646 2,515,103 284,708	
15	Construction Parking	Life Of Gypsum Disposal Stack Allowance For Karst Geologic Features Addition Geotechnical Investigation Gyp On Peninsula Cst	20.00 yrs 1.00 ls 1.00 ls		39,940.32 hrs 39,940.32 hrs	1,109,329 1,109,329	141,777 141,777	340,000 340,000	2,137,046 2,137,046			3,728,151 3,728,151
17	Ph 1 Base Construct	Base Layers Compacted Fly Ash Base (Fill) Proofroll Subgrade 2.5" Thick Bottom Ash Layer	1.00 lot 573,950.00 cy 177,100.00 sy 152,717.00 cy	1,300.000 25,111.000 1,300.000	441.27 cd 6.30 cd 117.47 cd	897,965 4,498 239,056			873,748 2,520 232,609		0.00 3.04 3.09	0 1,771,714 7,018 471,665

Spreadsheet Report  
KIF/0509306/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
16	Ph 2 Base Construct	0.5" Thick Fly Ash Filler Layer	30,543.00 cy	1,300.000	23.49 cd	47,811	-	-	-	45,521	3.09	94,332		
		18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	16,920.00 lf	-	-	-	-	-	338,400	-	-	20.00	338,400	
		Roll Tilt Fly Ash Layer	177,100.00 sy	1,400.000	126.50 cd	62,440	-	-	-	-	20,240	0.47	82,680	
		Bottom Ash Dike Fill	0.00 cy	1,300.000	0.00 cd	0	-	-	-	-	0	0.00	0	
		1.0" Layer Of Bottom Ash	61,087.00 cy	1,300.000	46.99 cd	95,623	-	-	-	-	93,044	3.09	188,667	
		Geosynthetic Clay Liner	185,260.00 sy	0.028	4,764.76 mth	114,226	-	-	-	-	11,912	3.05	558,088	
		4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	26,082.00 lf	0.070	1,825.74 mth	1,873	-	-	-	-	7,689	3.44	89,740	
		Trenching For The Drain System (4" Dia Underdrains), 966 boy	22,960.00 cy	0.200	232.00 mth	5,612	-	-	-	-	1,933	6.51	7,546	
		Strip Existing 1" Soil Cover (Phase 1 Expansion), 19,133 boy	22,960.00 cy	600.000	28.70 cd	11,873	-	-	-	-	14,637	1.16	28,510	
		Anchor Trench Cut	1,305.00 cy	0.200	261.20 mth	6,318	-	-	-	-	3,265	7.34	9,583	
		Anchor Trench Fill & Compact	1,242.00 cy	0.320	397.44 mth	9,614	-	-	-	-	9,642	15.50	19,256	
		2.0" Thick Bottom Ash Blanket Drain	24,640.00 cy	1,300.000	37.44 mth	38,570	-	-	-	-	37,530	3.09	76,100	
		1.0" Thick Filter Drain Ash Layer	12,320.00 cy	1,300.000	9.48 cd	19,285	-	-	-	-	18,765	3.09	38,050	
		Geomembrane	36,960.00 sy	0.050	1,648.00 mth	44,302	-	-	-	-	4,620	3.52	130,234	
		Perforated Pipe ADS Drain Tube, 6" Diameter	4,945.00 lf	0.200	989.20 mth	22,667	-	-	-	-	4,116	7.05	34,854	
		Geotextile For Underdrain	4,121.00 sy	0.021	84.77 mth	2,032	-	-	-	-	283	2.55	10,520	
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,001.00 tn	0.150	150.15 mth	3,652	-	-	-	-	1,251	13.81	13,817	
Solid Outlet Pipe ADS Drain 6" Diameter	1,239.00 lf	0.200	247.20 mth	2,012	-	-	-	-	1,029	7.05	8,710			
#7 Stone For Outlet Pipe Bedding (135 pcf)	250.00 tn	0.150	37.50 mth	907	-	-	-	-	315	13.80	3,451			
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 760)	302.00 lf	1.385	60.40 mth	1,385	-	-	-	-	251	7.05	2,128			
108" Crushed Stone, Bedding 6" Depth	10.00 tn	0.500	5.00 mth	121	-	-	-	-	17	23.1	231			
6" Dia Perforated HDPE Drain (EL. 760)	1,512.00 lf	0.021	302.40 mth	6,936	-	-	-	-	1,259	7.05	10,655			
108" Crushed Stone	286.00 tn	0.500	143.00 mth	3,459	-	-	-	-	476	23.12	6,611			
1.175" Dia In	1,175.00 sy	0.021	24.19 mth	580	-	-	-	-	81	2.55	3,002			
Cut For Underdrain System	224.00 cy	0.200	44.80 mth	1,084	-	-	-	-	373	6.51	1,457			
Backfill For Underdrain System	168.00 cy	0.250	42.00 mth	1,015	-	-	-	-	484	8.99	1,510			
Certification	1.00 ls	-	-	-	-	-	-	-	-	-	-	31,500		
QA/QC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	-	-	-	-	-	-	457,884		
Ph 2 Base Construct			61,445.51 hrs		1,688,576	592,014		796,284	1,388,842	31,500	457,884	4,496,916		
17			61,445.51 hrs		1,688,576	592,014		796,284	1,388,842	31,500	457,884	4,496,916		
18	Temp Slope Protect	Cut For Ditch (5,815 boy)	6,978.00 cy	1,200.000	5.82 cd	9,228	-	-	-	11,894	3.01	21,032		
		D50 9" Riprap	4,239.00 tn	0.320	1,356.48 mth	33,926	-	-	-	-	21,409	23.05	97,724	
		Seed Ditch	6,978.00 sy	-	-	-	-	-	3,489	-	-	0.50	3,489	
		June Matting	6,978.00 sy	0.012	83.74 mth	2,007	-	-	-	-	419	1.12	7,789	
		Temp Slope Protect			1,765.86 hrs	45,161	47,763		3,489	33,632	33,632		130,045	
		18			1,765.86 hrs	45,161	47,763		3,489	33,632	33,632		130,045	
		Riprap Stilling Basin			750.08 mth	18,760	-	-	-	-	11,938	23.05	54,038	
		Cut For Basin (3,542 boy)	3,542.00 cy	1,200.000	3.58 cd	5,686	-	-	-	-	7,274	3.01	12,960	
		Riprap Stilling Basin			950.75 hrs	24,446	23,446		2,446	19,112	19,112		66,998	
		19			950.75 hrs	24,446	23,446		2,446	19,112	19,112		66,998	
20	Ph 2 Initial Constr	Dry Stack Ash Quantities	614,909.00 cy	1,100.000	558.01 cd	1,028,843	-	-	-	804,972	2.98	1,833,815		
		Initial Construction Disposal Life (Assume Dry Ash Stack)	1.30 yrs	-	-	-	-	-	-	-	-	0.00	0	
		Ph 2 Initial Constr			40,248.59 hrs	1,028,843							1,833,815	
		Stage 4 (3 To 1 Side Slopes)			525.10 cd	986,441						0.00	0	
		Dry Stack Ash Quantities	577,613.00 cy	1,100.000	525.10 cd	986,441	-	-	-	-	755,148	2.98	1,722,589	
		Stage 4 Disposal Life (Assume Dike & Dry Stack Ash)	1.20 yrs	-	-	-	-	-	-	-	-	0.00	0	
		Ph 3 Operational Cost			37,807.40 hrs	986,441					755,148		1,722,589	
		Ph 3 Operational Cost			78,055.99 hrs	1,995,284					1,561,120		3,556,404	
		20			78,055.99 hrs	1,995,284					1,561,120		3,556,404	
		22	Ph 2 Operational Cost	Dry Stack Ash Quantities	1,589,685.00 cy	1,100.000	1,445.17 cd	2,659,803	-	-	-	2,081,042	2.98	4,740,845
Stage 1 (3 To 1 Side Slopes)	1.00 lot			-	-	-	-	-	-	-	-	0.00	0	
Dry Stack Ash Quantities	1,589,685.00 cy			1,100.000	1,445.17 cd	2,659,803	-	-	-	-	2,081,042	2.98	4,740,845	
Stage 1 Disposal Life (Assume Dry Stack Area)	3.30 yrs			-	-	-	-	-	-	-	-	0.00	0	
Haul Distance (Round Trip)	0.50 mile			-	-	-	-	-	-	-	-	0.00	0	
Ph 2 Operational Cost					104,052.11 hrs	2,659,803					2,081,042		4,740,845	
Ph 2 Operational Cost					104,052.11 hrs	2,659,803					2,081,042		4,740,845	
22					104,052.11 hrs	2,659,803					2,081,042		4,740,845	
23	Ph 2 Operational Cost			Dry Stack Ash Quantities	1,773,076.00 cy	1,100.000	1,611.89 cd	2,966,645	-	-	-	2,321,116	2.98	5,287,761
				Stage 2 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	-	0.00
		Dry Stack Ash Quantities	1,773,076.00 cy	1,100.000	1,611.89 cd	2,966,645	-	-	-	-	2,321,116	2.98	5,287,761	
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.70 yrs	-	-	-	-	-	-	-	-	0.00	0	
		Ph 2 Operational Cost											5,287,761	
		Ph 2 Operational Cost											5,287,761	
		23											5,287,761	

Spreadsheet Report  
KIF/0509306/FLY&BOTT/ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
24	Ph 2 Operation Cost				116,055.88 hrs	2,966,646			2,321,118			5,287,764
		Stage 3 (3 To 1 Side Slopes)	1.00 lot								0.00	0
		Dry Stack Ash Quantities	1,572,022.00 cy	1,100,000	1,429.11 cd	2,630,250			2,057,920		2.98	4,688,170
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs								0.00	0
		Ph 2 Operation Cost			102,895.99 hrs	2,630,250			2,057,920			4,688,170
25	Dry Fly Ash Conver											
		Dry Fly Ash Conversion Capital Cost	1.00 ls					25,000,000				25,000,000
		Dry Fly Ash Conver						25,000,000				25,000,000
xCONST FACILITY												
		Construct Facilities										
		Mobilization	0.00 ls	400,000	0.00 mh	0			0		0.00	0
		Admin Time (Employee proc, etc)	0.00 ls	256,000	0.00 mh	0			0		0.00	0
		General Clean Up	0.00 ls	600,000	0.00 mh	0			0		0.00	0
		Maintain Roads	0.00 ls	6,372,000	0.00 mh	0			0		0.00	0
		Drinking Water	0.00 ls	531,000	0.00 mh	0			0		0.00	0
		Hauling	0.00 ls	531,000	0.00 mh	0			0		0.00	0
		Portable Toilet Service	0.00 ls						0		0.00	0
		Demobilization	0.00 ls	240,000	0.00 mh	0			0		0.00	0
		Construct Facilities			0.00 hrs	0			0			0
		xCONST FACILITY			0.00 hrs	0			0			0
ZNON MANUAL												
		Non-Manual	0.00 ls	#####	0.00 mh	0					0.00	0

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12/16/2004 12:48 PM

Estimate Totals

\$26.00/HH  
\$33.12/EA

#5,172,775  
x 11%

\$569,000

L = 65% \$370,000

L = 35% \$199,000

202,750  
x 125

25,344

1,177,940  
x 306

1,433,330

Description	Quantity	Unit	Rate	Total	Code
Labor	25,033.892				
Material	2,891.950				
Subcontract	26,331.117				
Equipment	22,284.079				
Other	31.500				
	76,572.538				
Engineered Materials - Ph 2		100,000 %			C
Adjustment - Engr Materials		(100,000) %			C
Environmental Costs		100,000 %			C
Adjustment Environmental		(100,000) %			C
Demolition Costs		100,000 %			C
Adjustment Demolition		(100,000) %			C
Small Tools Expense	433,124	0.450 \$/hr			H
Consumables & Expendables	1,001,356	4.000 %			C
Office Supplies & Expense		3.000 %			C
Subcontract Fee	1,434,480				C
Escalation - Craft Labor	1,126,525	4.500 %			C
Escalation - Subcontract	710,940	2.700 %			C
Escalation - Subcontract Fee		0.350 %			C
Escalation - Perm Materials	49,163	1.700 %			C
Escalation - HED Equipment		2.000 %			C
Escalation - Tagged Equipment		2.000 %			C
Escalation - Small Tools	32,725	0.034 \$/hr			H
Escalation - Consumables	50,066	0.200 %			C
Escalation - Non-Manual Labor		3.400 %			C
Escalation - Office Supplies		0.200 %			C
Partner Insurance (FY04)	1,969,421	3.000 %			C
Partner Award Fee (FY04)	751,017	5.000 %			C
	1,251,695				
	2,802,712				
FPG Proj Engr - Phase 1	4	0.000 % @ 42.00 A			A
FPG Mech Engr - Phase 1	4	0.000 % @ 42.00 A			A
FPG Elec Engr - Phase 1	4	0.000 % @ 42.00 A			A
FPG Civil Engr - Phase 1	4	0.000 % @ 42.00 A			A
FPG Syst Engr - Phase 1	4	0.000 % @ 42.00 A			A
Non-TVA Engr - Phase 1	7	0.000 % @ 42.00 A			A
FPG Proj Cntrl Cost - Phase 1	4	0.000 % @ 42.00 A			A
FPG Proj Cntrl Sched - Phase 1	40	0.000 % @ 42.00 A			A
FPG Cost Estimating - Phase 1	4	0.000 % @ 42.00 A			A
Phase 1 Other/Other Org	75	0.000 % @ 42.00 L			L
FPG Proj Engr - Phase 2	4	0.000 % @ 42.00 A			A
FPG Mech Engr - Phase 2	4	0.000 % @ 42.00 A			A
FPG Elec Engr - Phase 2	4	0.000 % @ 42.00 A			A
FPG Civil Engr - Phase 2	4	0.000 % @ 42.00 A			A
FPG Syst Engr - Phase 2	4	0.000 % @ 42.00 A			A
Non-TVA Engr - Phase 2	7	0.000 % @ 42.00 A			A
FPG Proj Cntrl Cost - Phase 2	4	0.000 % @ 42.00 A			A
FPG Proj Cntrl Sched - Phase 2	40	0.000 % @ 42.00 A			A
FPG Cost Estimating - Phase 2	4	0.000 % @ 42.00 A			A
FPG Engr Records - Phase 2	4	0.000 % @ 42.00 A			A
Phase 2 Other/Other Org	43	0.000 % @ 42.00 L			L
FPG Proj Engr - Phase 3	4	0.000 % @ 42.00 A			A
FPG Mech Engr - Phase 3	4	0.000 % @ 42.00 A			A
FPG Elec Engr - Phase 3	4	0.000 % @ 42.00 A			A
FPG Civil Engr - Phase 3	4	0.000 % @ 42.00 A			A
FPG Syst Engr - Phase 3	4	0.000 % @ 42.00 A			A
Non-TVA Engr - Phase 3	7	0.000 % @ 42.00 A			A
FPG Proj Cntrl Cost - Phase 3	4	0.000 % @ 42.00 A			A
FPG Proj Cntrl Sched - Phase 3	4	0.000 % @ 42.00 A			A
FPG Engr Records - Phase 3	4	0.000 % @ 42.00 A			A
CAD Dwg Support - Phase 3	29	0.000 % @ 42.00 A			A
Phase 3 Other/Other Org	68	0.000 % @ 42.00 L			L

Spreadsheet Report  
KIF0509306/FLY&BOTTM ASH

mate Company

Estimate Totals

Rounding

81,979,337

Total

81,979,337

L

KINGSTON FOSSIL PLANT  
OPTION 7 - WET ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)

Project name KIF/0509307/FLY&BOTTOM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Plant Ash  
 Estimate # 0509307  
 PCN # KIF530  
 Requesting Engr Dan Smith  
 Option 7  
 Revision 0  
 Phase 2  
 Estimate Type Preliminary  
 Estimate Accuracy +/- 20%  
 Est. Issue Date 12/20/2004  
 Funding Type Capital  
 Unit N

(Wet ash in dredge cell/Phase 1. Wet gypsum in Phase 2. Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow;

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by 'Location/Activity'  
Detail summary

Spreadsheet Report  
KIF/0509307/FLY&BOT/IM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
01	Erosion Controls/S P	Erod Sill Fence	1,000.00 lf	0.068	68.57 mh	1,675	494	-	-	311	-	2,480	
		Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.016	68.80 mh	1,649	5,678	-	-	172	-	1.74	7,497
		D50 9" Riprap	5,215.00 ln	0.320	1,659.80 mh	41,737	52,150	-	-	26,338	-	23.05	120,225
		3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 ln	0.096	192.38 mh	5,089	17,888	-	-	3,008	-	12.96	25,981
		3' x 1-4 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 FIVEs)	4.00 ea	166.084	664.33 mh	17,785	19,860	-	-	2,740	-	9,946.25	39,785
		Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 bcy	52.00 cy	0.400	20.80 mh	903	3,612	-	-	173	-	13.01	876
		Fill With 1032 Compacted/Crushed Stone	83.00 ln	0.400	37.20 mh	930	3,720	-	-	587	-	24.82	2,308
		30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	14,695	26,000	-	-	3,610	-	44.30	44,304
		Bedding For 30" CMP, 6" Thick	135.00 ln	0.500	67.50 mh	1,633	1,262	-	-	225	-	23.12	3,121
		D50 9" Riprap Stand Pipe @ 6 Stages w/30" Per Stage)	720.00 lf	0.750	540.00 mh	13,989	18,720	-	-	2,235	-	48.51	34,923
		Galvanized Corrugated Metal Anti-Sweep Collar	53.00 ea	0.320	16.96 mh	424	530	-	-	268	-	23.05	1,222
		Erosion Controls/S P	16.00 ea	16.000	256.00 mh	6,270	4,800	-	-	1,540	-	788.12	12,610
						105,759	148,168	-	-	41,205	-	-	295,132
						105,759	148,168	-	-	41,205	-	-	295,132
		02	Seed/Mulch	Seed/Mulch Disturbed Areas	26.00 ac	-	-	-	-	62,920	-	-	2,420.00
		Seed/Mulch		0	0.00 hrs	0	0	62,920	-	-	-	62,920	
				0	0.00 hrs	0	0	62,920	-	-	-	62,920	
03	South Access Road	1032 Crushed Stone Base, 6" Depth	3,520.00 ln	0.120	422.40 mh	11,545	31,416	-	-	4,066	-	13.36	47,027
		Perimeter Road				11,545	31,416	-	-	4,066	-	-	47,027
						11,545	31,416	-	-	4,066	-	-	47,027
04	Perimeter Road	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,685.00 ln	0.120	826.20 mh	22,582	61,449	-	-	7,953	-	13.36	91,983
		Perimeter Road				22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
						22,582	61,449	-	-	7,953	-	-	91,983
		05	Instl Drms/Swan Pond	6" Dia Pipe Bollards	24.00 ea	1.500	36.00 mh	871	4,800	-	-	240	-
PVC Monitoring Wells	6.00 ea			-	-	-	-	-	12,000	-	-	2,000.00	12,000
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 772)	4,740.00 lf			0.200	948.00 mh	2,174	771	-	-	395	-	7.95	3,340
Crushed Stone, Bedding 6" Depth	16.00 ln			0.500	8.00 mh	194	150	-	-	27	-	23.12	370
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 760)	520.00 lf			0.200	104.00 mh	2,385	846	-	-	433	-	7.05	3,564
Crushed Stone, Bedding 6" Depth	18.00 ln			0.500	9.00 mh	168	128	-	-	30	-	23.12	416
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 762)	491.00 lf			0.200	98.20 mh	2,252	799	-	-	409	-	7.05	3,460
Crushed Stone, Bedding 6" Depth	17.00 ln			0.500	8.50 mh	208	159	-	-	29	-	23.12	363
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 810)	432.00 lf			0.200	86.40 mh	5,861	2,096	-	-	1,067	-	7.05	9,034
Crushed Stone, Bedding 6" Depth	41.00 ln			0.200	20.50 mh	5,587	1,892	-	-	1,014	-	23.12	8,503
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 817)	1,160.00 lf			0.200	232.00 mh	5,413	383	-	-	882	-	7.05	8,315
Crushed Stone, Bedding 6" Depth	40.00 ln			0.500	20.00 mh	484	374	-	-	67	-	23.12	925
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 825)	1,160.00 lf			0.200	232.00 mh	5,321	1,888	-	-	966	-	7.05	8,175
Crushed Stone, Bedding 6" Depth	39.00 ln			0.500	19.50 mh	472	365	-	-	65	-	23.12	901
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 832)	21,160.00 sy			0.200	4,238.00 mh	102,517	35,318	-	-	35,318	-	6.51	137,836
Cut For 6" Dia Non-Perforated HDPE (17,658 bcy)	14,833.00 cy	0.250	3,708.25 mh	89,703	43,609	-	-	8,99	-	8.99	133,312		
Backfill For 6" Dia Non-Perforated HDPE (12,361 bcy)	21,824.00 cy	0.200	4,364.80 mh	105,585	36,375	-	-	8,51	-	8.51	141,960		
Cut For 6" Dia Perforated HDPE (18,186 bcy)	15,276.00 cy	0.200	3,819.00 mh	92,382	44,911	-	-	8,59	-	8.59	137,993		
Backfill For 6" Dia Perforated HDPE (12,730 bcy)	2,000.00 lf	0.200	400.00 mh	9,174	3,255	-	-	1,695	-	7.05	14,094		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 763)	378.00 ln	0.150	56.70 mh	1,372	3,374	-	-	473	-	13.80	5,218		
1081 Crushed Stone	1,556.00 sy	0.021	32.01 mh	767	3,098	-	-	2,55	-	3,572	5,218		
Geotextile Woven Monofilament	3,790.00 lf	0.200	758.00 mh	17,395	6,168	-	-	3,155	-	7.05	26,709		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	716.00 ln	0.150	107.40 mh	2,598	6,390	-	-	895	-	13.80	9,683		
1081 Crushed Stone	2,846.00 sy	0.021	60.54 mh	1,454	5,669	-	-	202	-	2,55	7,525		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,160.00 lf	0.150	624.00 mh	19,982	7,015	-	-	3,463	-	7.05	29,316		
Geotextile Woven Monofilament	3,236.00 sy	0.021	66.56 mh	1,596	6,443	-	-	2,22	-	2.88	8,681		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 782)	745.00 ln	0.150	111.30 mh	2,592	6,338	-	-	3,268	-	7.05	27,659		
Geotextile Woven Monofilament	3,055.00 sy	0.021	62.80 mh	1,506	6,079	-	-	928	-	13.80	10,242		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	6,410.00 lf	0.200	1,282.00 mh	28,403	10,432	-	-	5,336	-	7.05	45,171		
1081 Crushed Stone	1,211.00 ln	0.150	181.65 mh	4,394	10,808	-	-	1,514	-	13.80	16,719		
Geotextile Woven Monofilament	4,896.00 sy	0.021	102.95 mh	2,459	9,827	-	-	342	-	7.05	12,728		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	1,151.00 lf	0.150	172.65 mh	4,176	10,273	-	-	5,078	-	2.85	42,816		
Geotextile Woven Monofilament	5,900.00 sy	0.021	97.44 mh	2,336	9,431	-	-	325	-	13.80	15,688		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	5,900.00 lf	0.200	1,180.00 mh	27,063	9,602	-	-	4,912	-	7.05	12,092		
1081 Crushed Stone	1,115.00 ln	0.150	167.25 mh	4,046	9,951	-	-	1,394	-	13.80	15,391		



**Spreadsheet Report**  
KIF/0509307/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount			
06	Instl Drns/Swan Pond	Geotextile Woven Monofilament	4,589.00 sy	0.021	94.40 mh	2,263	9,137	-	-	315	-	11,714			
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200	1,160.00 mh	26,605	9,440	-	-	4,829	-	7.05	40,073		
		1081 Crushed Stone	1,695.00 sy	0.150	164.40 mh	3,977	9,782	-	-	1,370	-	13.80	15,129		
		Geotextile Woven Monofilament	4,511.00 sy	0.224	82.79 mh	14,783	12,888	-	-	2,688	-	11.76	30,349		
		12" Dia Force Main HDPE Perimeter Underdrain (EL. 763)	2,950.00 lf	0.250	645.00 mh	2,086	5,132	-	-	719	-	13.80	7,937		
		1081 Crushed Stone	575.00 sy	0.150	86.25 mh	1,905	5,000	-	-	205	-	7.10	7,110		
		Submersible Pumping Station Equipment Package	1.00 ls	60.000	60.000	1,521	4,889	-	-	468	-	2.55	5,653		
		60" Diameter Catch Basin (Precast)	1.00 ea	0.021	47.17 mh	1,131	157	-	-	157	-	84.64	4,571		
		Geotextile Woven Monofilament	2,293.00 sy	1.000	1,273	2,808	100	-	-	489	-	217.09	4,341		
		Groul Seal Storm Drain - 24" Diameter (Pump & Plug)	54.00 sy	4.000	54.00 mh	256	78	-	-	78	-	84.64	4,486		
		Seal Weld 1/4" Thick A-36 Steel Plate	53.00 mh	1.000	53.00 mh	256	78	-	-	78	-	217.09	434		
		Groul Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000	2.00 ea	256	78	-	-	78	-	84.64	434		
		Seal Weld 1/4" Thick A-36 Steel Plate	23.00 sy	1.000	23.00 sy	418	760	-	-	208	-	217.09	1,245		
		Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ea	4.000	2.00 ea	418	760	-	-	67	-	7.34	1,245		
		24" CMP Storm Drain	38.00 sy	0.480	18.24 mh	145	75	-	-	75	-	15.50	328		
		Excavation For 24" Dia Pipe (25 boy)	30.00 sy	0.320	6.72 mh	163	163	-	-	163	-	23.12	692		
		Backfill For 24" Diameter CMP (17 boy)	21.00 sy	0.500	4.20 mh	48	7	-	-	7	-	55.30	3,962		
		Bedding For 24" Culvert	4.00 lf	0.600	43.20 mh	1,058	2,654	-	-	260	-	7.34	594		
		36" CMP Storm Drain	81.00 sy	0.200	16.20 mh	392	203	-	-	203	-	15.50	884		
		Excavation For 36" Dia Pipe (67 boy)	57.00 sy	0.320	18.24 mh	441	441	-	-	441	-	23.12	208		
		Backfill For 36" Diameter CMP (47 boy)	9.00 lf	0.500	4.50 mh	109	84	-	-	15	-	7.34	76.168		
		Anchor Trench - Excavate Into Borrow Area (8.650 boy)	10,899.00 sy	0.200	2,076.00 mh	50,218	7,34	-	-	25,950	-	3.52	390,026		
		Upper & Lower LDPE Geomembrane	110,696.00 sy	0.650	5,534.40 mh	132,676	243,514	-	-	13,836	-	2.15	9,372		
		Sediment Trap (3,630 boy)	4,356.00 sy	0.040	174.24 mh	4,880	853,837	-	-	4,492	-	12,000	1,612,723		
		Instl Drns/Swan Pond					853,837	486,927	-	12,000	259,959	-	7,430,944	11,040,145	
							35,789.66 hrs	853,837	486,927	12,000	259,959	-	7,430,944	11,040,145	
							35,789.66 hrs	853,837	486,927	12,000	259,959	-	7,430,944	11,040,145	
		07	Ph 28Ph 3 Base Const.	Eiv. 810 To Eiv. 844	1.00 lot								0.00	0	
				Bottom Ash Dike Fill	622,416.00 sy	1,300.000	478.78 cd	974,301	-	-	-	949,026	-	3.09	1,922,327
				Dredge	4,853,654.00 sy						7,430,944			1.53	7,430,944
				Wet Dip And Slack	678,848.00 sy	375.000	1,810.29 cd	446,773	-	-	-	1,240,101	-	2.49	1,686,874
				Disposal Lite (Assume Dike & Dredge Ash)	12.90 yr									0.00	0
				Drq Cell#1 Opr Cost					1,421,074	-	7,430,944	2,188,127	-	0.00	11,040,145
									1,421,074	-	7,430,944	2,188,127	-	0.00	11,040,145
				08	Ph 28Ph 3 Base Const.	Base Layers	1.00 lot								0.00
		Cut For Dredge Cell (268,500 boy)	322,200.00 sy			0.040	12,888.00 mh	360,928	-	-	-	332,291	-	2.15	693,220
		Compacted Fly Ash Base (Fill)	910,556.00 sy			1,300.000	700.43 cd	1,426,342	-	-	-	1,386,603	-	3.09	2,812,245
		Profiletop Subgrade	251,111.00 sy			28,111.000	10.00 cd	1,140	-	-	-	4,000	-	0.04	11,140
2.5" Thick Bottom Ash Layer	242,407.00 sy	1,300.000	186.47 cd			379,453	-	-	-	369,219	-	3.09	748,672		
6.5" Thick Fly Ash Layer	48,481.00 sy	1,300.000	37.28 cd			75,890	-	-	-	75,843	-	3.08	149,733		
18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 boy)	16,620.00 lf											20.00	338,400		
10" Layer Of Bottom Ash	281,111.00 sy	1,400.000	200.79 cd			99,112	-	-	-	32,127	-	0.47	131,239		
Bottom Ash Dike Fill	163,614.00 sy	1,300.000	125.86 cd			256,114	-	-	-	245,207	-	3.09	505,321		
Geosynthetic Clay Liner	96,963.00 sy	1,300.000	74.59 cd			151,781	-	-	-	147,688	-	3.09	289,469		
2.5" Thick Bottom Ash Layer	290,889.00 sy	0.026	7,583.11 mh			18,311	687,225	-	-	16,909	-	3.05	867,444		
4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	41,400.00 lf	0.070	2,898.00 mh			66,466	63,901	-	-	12,078	-	3.44	142,445		
Trenching For The Drain System (4" Dia Underdrains), 1,933 boy	22,956.00 sy	800.000	368.00 mh			8,902	-	-	-	14,637	-	1.16	26,510		
Slip Existing 1' Soil Cover (Phase 1 Expansion), 191,133 boy	2,073.00 sy	0.200	28.70 cd			11,873	-	-	-	7.34	-	15.212	5,172		
Anchor Trench Cut	1,971.00 sy	0.320	14.60 mh			10,028	-	-	-	5,183	-	15.50	30,558		
2.0" Thick Bottom Ash Blanket Drain	39,111.00 sy	1,300.000	630.72 mh			19,257	-	-	-	15,301	-	3.08	120,794		
1.0" Thick Fly Ash Layer	19,556.00 sy	1,300.000	30.09 cd			61,223	-	-	-	58,571	-	3.09	60,398		
Geomembrane	58,667.00 sy	0.650	2,833.35 mh			70,321	129,057	-	-	7,333	-	7.05	206,722		
Perforated Pipe ADS Drain Tube, 6" Diameter	7,850.00 lf	0.200	1,570.00 mh			36,008	12,776	-	-	6,535	-	2.55	55,319		
Geotextile For Underdrain	6,542.00 sy	0.150	134.57 mh			3,226	13,025	-	-	449	-	13.80	16,700		
#57 Stone For Outlet Pipe Bedding (135 pct)	1,690.00 lf	0.200	238.50 mh			5,769	14,191	-	-	1,988	-	7.05	21,948		
Solid Outlet Pipe ADS Drain 6" Diameter	1,963.00 lf	0.200	392.60 mh			9,004	3,195	-	-	1,634	-	13.80	13,633		
#57 Stone For Outlet Pipe Bedding (135 pct)	397.00 lf	0.150	59.55 mh			1,441	3,543	-	-	496	-	7.05	5,480		
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 780)	480.00 lf	0.200	96.00 mh			2,202	761	-	-	400	-	23.12	370		
1081 Crushed Stone, Bedding 6" Depth	16.00 lf	0.500	8.00 mh			194	150	-	-	27	-	7.05	370		
6" Dia Perforated HDPE Drain (EL. 780)	2,400.00 lf	0.200	480.00 mh			1,009	3,906	-	-	1,988	-	23.12	16,913		
Geotextile Woven Monofilament	1,867.00 sy	0.021	38.40 mh			921	4,245	-	-	758	-	2.55	4,766		
Cut For Underdrain System	356.00 sy	0.200	71.20 mh			1,722	3,717	-	-	583	-	6.51	2,316		
Backfill For Underdrain System	267.00 sy	0.250	66.75 mh			1,615	785	-	-	785	-	8.99	2,400		
Certification	1.00 ls											50,000	50,000		
QA/QC For Construction Of Disposal Facility	1.00 ls											728,800	728,800		

Spreadsheet Report  
KIF/0509307/FLY&BOTTOM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount
08	Temp Slope Protect	Cut For Ditch (5,515 bcy)	6,978.00 cy	1,200.000	119,212.97 hrs	3,290,354	939,722	1,056,200	2,776,936	50,000		8,122,211
		D50 9" Riprap	4,239.00 tn	0.320	1,356.48 m	38,926	42,390	-	21,409	-	3.01	21,032
		Seed Ditch	6,978.00 sy	0.012	83.74 m	2,007	5,173	3,489	419	-	1.12	7,789
		Joint Matting	6,978.00 sy		1,765.86 hrs	45,161	47,763	3,489	33,632	-		130,045
		Temp Slope Protect			1,765.86 hrs	45,161	47,763	3,489	33,632	-		130,045
09	Riprap Stilling Basin	Riprap D50 Size 9"	2,344.00 tn	0.320	750.08 m	18,760	23,440	-	11,838	-	23.05	54,038
		Cut For Basin (3,582 bcy)	4,300.00 cy	1,200.000	3.58 cd	5,686	7,274	-	12,960	-	3.01	12,960
		Riprap Stilling Basin			950.75 hrs	24,446	23,440	-	19,112	-		66,998
					950.75 hrs	24,446	23,440	-	19,112	-		66,998
10	Ph 2 Initial Constr	Wet Sluice Sedimented Gypsum Quantities	451,295.00 cy								0.00	0
		Initial Disposal Life	1.40 yrs								0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 m	33,806	11,995	-	6,136	-	7.05	51,836
		Geotextile For Underdrain	6,142.00 sy	0.021	126.34 m	3,029	12,229	-	421	-	2.35	15,679
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,492.00 tn	0.150	223.80 m	5,414	13,316	-	1,856	-	13.80	20,595
		Solid Outlet Pipe ADS Drain 6" Diameter	1,653.00 lf	0.200	331.60 m	7,605	2,688	-	420	-	7.05	11,664
		#57 Stone For Outlet Pipe Bedding (135 pcf)	336.00 tn	0.150	50.40 m	1,219	2,999	-	420	-	13.80	4,938
		Ph 2 Initial Constr			2,906.14 hrs	51,073	43,237	-	10,222	-		104,532
					2,206.14 hrs	51,073	43,237	-	10,222	-		104,532
11	Rim Ditches	Cut (111,889 bcy)	134,279.00 cy	375.000	358.08 cd	88,373	-	-	245,297	-	2.49	333,671
		Rim Ditches			2,864.62 hrs	88,373	-	-	245,297	-		333,671
					2,864.62 hrs	88,373	-	-	245,297	-		333,671
12	Ph 2 Operational Cost	Stage 1 (3 To 1 Side Slopes)	1.00 lot								0.00	0
		Wet Cast Gypsum Dike Fill	255,189.00 cy	375.000	680.50 cd	167,848	-	-	486,172	-	2.49	634,121
		Wet Sluice Gypsum Quantities	1,334,496.00 cy								0.00	0
		Stage 1 Disposal Life (Assumes Dikes & Sluice Gypsum)	4.90 yrs								0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf	0.200	2,299.00 m	52,728	18,708	-	9,570	-	7.05	81,005
		Geotextile For Underdrain	9,579.00 sy	0.021	197.04 m	4,724	19,072	-	657	-	2.55	24,453
		#57 Stone For Outlet Pipe Bedding (135 pcf)	2,328.00 tn	0.150	349.20 m	8,447	20,777	-	2,810	-	13.80	32,135
		Solid Outlet Pipe ADS Drain 6" Diameter	2,585.00 lf	0.200	517.20 m	11,862	4,209	-	2,153	-	7.05	18,224
		#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 tn	0.150	78.60 m	1,901	4,577	-	655	-	13.80	7,233
		Ph 2 Operational Cost			8,885.07 hrs	247,610	67,443	-	482,117	-		797,170
					8,885.07 hrs	247,610	67,443	-	482,117	-		797,170
13	Ph 3 Operational Cost	Stage 2 (3 To 1 Side Slopes)	1.00 lot								0.00	0
		Wet Cast Gypsum Dike Fill	269,403.00 cy	375.000	702.41 cd	173,354	-	-	481,178	-	2.49	654,532
		Wet Sluice Gypsum Quantities	1,508,673.00 cy								0.00	0
		Stage 2 Disposal Life (Assume Dike & Sluice Gypsum)	5.40 yrs								0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	11,865.00 lf	0.200	2,373.00 m	54,425	19,310	-	9,878	-	7.05	83,613
		Geotextile For Underdrain	9,888.00 sy	0.021	203.40 m	4,876	19,987	-	678	-	2.55	25,241
		#57 Stone For Outlet Pipe Bedding (135 pcf)	2,403.00 tn	0.150	360.45 m	8,719	21,447	-	3,004	-	13.80	33,170
		Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200	534.00 m	12,247	4,345	-	2,223	-	7.05	18,816
		#57 Stone For Outlet Pipe Bedding (135 pcf)	541.00 tn	0.150	81.15 m	1,963	4,828	-	676	-	13.80	7,468
		Ph 3 Operational Cost			9,171.26 hrs	255,585	69,618	-	497,636	-		822,839
					9,171.26 hrs	255,585	69,618	-	497,636	-		822,839
14	Ph 3 Initial Constr	Dry Ash Stack	569,783.00 cy	1,100.000	517.98 cd	953,340	-	-	745,898	-	2.88	1,699,238
		Disposal Life (Assumes Dry Stack Ash)	1.20 yrs								0.00	0
		Ph 3 Initial Constr			37,294.89 hrs	953,340	-	-	745,898	-		1,699,238
					37,294.89 hrs	953,340	-	-	745,898	-		1,699,238
15	Ph 3 Operational Cost	Stage 1 (3 To 1 Side Slopes)	1.00 lot								0.00	0
		Dry Stack Ash Quantities	1,349,180.00 cy	1,100.000	1,226.53 cd	2,257,399	-	-	1,765,189	-	2.98	4,023,588

Spreadsheet Report  
KJF/0509307/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Unit	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
16	Ph 3 Operational Cost	Stage 1 Disposal Life (Assume Dike Stack)	2.80 yrs		88,309.96 hrs		2,257,399	0		1,766,199		0.00	4,023,598
		Ph 3 Operational Cost			88,309.96 hrs		2,257,399	0		1,766,199			4,023,598
		Dry Stack Ash Quantities	1.00 lot	1,100.000	1,388.02 cd	2,517,818		1,969,953					4,487,771
17	Ph 3 Operational Cost	Stage 2 Disposal Life (Assume Dry Stack)	3.20 yrs		98,497.64 hrs		2,517,818	0		1,969,953		0.00	4,487,771
		Ph 3 Operational Cost			98,497.64 hrs		2,517,818	0		1,969,953			4,487,771
		Dry Stack Ash Quantities	1.00 lot	1,100.000	1,212.80 cd	2,232,317		1,746,575					3,978,891
18	Ph 2 Operational Cost	Stage 3 Disposal Life (Assume Dry Stack)	2.80 yrs		87,328.73 hrs		2,232,317	0		1,746,575		0.00	3,978,891
		Ph 3 Operational Cost			87,328.73 hrs		2,232,317	0		1,746,575			3,978,891
		Dry Stack Ash Quantities	1.00 lot	1,100.000	605.62 cd	149,466		414,871					564,337
19	Ph 2 Operational Cost	Stage 3 (3 To 1 Side Slopes)	1.00 lot	375.000								0.00	0
		Wet Cast Gypsum Dike Fill	227,106.00 cy										564,337
		Wet Slurce Gypsum Quantities	1,344,916.00 cy										0
		Stage 3 Disposal Life (Assume Dike & Sluice Ash & Gypsum)	4.80 yrs										0
		Perforated Pipe ADS Drain Tube, 6" Diameter	10,230.00 lf	0.200	2,046.00 mh	46,925		8,516					72,091
		Geotextile For Underdrain	8,526.00 sq	0.021	175.36 mh	4,204		585					2,55
		#57 Stone For Outlet Pipe Bedding (135 pct)	2,072.00 tn	0.150	310.80 mh	7,518		2,590					28,601
		Solid Outlet Pipe ADS Drain 6" Diameter	2,302.00 lf	0.200	460.40 mh	10,559		1,916					7,05
		#57 Stone For Outlet pipe Bedding (135 pct)	468.00 tn	0.150	69.60 mh	1,691		563					6,432
		Ph 2 Operational Cost	7,907.39 hrs			220,363		60,021					13.80
20	Ph 2 Operational Cost	Stage 4 (3 To 1 Side Slopes)	1.00 lot	375.000								0.00	0
		Wet Cast Gypsum Dike Fill	168,831.00 cy										419,629
		Wet Slurce Gypsum & Ash Quantities	702,654.00 cy										0
		Stage 4 Disposal Life (Assume Dike & Sluice Ash)	2.70 yrs										0
		Perforated Pipe ADS Drain Tube, 6" Diameter	7,605.00 lf	0.200	1,521.00 mh	34,884		6,331					53,592
		Geotextile For Underdrain	6,338.00 sq	0.021	130.37 mh	3,125		435					16,179
		#57 Stone For Outlet Pipe Bedding (135 pct)	1,540.00 tn	0.150	231.00 mh	5,988		1,424					21,257
		Solid Outlet Pipe ADS Drain 6" Diameter	1,711.00 lf	0.200	342.20 mh	7,848		1,424					12,057
		#57 Stone For Outlet pipe Bedding (135 pct)	347.00 tn	0.150	52.05 mh	1,259		434					4,760
		Ph 2 Operational Cost	5,878.36 hrs			163,818		44,622					13.80
25	Dry Fly Ash Conver.	Stage 4 (3 To 1 Side Slopes)	1.00 lot	1,100.000								0.00	0
		Dry Stack Ash Quantities	577,613.00 cy										1,722,757
		Ph 3 Operational Cost	37,807.40 hrs			966,609		756,148				0.00	1,722,757
xCONST FACILITY	Construct Facilities	Dry Fly Ash Conversion Capital Cost	1.00 ls						21,400,000			21,400,000	21,400,000
		Dry Fly Ash Conver							21,400,000				21,400,000
		Mobilization	0.00 ls	400,000	0.00 mh	0		0				0.00	0
		Admin Time (Employee proc, etc)	0.00 ls	256,000	0.00 mh	0		0				0.00	0
		General Clean Up	0.00 ls	600,000	0.00 mh	0		0				0.00	0
		Maintain Roads	0.00 ls	6,372,000	0.00 mh	0		0				0.00	0
		Drinking Water	0.00 ls	531,000	0.00 mh	0		0				0.00	0
		Hauling	0.00 ls	531,000	0.00 mh	0		0				0.00	0
		Portable Toilet Service	0.00 ls		0.00 mh	0		0				0.00	0

Spreadsheet Report  
KIF0509307/FLY&BOTTMASH

Estimate Company

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
ZNON MANUAL	Construct Facilities	Demobilization Construct Facilities xCONST FACILITY	0.00 ls	240.000	0.00 mh 0.00 hrs 0.00 hrs	0 0 0	-	-	0 0 0	0	0.00	0
	Non-Manual			#####	0.00 mh	0	-	-	-	-	0.00	0
		Non Manual		0.00 ls								

Estimate Totals

\$26.39/HH  
\$33.42/EH

\$5446,470  
x 11%  
-----  
\$599,000

L = 65% \$389,000  
E = 35% \$210,000

220,326  
x 1125  
-----  
27,540

39,291,000  
x 1.3%  
-----  
511,790,000

Item Description	Quantity	Unit	Rate	Total	Code	Category
Labor	15,729,063					
Material	2,023,826					
Subcontract	29,974,553					
Equipment	14,280,080					
Other	50,000					
	62,076,503			62,076,503		
Engineered Materials - Ph 2			100,000 %		C	
Adjustment - Engr Materials			(100,000) %		C	
Environmental Costs			100,000 %		C	
Adjustment Environmental			(100,000) %		C	
Demolition Costs			100,000 %		C	
Adjustment Demolition			(100,000) %		C	
Small Tools Expense	299,224		0.450 \$/hr		H	
Consumables & Expendables	625,163		4.000 %		C	
Office Supplies & Expense			3.000 %		C	
Subcontract Fee	995,387			62,574,800		
Escalation - Craft Labor	707,809		4.500 %		C	
Escalation - Subcontract	809,313		2.700 %		C	
Escalation - Subcontract Fee			0.350 %		C	
Escalation - Perm Materials	34,405		1.700 %		C	
Escalation - HED Equipment			2.000 %		C	
Escalation - Tagged Equipment			2.000 %		C	
Escalation - Small Tools	20,341		0.034 \$/hr		H	
Escalation - Consumables	31,459		0.200 %		C	
Escalation - Non-Manual Labor			3.400 %		C	
Escalation - Office Supplies	1,803,325		0.200 %		C	
Partner Insurance (FY04)	471,872		3.000 %		C	
Partner Award Fee (FY04)	766,453		5.000 %		C	
	1,238,325			65,836,540		
FFG Proj Engr - Phase 1	3		0.000 % @ 42.00 A		0	
FFG Mech Engr - Phase 1	3		0.000 % @ 42.00 A		0	
FFG Elec Engr - Phase 1	3		0.000 % @ 42.00 A		0	
FFG Civil Engr - Phase 1	3		0.000 % @ 42.00 A		0	
FFG Syst Engr - Phase 1	3		0.000 % @ 42.00 A		0	
Non-TVA Engr - Phase 1	4		0.000 % @ 42.00 A		0	
FFG Proj Cntrl Cost - Phase 1	3		0.000 % @ 42.00 A		0	
FFG Proj Cntrl Sched - Phase 1	25		0.000 % @ 42.00 A		1	
FFG Cost Estimating - Phase 1	3		0.000 % @ 42.00 A		0	
Phase 1 Other/Other Org	50		0.000 % @ 42.00 A		L	
FFG Proj Engr - Phase 2	3		0.000 % @ 42.00 A		0	
FFG Mech Engr - Phase 2	3		0.000 % @ 42.00 A		0	
FFG Elec Engr - Phase 2	3		0.000 % @ 42.00 A		0	
FFG Civil Engr - Phase 2	3		0.000 % @ 42.00 A		0	
FFG Syst Engr - Phase 2	3		0.000 % @ 42.00 A		0	
Non-TVA Engr - Phase 2	4		0.000 % @ 42.00 A		0	
FFG Proj Cntrl Cost - Phase 2	3		0.000 % @ 42.00 A		0	
FFG Proj Cntrl Sched - Phase 2	3		0.000 % @ 42.00 A		0	
FFG Cost Estimating - Phase 2	3		0.000 % @ 42.00 A		0	
FFG Engr Records - Phase 2	3		0.000 % @ 42.00 A		0	
Phase 2 Other/Other Org	31		0.000 % @ 42.00 A		L	
FFG Proj Engr - Phase 3	3		0.000 % @ 42.00 A		0	
FFG Mech Engr - Phase 3	3		0.000 % @ 42.00 A		0	
FFG Elec Engr - Phase 3	3		0.000 % @ 42.00 A		0	
FFG Civil Engr - Phase 3	3		0.000 % @ 42.00 A		0	
FFG Syst Engr - Phase 3	3		0.000 % @ 42.00 A		0	
Non-TVA Engr - Phase 3	4		0.000 % @ 42.00 A		0	
FFG Proj Cntrl Cost - Phase 3	3		0.000 % @ 42.00 A		0	
FFG Proj Cntrl Sched - Phase 3	3		0.000 % @ 42.00 A		0	
FFG Engr Records - Phase 3	3		0.000 % @ 42.00 A		0	
CAD Dwg Support - Phase 3	16		0.000 % @ 42.00 A		0	
Phase 3 Other/Other Org	46		0.000 % @ 42.00 A		L	

Estimate Totals

Rounding		L
	65,836,667	
Total	65,836,667	

**KINGSTON FOSSIL PLANT  
OPTION B - DRY ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)**

Project name KIF/0509308/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 0509308  
FCN # KIF530  
Requesting Engr Dan Smith  
Option 8  
Revision 0  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 12/20/2004  
Funding Type Capital  
Unit N

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Notes

Report format Sorted by 'Location/Activity'  
'Detail' summary

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
01	Erosion Controls/S.P.	Erect Silt Fence	1,000.00 lf	0.069	68.57 mh	1,675	494	-	311	-	2.46	2,480
		Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.15	68.80 mh	1,649	5,676	-	172	-	1.74	7,497
		D50 9" Riprap	5,215.00 ln	0.320	1,658.80 mh	41,737	52,150	-	26,338	-	23.05	120,225
		3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 ln	0.096	192.38 mh	5,089	17,888	-	3,006	-	12.96	25,981
		Sig 1-3 CMP Mill Spillway (1/2 of 48" Dia Half-Round Pipe @ 128 Ft/100)	4.00 ea	188.084	664.33 mh	17,185	19,660	-	2,740	-	9,946.25	39,785
		Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 box	52.00 cy	0.400	20.80 mh	503	761	-	173	-	13.01	676
		Fill With 1032 Compacted/Crushed Stone	93.00 lf	0.000	37.20 mh	930	26,000	-	587	-	24.82	2,306
		30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	14,695	26,000	-	3,610	-	44.30	44,304
		Bedding For 30" CMP, 6" Thick	135.00 ln	0.900	67.50 mh	1,633	1,262	-	225	-	23.12	3,121
		30" Diameter CMP Stand Pipe (4Pipes @ 6 Slaps w/30 Per Slap)	720.00 lf	0.160	540.00 mh	1,969	18,720	-	2,235	-	48.51	34,923
		D50 9" Riprap Outlet For Metal Spillway	53.00 ln	0.320	16.96 mh	424	500	-	268	-	23.05	1,222
		Galvanized Corrugated Metal Anti-Seep Collar	16.00 ea	16.000	256.00 mh	6,270	4,800	-	1,540	-	788.12	12,510
		Erosion Controls/S.P			4,201.35 hrs	105,759	148,168	-	41,205	-		295,132
		01			4,201.35 hrs	105,759	148,168	-	41,205	-		295,132
02	Seed/Mulch	See/Mulch Disturbed Areas	26.00 ac		0.00 hrs	0	0	62,920	0	-	2,420.00	62,920
		Seed/Mulch			0.00 hrs	0	0	62,920	0	-		62,920
03	South Access Road	1032 Crushed Stone Base, 6" Depth	3,520.00 ln	0.120	422.40 mh	11,545	31,416	-	4,066	-	13.36	47,027
		South Access Road			422.40 hrs	11,545	31,416	-	4,066	-		47,027
		03			422.40 hrs	11,545	31,416	-	4,066	-		47,027
04	Perimeter Road	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 ln	0.120	826.20 mh	22,582	61,449	-	7,953	-	13.36	91,983
		Perimeter Road			826.20 hrs	22,582	61,449	-	7,953	-		91,983
		04			826.20 hrs	22,582	61,449	-	7,953	-		91,983
06	Dig Cell/P1 Opr Cost	Elv. 810 To Elv. 866	1.00 lot								0.00	0
		Dry Ash Slack	5,478,070.00 sy	1,000.000	4,978.25 cd	9,162,361	-	-	-	-	2.88	16,331,035
		Wet Dip And Slack Bottom Ash Only	678,848.00 sy	375.000	1,810.26 cd	4,465,773	-	-	-	-	2.48	1,888,974
		Disposal Life (Assume Dike & Dredge Ash)	12.90 yr								0.00	0
		Haul Distance (Round Trip)	0.50 mile								0.00	0
		Dig Cell/P1 Opr Cost			372,615.76 hrs	9,609,134	-	-	8,408,775	-		18,017,909
		06			372,615.76 hrs	9,609,134	-	-	8,408,775	-		18,017,909
07	Ph 2 Base Construct	Base Layers	1.00 lot								0.00	0
		Compacted Fly Ash Base (Fill)	910,556.00 cy	1,300.000	700.43 cd	1,425,342	-	-	1,388,903	-	3.09	2,812,245
		Prep/roll Subgrade	281,111.00 sy	28,111.100	10.00 cd	7,140	-	-	4,000	-	0.04	11,140
		2.5" Thick Bottom Ash Layer	242,407.00 sy	1,300.000	186.47 cd	378,453	-	-	369,219	-	3.09	748,672
		0.5" Thick Fly Ash Filler Layer	48,481.00 sy	1,300.000	37.29 cd	75,890	-	-	73,843	-	3.09	149,733
		18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 box)	16,926.00 lf					338,400	-	-	20.00	338,400
		Bottom Ash Dike Fill	281,111.00 sy	1,400.000	200.79 cd	99,112	-	-	32,127	-	0.47	131,239
		Bottom Ash Dike Fill	163,614.00 sy	1,300.000	125.96 cd	255,114	-	-	249,207	-	3.09	505,321
		1.0" Layer Of Bottom Ash	96,993.00 sy	1,300.000	74.99 cd	151,781	-	-	147,688	-	3.05	299,469
		Geosynthetic Clay Liner	290,889.00 sy	0.026	7,583.11 mh	181,311	687,225	-	18,968	-	3.08	887,444
		4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	41,400.00 lf	0.070	2,898.00 mh	66,466	63,901	-	12,078	-	3.44	142,445
		Trenching For The Drain System (4" Dia Underdrains) 1,533 box	1,840.00 sy	8.000	368.00 mh	8,902	-	-	3,067	-	6.51	11,955
		Slip Existing 1" Soil Cover (Phase 1 Expansion), 19,193 box	22,960.00 sy	800.000	28.70 cd	11,873	-	-	14,637	-	1.16	26,510
		Anchor Trench Out	2,073.00 sy	0.200	414.60 mh	10,029	-	-	5,183	-	7.34	15,212
		Anchor Trench Fill & Compact	1,971.00 sy	0.320	630.72 mh	1,527	-	-	15,301	-	15.50	30,559
		2.0" Thick Bottom Ash Blanket Drain	99,111.00 sy	1,300.000	30.05 cd	61,223	-	-	29,787	-	3.09	120,794
		1.0" Thick Filter Drain Ash Layer	19,556.00 sy	1,300.000	15.04 cd	30,612	-	-	7,333	-	3.52	60,999
		Geomembrane	58,667.00 sy	0.050	2,933.95 mh	70,321	128,067	-	3,332	-	7.05	206,722
		Perforated Pipe ADS Drain Tube, 6" Diameter	6,542.00 sy	0.200	1,570.00 mh	36,008	12,778	-	6,553	-	3.05	55,319
		Geotextile For Underdrain	1,590.00 lf	0.150	134.57 mh	3,226	13,025	-	449	-	2.55	16,700
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,963.00 lf	0.200	392.60 mh	9,004	14,191	-	1,988	-	13.80	21,946
		Solid Outlet Pipe ADS Drain, 6" Diameter	397.00 ln	0.150	59.55 mh	1,441	3,543	-	496	-	7.05	13,833
		#57 Stone For Outlet Pipe Bedding (135 pcf)	480.00 ln	0.200	96.00 mh	2,202	781	-	400	-	7.05	3,383
		1081 Crushed Stone, Bedding, 6" Depth	16.00 ln	0.300	8.00 mh	184	150	-	27	-	23.12	370
		5" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 760)	2,404.00 lf	0.200	480.00 mh	11,098	3,906	-	1,998	-	7.05	16,913
		5" Dia Perforated HDPE Drain (EL. 760)	454.00 lf	0.500	227.00 mh	5,491	4,245	-	128	-	23.12	10,491
		Geotextile Woven Monoliament	1,867.00 sy	0.021	38.40 mh	921	3,717	-	256	-	2.55	4,765
		Cut For Underdrain System	356.00 cy	0.200	71.20 mh	1,722	-	-	593	-	6.51	2,518



Spreadsheet Report  
KIP/0509308/FLY&BOTT/ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Unit	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
08	Ph 2 Base Construct	Backfill For Underdrain System	267.00 cy	0.250	66.75 mh	1.615	-	-	-	-	765	8.99	2,400	
		QA/QC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	-	726,900	-	-	50,000	50,000.00	726,900
		Ph 2 Base Construct	1.00 ls	-	-	-	-	939,722	1,065,200	2,444,643	50,000	50,000	7,428,991	7,428,991
09	Temp Slope Protect	Cut For Ditch (5.815 bty)	6,978.00 cy	1,200.000	5.82 cd	9,228	-	-	-	-	11,804	3.01	21,032	
		D50 6" Riprap	4,236.00 ln	0.320	1,356.48 mh	33,926	42,390	-	-	-	21,409	-	23.05	97,724
		Seed Ditch	6,978.00 sy	0.012	83.74 mh	2,007	5,373	3,489	-	-	-	-	0.50	3,489
10	Riprap Stilling Basin	Jute Matting	6,978.00 sy	-	1,765.86 hrs	45,161	47,763	-	-	-	419	1.12	7,799	
		Temp Slope Protect	-	-	1,765.86 hrs	45,161	47,763	3,489	-	-	33,632	-	130,045	
		Temp Slope Protect	-	-	1,765.86 hrs	45,161	47,763	3,489	-	-	33,632	-	130,045	
11	Riprap Stilling Basin	Riprap D50 Size 6"	2,344.00 ln	0.220	750.08 mh	18,760	23,440	-	-	-	11,838	23.05	54,038	
		Cut For Basin (3.582 bty)	4,300.00 cy	1,200.000	3.58 cd	5,688	-	-	-	-	7,274	-	12,960	
		Riprap Stilling Basin	-	-	950.75 hrs	24,446	23,440	-	-	-	19,112	-	3.01	66,988
12	Ph 2 Operational Cost	Wet Sluice Sedimented Gypsum Quantities	451,295.00 cy	-	-	-	-	-	-	-	-	0.00	0	
		Initial Cons. Disposal Life	1.40 yrs	-	-	-	-	-	-	-	-	-	0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	33,806	11,995	-	-	-	6,136	-	7.05	51,938
13	Ph 2 Operational Cost	Geotextile For Underdrain	6,142.00 sy	0.021	128.34 mh	3,029	12,229	-	-	-	421	-	2.55	15,978
		#57 Stone For Outlet pipe Bedding (135 pcf)	1,492.00 ln	0.150	223.80 mh	5,414	13,316	-	-	-	1,865	-	13.80	20,595
		Solid Outlet Pipe ADS Drain 6" Diameter	1,659.00 lf	0.200	331.80 mh	7,605	2,699	-	-	-	1,380	-	7.05	11,984
14	Ph 3 Initial Constr	#57 Stone For Outlet pipe Bedding (135 pcf)	339.00 ln	0.150	50.40 mh	1,219	2,999	-	-	-	420	-	13.80	4,838
		Ph 2 Initial Constr	-	-	2,206.14 hrs	51,073	43,237	-	-	-	10,222	-	104,532	
		Ph 2 Initial Constr	-	-	2,206.14 hrs	51,073	43,237	-	-	-	10,222	-	104,532	
15	Ph 3 Initial Constr	Cut (111.899 bty)	134,279.00 cy	375.000	358.08 cd	88,373	88,373	-	-	-	245,287	2.49	333,671	
		Rim Ditches	-	-	2,864.62 hrs	88,373	88,373	-	-	-	245,287	-	333,671	
		Rim Ditches	-	-	2,864.62 hrs	88,373	88,373	-	-	-	245,287	-	333,671	
16	Ph 2 Operational Cost	Stage 1 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	-	0.00	0	
		Wet Cast Gypsum Dike Fill	255,189.00 cy	375.000	680.50 cd	167,948	-	-	-	-	466,172	-	2.49	654,121
		Wet Sluice Gypsum Quantities	1,334,496.00 cy	-	-	-	-	-	-	-	-	-	0.00	0
17	Ph 2 Operational Cost	Stage 1 Disposal Life (3 To 1 Side Slopes)	4.90 yrs	-	-	-	-	-	-	-	-	0.00	0	
		Perforated Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf	0.200	2,299.00 mh	57,228	18,706	-	-	-	9,570	-	7.05	81,005
		Geotextile For Underdrain	9,579.00 sy	0.021	197.04 mh	4,724	19,072	-	-	-	657	-	2.55	24,459
18	Ph 2 Operational Cost	#57 Stone For Outlet pipe Bedding (135 pcf)	2,328.00 ln	0.150	349.20 mh	8,447	20,777	-	-	-	2,910	-	13.80	32,139
		Solid Outlet Pipe ADS Drain 6" Diameter	2,586.00 lf	0.200	517.20 mh	11,862	4,209	-	-	-	2,153	-	7.05	19,224
		#57 Stone For Outlet pipe Bedding (135 pcf)	524.00 ln	0.150	78.60 mh	1,901	4,677	-	-	-	655	-	13.80	7,933
19	Ph 2 Operational Cost	Ph 2 Operational Cost	-	-	8,885.07 hrs	247,610	67,443	-	-	-	482,117	-	797,170	
		Ph 2 Operational Cost	-	-	8,885.07 hrs	247,610	67,443	-	-	-	482,117	-	797,170	
		Ph 2 Operational Cost	-	-	8,885.07 hrs	247,610	67,443	-	-	-	482,117	-	797,170	
20	Ph 2 Operational Cost	Stage 2 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	-	0.00	0	
		Wet Cast Gypsum Dike Fill	263,403.00 cy	375.000	702.41 cd	173,354	-	-	-	-	481,178	-	2.49	654,532
		Wet Sluice Gypsum Quantities	1,509,673.00 cy	-	-	-	-	-	-	-	-	-	0.00	0
21	Ph 2 Operational Cost	Stage 2 Disposal Life (Assume Dike & Sluice Gypsum)	5.40 yrs	-	-	-	-	-	-	-	-	0.00	0	
		Perforated Pipe ADS Drain Tube, 6" Diameter	11,865.00 lf	0.200	2,373.00 mh	54,425	19,310	-	-	-	9,878	-	7.05	83,613
		Geotextile For Underdrain	9,886.00 sy	0.021	203.40 mh	4,876	19,667	-	-	-	678	-	2.55	25,241
22	Ph 2 Operational Cost	#57 Stone For Outlet pipe Bedding (135 pcf)	2,403.00 ln	0.150	360.45 mh	8,719	21,447	-	-	-	3,004	-	13.80	33,170
		Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200	534.00 mh	12,247	4,345	-	-	-	2,223	-	7.05	18,616
		#57 Stone For Outlet pipe Bedding (135 pcf)	541.00 ln	0.150	81.15 mh	1,963	4,828	-	-	-	676	-	13.80	7,468
23	Ph 2 Operational Cost	Ph 2 Operational Cost	-	-	9,171.26 hrs	255,585	69,618	-	-	-	497,636	-	822,839	
		Ph 2 Operational Cost	-	-	9,171.26 hrs	255,585	69,618	-	-	-	497,636	-	822,839	
		Ph 2 Operational Cost	-	-	9,171.26 hrs	255,585	69,618	-	-	-	497,636	-	822,839	
24	Ph 3 Initial Constr	Dry Stack Ash Quantities	677,412.00 cy	1,100.000	615.83 cd	1,139,421	-	-	-	-	886,764	2.98	2,020,215	
		Initial Construction Disposal Life (Assume Dry Ash Stack)	1.40 yrs	-	-	-	-	-	-	-	-	-	0.00	0
		Initial Construction Disposal Life (Assume Dry Ash Stack)	-	-	-	-	-	-	-	-	-	-	0.00	0

Spreadsheet Report  
KIF/0509308/FLY&BOTTIMASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Unit	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
15	Ph 3 Operational Cost	Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,349,180.00 cy	1,100.000	44,339.70 hrs 44,339.70 hrs	hrs	1,133,421 1,133,421	-	886,794 886,794	-	0.00	2,020,215 2,020,215
16	Ph 3 Operational Cost	Stage 1 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) Ph 3 Operational Cost	2.80 yrs 0.50 mile	-	1,226.53 cd	cd	-	-	1,766,199	-	0.00	4,023,598 0 4,023,598
17	Ph 2 Operational Cost	Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 2 Disposal Life (Assume Dry Stack) Haul Distance (Round Trip) Ph 3 Operational Cost	1.00 lot 1,504,825.00 cy 3.20 yrs 0.50 mile	1,100.000	1,388.02 cd	cd	2,517,818	-	1,969,953	-	2.88	4,487,771 0 4,487,771
18	Ph 3 Operational Cost	Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) Ph 2 Operational Cost	227,106.00 cy 1,344,916.00 cy 4.80 yrs	375.000	605.62 cd	cd	149,486	-	414,871	-	2.49	564,337 0 564,337
19	Ph 2 Operational Cost	Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) Ph 3 Operational Cost	1.00 lot 1,334,189.00 cy 2.80 yrs 0.50 mile	1,100.000	1,212.90 cd	cd	2,232,317	-	1,746,575	-	2.88	3,978,891 0 3,978,891
20	Ph 3 Operational Cost	Stage 4 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) Ph 2 Operational Cost	1.00 lot 702,654.00 cy 2.70 yrs	375.000	450.22 cd	cd	111,113	-	308,416	-	2.49	419,529 0 419,529
25	Dry Fly Ash Conver	Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Assume Dike & Dry Stack Ash) Ph 3 Operational Cost	1.00 lot 577,613.00 cy 1.20 yrs	1,100.000	525.10 cd	cd	966,441	-	756,148	-	0.00	1,722,589 0 1,722,589
XCONST FACILITY		Dry Fly Ash Conversion Capital Cost Dry Fly Ash Conver	1.00 is	-	-	hrs	-	25,000,000	-	-	25,000,000	25,000,000 25,000,000 25,000,000

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Construct Facilities											
		Mobilization	0.00 ls	400.000	0.00 mh	0			0	0	0.00	0
		Admin Time (Employee proc, etc)	0.00 ls	256.000	0.00 mh	0			0	0	0.00	0
		General Clean Up	0.00 ls	600.000	0.00 mh	0			0	0	0.00	0
		Maintain Roads	0.00 ls	6,372.000	0.00 mh	0			0	0	0.00	0
		Drinking Water	0.00 ls	531.000	0.00 mh	0			0	0	0.00	0
		Hauling	0.00 ls	531.000	0.00 mh	0			0	0	0.00	0
		Portable Toilet Service	0.00 ls						0		0.00	0
		Demobilization	0.00 ls	240.000	0.00 mh	0			0	0	0.00	0
		Construct Facilities			0.00 hrs	0			0	0		0
		XCONST FACILITY			0.00 hrs	0			0	0		0
zNON MANUAL	Non-Manual			#####								
		Non Manual	0.00 ls		0.00 mh	0					0.00	0

\$25.98/HR  
\$32.35/EA

\$4,411,786  
x 1190

\$485,000  
L = 65% \$315,000  
E = 35% \$170,000

184,026  
x .125  
= 23,000

\$42,422,121  
x 3%  
1,272,664

Estimate Totals

Description	Quantity	Unit	Rate	Total	Code
Labor	22,882,271	hrs	880,603.545	20,128,000	C
Material	1,536,899				C
Subcontract	26,131,609				C
Equipment	20,068,354				C
Other	50,000				C
<b>Subtotal</b>	<b>70,669,133</b>				
Engineered Materials - Ph 2					C
Adjustment - Engr Materials					C
<b>Subtotal</b>	<b>70,669,133</b>				
Environmental Costs					C
Adjustment Environmental					C
<b>Subtotal</b>	<b>70,669,133</b>				
Demolition Costs					C
Adjustment Demolition					C
<b>Subtotal</b>	<b>70,669,133</b>				
Small Tools Expense	386,272	0.450 \$/hr			H
Consumables & Expendables	915,291	4.000 %			C
Office Supplies & Expense		3.000 %			C
Subcontract Fee	1,311,553				C
<b>Subtotal</b>	<b>71,660,696</b>				
Escalation - Craft Labor	1,029,702	4.500 %			C
Escalation - Subcontract	705,553	2.700 %			C
Escalation - Subcontract Fee		0.350 %			C
Escalation - Perm Materials	26,127	1.700 %			C
Escalation - HED Equipment		2.000 %			C
Escalation - Tagged Equipment		2.000 %			C
Escalation - Small Tools	29,841	0.034 \$/hr			H
Escalation - Consumables	45,765	0.200 %			C
Escalation - Non-Manual Labor		3.400 %			C
Escalation - Office Supplies	1,937,888	0.200 %			C
<b>Subtotal</b>	<b>73,617,784</b>				
Partner Insurance (FY04)	586,468	3.000 %			C
Partner Award Fee (FY04)	1,144,114	5.000 %			C
<b>Subtotal</b>	<b>1,730,582</b>				
FPG Proj Engr - Phase 1	4	0.000 % @ 42.00 A			A
FPG Mech Engr - Phase 1	4	0.000 % @ 42.00 A			A
FPG Elec Engr - Phase 1	4	0.000 % @ 42.00 A			A
FPG Civil Engr - Phase 1	4	0.000 % @ 42.00 A			A
FPG Syst Engr - Phase 1	4	0.000 % @ 42.00 A			A
Non-TVA Engr - Phase 1	6	0.000 % @ 72.00 A			A
FPG Proj Cntrl Cost - Phase 1	4	0.000 % @ 42.00 A			A
FPG Proj Cntrl Sched - Phase 1	37	0.000 % @ 42.00 A			A
FPG Cost Estimating - Phase 1	4	0.000 % @ 42.00 A			A
Phase 1 Other/Other Org	71	0.000 % @ 42.00 A			L
<b>Subtotal</b>	<b>75,648,437</b>				
FPG Proj Engr - Phase 2	4	0.000 % @ 42.00 A			A
FPG Mech Engr - Phase 2	4	0.000 % @ 42.00 A			A
FPG Elec Engr - Phase 2	4	0.000 % @ 42.00 A			A
FPG Civil Engr - Phase 2	4	0.000 % @ 42.00 A			A
FPG Syst Engr - Phase 2	4	0.000 % @ 42.00 A			A
Non-TVA Engr - Phase 2	6	0.000 % @ 72.00 A			A
FPG Proj Cntrl Cost - Phase 2	4	0.000 % @ 42.00 A			A
FPG Proj Cntrl Sched - Phase 2	4	0.000 % @ 42.00 A			A
FPG Cost Estimating - Phase 2	4	0.000 % @ 42.00 A			A
FPG Engr Records - Phase 2	4	0.000 % @ 42.00 A			A
Phase 2 Other/Other Org	42	0.000 % @ 42.00 A			L
<b>Subtotal</b>	<b>75,648,479</b>				
FPG Proj Engr - Phase 3	4	0.000 % @ 42.00 A			A
FPG Mech Engr - Phase 3	4	0.000 % @ 42.00 A			A
FPG Elec Engr - Phase 3	4	0.000 % @ 42.00 A			A
FPG Civil Engr - Phase 3	4	0.000 % @ 42.00 A			A
FPG Syst Engr - Phase 3	4	0.000 % @ 42.00 A			A
Non-TVA Engr - Phase 3	6	0.000 % @ 72.00 A			A
FPG Proj Cntrl Cost - Phase 3	4	0.000 % @ 42.00 A			A
FPG Proj Cntrl Sched - Phase 3	4	0.000 % @ 42.00 A			A
FPG Engr Records - Phase 3	4	0.000 % @ 42.00 A			A
CAD Dwg Support - Phase 3	26	0.000 % @ 42.00 A			A
Phase 3 Other/Other Org	64	0.000 % @ 42.00 A			L
<b>Subtotal</b>	<b>75,648,543</b>				

Spreadsheet Report  
KIF/0509308/FLY&BOTTM/ASH

Rounding

75,648,543

L

Estimate Totals

Total 75,648,543

**Toney, Calvin L.**

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**From:** Melton, Gary [Gary.Melton@parsonsec.com]  
**Sent:** Monday, December 13, 2004 6:36 PM  
**To:** Toney, Calvin L.  
**Cc:** Hughes, Michael; Smith, Daniel R.  
**Subject:** KIF

Calvin,

The attached file is ~~options 4~~ and options 8. I will send the remaining options first thing in the morning.

Thank You

Gary

<<KIF Ash Study Ph2 QTO Estimated Options 4 & 8REV1.xls>>

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12/14/2004

TVA-00028353

Option 4 & Option 8

KIF Dry Ash in Pond & Gypsum in Pond

PRELIMINARY

ITEM	DESCRIPTION	UNITS	QUANTITY	T-1 Spec	Comments/Assumptions
1.000	Erosion Controls/ Sediment Pond				
1.010	Erect silt fence	lf	1000	571	Place at NE Corner of Dredge Cell
1.020					
1.030	Geotextile Erosion Protection Channel	sy	4300		Non woven
1.040	D50 9" Riprap	ton	5215		18" Riprap Layer Stage A & B
1.050	3" stone, 1' thick to prevent erosion (assume 105 pcf)	ton	2004		Erosion protection channel for Gypsum
1.060	Stage 1-6 CMP Metal Spillway	ea	4		2 Gypsum ponds @ 2 per pond
1.070	Cut	bcy	43		Excavation for placement of 48" half-pipe
1.080	Fill with 1032 crushed stone	ton	93		Compacted until a stable base is achieved.
1.090	1/2 of 48" riser stand pipe	lf	512		Fully bituminous coated & 14 gage thickness
1.100	30" dia CMP	lf	1000		Fully bituminous coated & 14 gage thickness
1.110	Bedding for 30" CMP	ton	135		6" Thick up to half pipe dia.
1.120	30" dia CMP stand pipe	lf	720		4 pipes at 6 stages with 30' per stage
1.130	D50 9" riprap outlet for metal spillway	ton	53		Minimum
1.140					
1.150	Galvanized corrugated metal anti-seep collar	ea	16		Min. 2 per dike
2.000	Seed/Mulch				
2.001	Seed/Mulch disturbed areas	ac	26		5600 ft x 200 ft (wide swale between toe of new earthen
3.000	South Access Road (gravel)				assume existing road upgrade
3.010	1032 crushed stone base 6" depth	ton	3520	305	Assume 1.5 miles of roadway (8000 lf); road is 16 ft
4.000	Perimeter Road				
4.010	1032 crushed stone	ton	6885		Add 6" crushed stone base & compact
4.020	Roller compact	sy	22667		
5.000	Install Drains for Swan Pond Road				Omit for Options 4 & 8
6.000	Dredge Cell/Phase 1 Operational Cost				
6.001	EI. 810 to EI. 866				
6.002	Dry Ash Stack Quantities	cy	5476070		EI. 810 to EI. 866 in Dredge Cell
6.003	Wet Dip and Stack Bottom Ash Only	cy	678848		EI. 810 to EI. 866 in Dredge Cell
6.004	Disposal Life (Assume dike & dredge ash)	yr	12.9		Ash Production rate 475600 cy per year
6.005	Haul Distance	yr	0.5		Round trip from the preceptors
7.000	Phase 2 Base Construction				

7.001 Base Layers					
7.002	Cut for dredge cell	bcy	0		Pond not Req. for dry stacking ash
7.003	Compacted Fly Ash base (Fill)	cy	910556		Added 2' for consolidation
7.004	Proofroll subgrade	sy	281111		Fill from stock pile soil for final cover
7.005	2.5' Thick Bottom Ash Layer	cy	242407		El. 767
7.006	0.5' Thick Fly Ash Filter Layer	cy	48481		El. 767
7.007	18" dia Coarse Bottom Ash Drain Columns (Haul 2 mi, 1100 bcy)	lf	16920		564 columns (3 rows) average of drilled depth to clay layer of 30'. \$20 per lf installed. (SUBCONTRACTED)
7.008	Roto till Fly Ash Layer	sy	281111		
7.009	Bottom Ash Dike Fill	cy	163614		
7.010	<del>1' Layer of Bottom Ash</del>	cy	<del>96963</del>		<del>Omit for option 4 but include in option 8</del>
7.011	<del>Geosynthetic Clay Liner</del>	sy	<del>290889</del>		<del>Omit for option 4 but include in option 8</del>
7.012	4" dia. Perforated PVC Pipe (underdrains) SDR 17.5	lf	41400		
7.013	Trenching for the drain system (4"dia. underdrains)	bcy	1533		
7.014	Strip existing 1' soil cover (Phase 1 expansion)	bcy	19133		Cut will be used as Fill
7.015	Anchor Trench Cut	cy	2073		El. 795, 810, & 845
7.016	Anchor Trench Fill & Compact	cy	1971		95% Standard Proctor Density
7.017					
7.018	2' Thick Bottom Ash Blanket Drain	cy	39111		
7.019	1' Thick Filter Drain Ash Layer	cy	19556		
7.020	Geomembrane	sy	58667		
7.021	Perforated Pipe ADS Drain Tube 6" Dia	lf	7850		
7.022	Geotextile for underdrain	sy	6542		
7.023	#57 Stone for underdrain pipe bedding (135 pcf)	ton	1590		
7.024	Solid Outlet Pipe ADS Drain 6" Dia	lf	1963		
7.025	#57 Stone for outlet pipe bedding (135 pcf)	ton	397		
7.026	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (El. 760)	lf	480		10W425-29
7.027	1081 crushed stone, bedding 6" depth	ton	16		
7.028	6" dia Perforated HDPE Drain (El. 760)	lf	2400		10W425-68
7.029	1081 crushed stone	ton	454		
7.030	Geotextile woven monofilament	sy	1867		Trench
7.031	Cut for underdrain system	cy	356		
7.032	Back Fill for underdrain system	cy	267		
7.012	Certification	ls	50000		
7.013	QA/QC for construction of disposal facility	ls	726800		2 F.T.E. during construction at \$40,000 per year & 5
8.000	Temporary slope protection (5' wide)				



8.001	Cut for ditch	bcy	5815		
8.002	9" D50 Riprap	ton	4239		
8.003	Seed ditch	sy	6978	581	
8.004	Jute Matting	sy	6978		North American Green S150 or Synthetic Industries Land
9.000	<b>Riprap Stilling Basin</b>				
9.001	Riprap D50 size 9"	ton	2344		
9.002	Cut for basin	bcy	3582		3' average depth of cut
10.000	<b>Phase 2 Initial Construction</b>				
10.001	<b>Wet Sluice Sedimented Gypsum Quantities</b>	cy	451295		<b>Phase 2 only (prorated based on volume)</b>
10.002	<b>Initial Cons. Disposal Life</b>	yr	1.4		<b>327360 cy gypsum &amp; ash annual rate</b>
10.003	Perforated Pipe ADS Drain Tube 6" Dia	lf	7370		Elevations 770, 780
10.004	Geotextile for underdrain	sy	6142		Woven Monofilament (Mirafi HP 370)
10.005	#57 Stone for underdrain pipe bedding (135 pcf)	ton	1492		
10.006	Solid Outlet Pipe ADS Drain 6" Dia	lf	1658		
10.007	#57 Stone for outlet pipe bedding (135 pcf)	ton	336		
11.000	<b>Rim Ditches</b>				
11.001	Cut	bcy	111899	130	Total Rim Ditching in Phase 2 through stage 4
12.000	<b>Phase 2 Operational Cost</b>				
12.001	<b>Stage 1 (3 to 1 side slopes)</b>				
12.002	Wet Cast Gypsum Dike Fill	cy	255189		Excavate gypsum from rim ditch & cast on outer &
12.003	Wet Sluice Gypsum Quantities	cy	1334496		Phase 2 only
12.004	Stage 1 Disposal Life (Assume dike & sluice gyp)	yr	4.9		327360 cy gypsum annual rate
12.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	11495		Elevations 790, 800, 810
12.006	Geotextile for underdrain	sy	9579		Woven Monofilament
12.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	2328		
12.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	2586		
12.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	524		
13.000	<b>Phase 2 Operational Cost</b>				
13.001	<b>Stage 2 (3 to 1 side slopes)</b>				
13.002	Wet Cast Gypsum Dike Fill	cy	263403		Excavate gypsum from rim ditch & cast on outer &
13.003	Wet Sluice Gypsum Quantities	cy	1509673		
13.004	Stage 2 Disposal Life (Assume dike & sluice gyp.)	yr	5.4		327360 cy gypsum annual rate
13.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	11865		Elevations 820, 830, 840
13.006	Geotextile for underdrain	sy	9888		Woven Monofilament
13.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	2403		
13.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	2670		
13.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	541		

<b>14.000</b>	<b>Phase 3 Initial Construction</b>					
14.001	Dry Stack Ash Quantities	cy	677412		Phase 3 only (prorated based on volumes)	
14.002	Initial Cons. Disposal Life (Assume Dry Ash Stack)	yr	1.4		475600 ash annual rate; .5 miles round trip	
14.002	Perforated Pipe ADS Drain Tube 6" Dia	lf	0		Elevations 770, 780	
14.003	Geotextile for underdrain	sy	0		Woven Monofilament (Mirafi HP 370)	
14.004	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0			
14.005	Solid Outlet Pipe ADS Drain 6" Dia	lf	0			
14.006	#57 Stone for outlet pipe bedding (135 pcf)	ton	0			
<b>15.000</b>	<b>Phase 3 Operational Cost</b>					
<b>15.001</b>	<b>Stage 1 (3 to 1 side slopes)</b>					
15.002	Dry Stack Ash Quantities	cy	1349180		Phase 3 only	
15.003	Stage 1 Disposal Life (Assume Dry Stack Ash)	yr	2.8		475600 cy ash annual rate	
15.004	Haul distance-	mi	0.5			
15.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	0		For Dry Stacking Ash Only (Round Trip)	
15.006	Geotextile for underdrain	sy	0		Elevations 790, 800, 810	
15.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0		Woven Monofilament	
15.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	0			
15.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	0			
<b>16.000</b>	<b>Phase 3 Operational Cost</b>					
<b>16.001</b>	<b>Stage 2 (3 to 1 side slopes)</b>					
16.002	Dry Stack Ash Quantities	cy	1504825		Phase 3 only	
16.003	Stage 2 Disposal Life (Assume Dry Stack Ash)	yr	3.2		475600 cy ash annual rate	
16.004	Haul distance	mi	0.5		For Dry Stacking Ash Only (Round Trip)	
16.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	0		Elevations 820, 830, 840	
16.006	Geotextile for underdrain	sy	0		Woven Monofilament	
16.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0			
16.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	0			
16.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	0			
<b>17.000</b>	<b>Phase 2 Operational Cost</b>					
<b>17.001</b>	<b>Stage 3 (3 to 1 side slopes)</b>					
17.002	Wet Cast Gypsum Dike Fill	cy	227106		Excavate gypsum from rim ditch & cast on outer & interior dikes	
17.003	Wet Sluice Gypsum Quantities	cy	1344916			
17.004	Stage 3 Disposal Life (Assume dike & sluice gyp.)	yr	4.8		327360 cy gypsum annual rate	
17.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	10230		Elevations 850, 860, 870	
17.006	Geotextile for underdrain	sy	8525		Woven Monofilament	

17.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	2072		
17.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	2302		
17.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	466		
18.000	<b>Phase 3 Operational Cost</b>				
18.001	<b>Stage 3 (3 to 1 side slopes)</b>				
18.002	<b>Dry Stack Ash Quantities</b>	<b>cy</b>	<b>1334189</b>		<b>Phase 3 only</b>
18.003	<b>Stage 3 Disposal Life (Assume Dry Stack Ash)</b>	<b>yr</b>	<b>2.8</b>		<b>475600 cy ash annual rate</b>
18.004	Haul distance	mi	0.5		For Dry Stacking Ash Only (Round Trip)
18.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	0		Elevations 850, 860, 870
18.006	Geotextile for underdrain	sy	0		Woven Mono filament
18.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0		
18.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	0		
18.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	0		
19.000	<b>Phase 2 Operational Cost</b>				
19.001	<b>Stage 4 (3 to 1 side slopes)</b>				
19.002	<b>Wet Cast Gypsum Dike Fill</b>	<b>cy</b>	<b>168831</b>		<b>Excavate gypsum from rim ditch &amp; cast on outer &amp; interior dikes</b>
19.003	<b>Wet Sluice Gypsum Quantities</b>	<b>cy</b>	<b>702654</b>		
19.004	Stage 4 Disposal Life (Assume dike & sluice ash & gyp.)	yr	2.7		327360 cy gypsum annual rate
19.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	7605		Elevations 880, 890, 900
19.006	Geotextile for underdrain	sy	6338		Woven Mono filament
19.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	1540		
19.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	1711		
19.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	347		
20.000	<b>Phase 3 Operational Cost</b>				
20.001	<b>Stage 4 (3 to 1 side slopes)</b>				
20.002	<b>Dry Stack Ash Quantities</b>	<b>cy</b>	<b>577613</b>		
20.003	<b>Stage 4 Disposal Life (Assume dike &amp; dry stack ash)</b>	<b>yr</b>	<b>1.2</b>		<b>475600 cy ash</b>
20.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0		Elevations 880, 890
20.005	Geotextile for underdrain	sy	0		Woven Mono filament
20.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0		
20.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0		
20.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0		

KIF Ash Study Ph2 QTO Estimated Options 4 8REV1.xls

Assumptions

- (1) All earthwork quantities are in bank cubic yards (bcy) - no shrink or swell factors applied
- (2) Closure costs not included.
- (3) Liner is not required for option 3, but is required for option 7.
- (4) Bottom ash columns are subject to change with final design.
- (5) Engineering (Inc. TVA over sight, subcontracts, and additional geotechnical investigation) - Assume 10% of construction costs.
- (6) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & Gypsum/Ash Generation 327360 cy annually.
- (7) Single Phase power is assumed for pump installed for Dredge Cell seepage retrofit. 3-phase power is assumed to not be required.

DRY ASH IS LOADED FROM DRY FLY ASH SILOS.  
 ASSUME USING Z31M (14cy) DUMP TRUCKS ASSUME  
 (EVERY 5 MINUTES; 50 MIN/HR / 5 MINUTES = 10 TIMES X 14cy) 140cy/hr

No of Trucks 14cy (class Z 31M) Dump Trucks

Spotting (incl. waiting time) - 2.00 MIN/TR  
 LOADING 140 cy/HR ÷ 60 MIN/HR = 2.33 cy/MIN  
 Time to load 14cy ÷ 2.33 cy/MIN = 6.00 MIN  
 UNLOAD TURN + DUMP = 2.00 MIN  
 Haul: Haul 1,320' x 5 MPH = 3.00 MIN  
 Return 1,320' x 10 MPH = 1.50 MIN  


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 14.50 MIN

$\frac{50 \text{ MIN. HR}}{14.50 \text{ MIN/TRIP}} = 3.45 \text{ TRIPS/HR} \times 14 \text{ cy/TRIP} = 48.30 \text{ cy/HR/TRUCK}$

$\frac{140 \text{ cy/HR}}{48.30 \text{ cy/HR/TRUCK}} = 2.91 \text{ TRUCKS REQUIRED} \Rightarrow \text{use } \underline{\underline{3 \text{ TRUCKS}}}$

Assumed Crew

- 1 MF4
- 4 M34
- 2 OES4
- 2 LAC9

---

- 9 MEN

Equipment

- 3 (class Z 31M) Dump Trucks
- 1 (class Z 36M) Spinkler
- 1 (class Z 20M) DB DOWER
- 1 (class Z 25L) COMPACTOR

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- 6 PCS EQPT

1,120 cy/day use 1,100 cy/day

ESTIMATE DATA  
 KIF LONG TERM ASH DISPOSAL

2005 LFA 47500  
 02088-8020  
 388,000 cy/year

# Kingston Decision Matrix

Factors	Wet Ash Only in Pond – Gyp On Peninsula	Dry Ash Only in Pond – Gyp on Peninsula	Wet ash in Pond – Gyp in Pond	Dry ash in Pond – Gyp in Pond
OPTION #	OPTION 1	OPTION 2	OPTION 3	OPTION 4
Capacity (CY)	11,887,870 ash 6,547,200 gypsum	11,887,870 ash 6,547,200 gypsum	11,598,137 ash 6,604,437 gypsum	11,598,137 ash 6,604,437 gypsum
Total Costs NPV (From Chart)				
Time Required for Implementation				
Advantages	No dry ash conversion costs, no clay liner construction costs	No clay liner construction cost	No gypsum disposal facility construction costs, no clay liner construction costs	No gypsum disposal facility construction costs, no clay liner construction costs
Disadvantages	Gypsum disposal facility construction costs	Gypsum disposal facility costs, dry ash conversion costs	Dry ash conversion costs in 2017	Dry ash conversion costs

# Kingston Decision Matrix

Factors	Wet Ash Only in Pond – Gyp On Peninsula	Dry Ash Only in Pond – Gyp on Peninsula	Wet ash in Pond – Gyp in Pond	Dry ash in Pond – Gyp in Pond
OPTION #	OPTION 5	OPTION 6	OPTION 7	OPTION 8
Capacity (CY)	11,887,870 ash 6,547,200 gypsum	11,887,870 ash 6,547,200 gypsum	11,598,137 ash 6,604,437 gypsum	11,598,137 ash 6,604,437 gypsum
Total Costs NPV (From Chart)				
Time Required for Implementation				
Advantages	No dry ash conversion costs		No gypsum disposal facility construction costs	No gypsum disposal facility construction costs
Disadvantages	Gypsum disposal facility construction costs, clay liner construction costs	Gypsum disposal facility costs, dry ash conversion costs, clay liner construction cost	Dry ash conversion costs in 2017, clay liner construction costs	Dry ash conversion costs, clay liner construction costs

# Kingston Scope Packages

<p><b>Wet Ash Only in Pond – Gyp On Peninsula</b></p> <p><b>OPTION 1</b></p> <p>This option will consider putting wet ash in the existing pond, installing a french drain system, and sluicing gypsum material to the peninsula area. There are no geosynthetic clay liner costs included in this option</p>	<p><b>Dry Ash Only in Pond – Gyp on Peninsula</b></p> <p><b>OPTION 2</b></p> <p>This option will consider dry fly ash conversion, putting dry ash in the pond, no french drain system installed, and sluicing gypsum material to the peninsula. No geosynthetic clay liner costs are included.</p>	<p><b>Wet ash in Pond – Gyp in Pond</b></p> <p><b>OPTION 3</b></p> <p>This option will consider putting wet ash in the pond, sluicing gypsum material to the pond, and a french drain system. No geosynthetic clay liner costs are included.</p>	<p><b>Dry ash in Pond – Gyp in Pond</b></p> <p><b>OPTION4</b></p> <p>This option will consider dry fly ash conversion, putting dry ash in the pond, sluicing gypsum material to the pond, with no french drain system installation. No geosynthetic clay liner costs are included.</p>
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# Kingston Scope Packages

<p><b>Wet Ash Only in Pond – Gyp On Peninsula</b></p> <p><b>OPTION 5</b></p> <p>This option will consider putting wet ash in the existing pond, installing a french drain system, and sluicing gypsum material to the peninsula area. There are geosynthetic clay liner costs included in this option</p>	<p><b>Dry Ash Only in Pond – Gyp on Peninsula</b></p> <p><b>OPTION 6</b></p> <p>This option will consider dry fly ash conversion, putting dry ash in the pond, no french drain system installation, and sluicing gypsum material to the peninsula. The geosynthetic clay liner costs are included.</p>	<p><b>Wet ash in Pond – Gyp in Pond</b></p> <p><b>OPTION 7</b></p> <p>This option will consider putting wet ash in the pond, sluicing gypsum material to the pond, and installing a french drain system. The geosynthetic clay liner costs are included.</p>	<p><b>Dry ash in Pond – Gyp in Pond</b></p> <p><b>OPTION 8</b></p> <p>This option will consider dry fly ash conversion, putting dry ash in the pond, sluicing gypsum material to the pond, and no french drain system installation. The geosynthetic clay liner costs are included.</p>
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WITH BUFFER & WITHOUT BUFFER  
8-OPTIONS

START THROUGH 2029

10% OF CAPITAL COST ONLY

# Kingston Scope Packages

2-1509304  
2-1509308

Desp301

Wet Ash Only in Pond (- Gyp On Peninsula) (DATE PRICE 5-13-04)	Dry Ash Only in Pond (- Gyp on Peninsula) (DATE PRICE 5-13-04)	Wet ash in Pond Gyp in Pond	Dry ash in Pond Gyp in Pond
KIF530 (5/21/04) Scope is for Waste Storage Facility \$16,375k Capital (conceptual value - no cost estimate)	KIF530 (5/21/04) Scope is for Waste Storage Facility \$16,375k Capital (conceptual value - no cost estimate)	KIF530 (5/21/04) Scope is for Waste Storage Facility \$16,375k Capital (conceptual value - no cost estimate)	KIF530 (5/21/04) Scope is for Waste Storage Facility \$16,375k Capital (conceptual value - no cost estimate)
(less the French drain cost) Plus the liner	(less the French drain cost) Plus the liner	(less the French drain cost) Plus the liner	(less the French drain cost) Plus the liner
Cost Estimate Scope for Dry Fly Ash Conversion Capital Cost	Cost Estimate Scope for Dry Fly Ash Conversion Capital Cost	Cost Estimate Scope for Dry Fly Ash Conversion Capital Cost	Cost Estimate Scope for Dry Fly Ash Conversion Capital Cost
FGD Project pay for Gyp Transportation System (TBD) and Site Development. (initial est. at 9,400K Cost to be Refined)	FGD Project pay for Gyp Transportation System (TBD) and Site Development. (initial est. at 9,400K Cost to be Refined)	FGD Project pays for Prorated portion of Development of Pond Area and Gyp Transport System TBD	FGD Project pays for Prorated portion of Development of Pond Area and Gyp Transport System TBD
O&M TBD	O&M TBD	O&M TBD	O&M TBD
Total Cost (NPV) TBD \$25M - 4M	Total Cost (NPV) TBD \$25 M	Total Cost (NPV) TBD Bren's 29 - 4M \$25 - 3.6	Total Cost (NPV) TBD Bren's NO 25M

Monday

THURSDAY

\$25M Dry Fly Ash Facility

# Long Term – Pond or Peninsula (continued)

## Taking the results of the Peer review in hand we will continue to pursue the evaluation

- Pond Option will be estimated with no buffer requirement and with liner (Capital Installation cost). (Calvin Toney (Complete Oct 15)) 2 ALT.
- The HydroGeo will be submitted in September and after which discussions will be held with TDEC to obtain a better feel for likely answer to the buffer question. (by Nov 1.) IGNORE
- Revisit the cost estimate on the peninsula option (Calvin Toney CAPITAL Oct. 15) Include assumed cost for Karst mitigation and wetland component mitigation. CAPITAL component
- Set up table of total cost based on NPV for wet and dry ash
  1. Gypsum and Ash in Pond Option
  2. Ash in Pond, Gypsum on Peninsula Option
- Set up a decision matrix with cost, risks, advantages and disadvantages stated.
- Present to the FGD JPT at the December meeting.

**Spreadsheet Report**  
Ash Disposal

**Kingston Fossil Plant**  
**Develop Fly Ash, Gypsum & Bottom Ash Disposal Capacity**  
**Development of a waste stack for flyash, bottom ash & gypsum.**

Project name Ash Disposal  
Estimator Sys. Eng.  
Plant KIF  
Estimate # 04313  
PCN # KIF330  
Requesting Engr S. M. Haber  
Option 0  
Revision 0  
Phase 1  
Estimate Type Conceptual  
Estimate Accuracy +/- 30%  
Est. Issue Date 08/16/2004  
Funding Type Capital  
Report format Sorted by 'Location/Activity'  
Detail summary

Estimate Company

Spreadsheet Report  
Ash Disposal

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
K/F	Ash System											
		Material (Blank)	1.00 ls		1.00 ls		8,000,000				8,000,000.00	8,000,000
		Crat Labor (GUMBK)	1.00 ls	1,086.366	1,086.37 mh	40,000					40,000.00	40,000
		GUMBK (PH II)	1.00 ls		1.00 ls					35,000	35,000.00	35,000
		Plant Support (PH III)	1.00 ls		1.00 ls					40,000	40,000.00	40,000
		Turnkey Installation	1.00 ls		1.00 ls			7,085,000			7,085,000.00	7,085,000
		Ash System	1.00 ls		1,086.37 hrs	40,000	8,000,000	7,085,000		76,000	7,085,000.00	15,200,000
		K/F			1,086.37 hrs	40,000	8,000,000	7,085,000		75,000	7,085,000.00	15,200,000

Estimate Totals

		1,086,366	hrs	
Labor	40,000			
Material	8,000,000			
Subcontract	7,085,000			
Other	75,000			
	<u>15,200,000</u>	15,200,000		
Engineered Materials - Pht 2	8,000,000	100,000 %	C	
Adjustment - Engr Materials	(8,000,000)	(100,000) %	C	
Environmental Costs				
Adjustment Environmental	15,200,000	100,000 %	C	
		(100,000) %	C	
Demolition Costs				
Adjustment Demolition	15,200,000	100,000 %	C	
		(100,000) %	C	
FPG Engineering - Phase 1	250,000	547,917 % @	42.00 A	5,952
FPG Proj Engr - Phase 1	17,312	37,942 % @	42.00 A	412
FPG Estimating - Phase 1	1,008	2,209 % @	42.00 A	24
FPG Proj Condit - Phase 1	1,680	3,662 % @	42.00 A	40
Plant Support - Phase 1	5,000		L	
	<u>275,000</u>	15,475,000		
FPG Engineering - Phase 2	370,000	810,917 % @	42.00 A	8,810
FPG Proj Engr - Phase 2	49,960	109,456 % @	42.00 A	1,190
FPG Estimating - Phase 2	1,008	2,209 % @	42.00 A	24
FPG Proj Condit - Phase 2	3,360	7,364 % @	42.00 A	80
FPG Records - Phase 2	672	1,473 % @	42.00 A	16
Plant Support - Phase 2	25,000		L	
	<u>450,000</u>	15,625,000		
FPG Engineering - Phase 3	400,000	876,667 % @	42.00 A	9,524
FPG Proj Engr - Phase 3	47,312	103,682 % @	42.00 A	1,126
FPG Estimating - Phase 3	1,680	3,662 % @	42.00 A	40
FPG Proj Condit - Phase 3	1,008	2,209 % @	42.00 A	24
FPG Records - Phase 3	450,000			
<b>Total</b>		<b>16,375,000</b>		

# Kingston Decision Matrix

Factors	Wet Ash Only in Pond – Gyp On Peninsula	Dry Ash Only in Pond – Gyp on Peninsula	Wet ash in Pond – Gyp in Pond	Dry ash in Pond – Gyp in Pond
Capacity (CY)				
Facility Life Expectancy (Years)				
Total Costs NPV (From Chart)				
Time Required for Implementation				
Risk/Other Factors				
Advantages	#			
Disadvantages				
The Bottom Line				

**KINGSTON FOSSIL PLANT**  
**Waste Management Update**

**September 2, 2004**

**Plant Manager's Conference Room**

**2:00 PM-3:30 PM.**

# **KINGSTON FOSSIL PLANT**

## **Waste Management Update**

- 1. Interim Dredge Cell & FWV**
- 2. Permanent Dredge Cell**
- 3. Dry Fly Ash Conversion**
- 4. Permit Package**
- 5. Long Term – Pond or Peninsula**



# Interim Dredge Cell and FWV

## Current Status - Hedgecoth

- **Phase 1 (of 3) is complete and filled with dredged ash**
- **Phase 2 is being constructed**
  - Construction Complete by end of September
  - Capacity and Timeline
  - Construction Technique

## Next Steps - Hedgecoth

- **Phase 3 –Capacity and Timeline**
- **FWV graph – Current and Projected**

# Permanent Dredge Cell

## Current Status

- **Status of Water Seepage**
  - Surface - Catlett
  - Potential Groundwater Offsite Source - Petty
- **Temporary Pumping System**
  - Plant Concerns - Catlett

## Proposed Permanent Fix

- **Alternatives Considered - Petty**
  - HDPE Liner
  - Rip Rap/Rock Face
  - Vibratory Wall
  - Conversion to Dry Fly Ash
  - Deep French Drain
- **Status of Engineering Study - Petty**

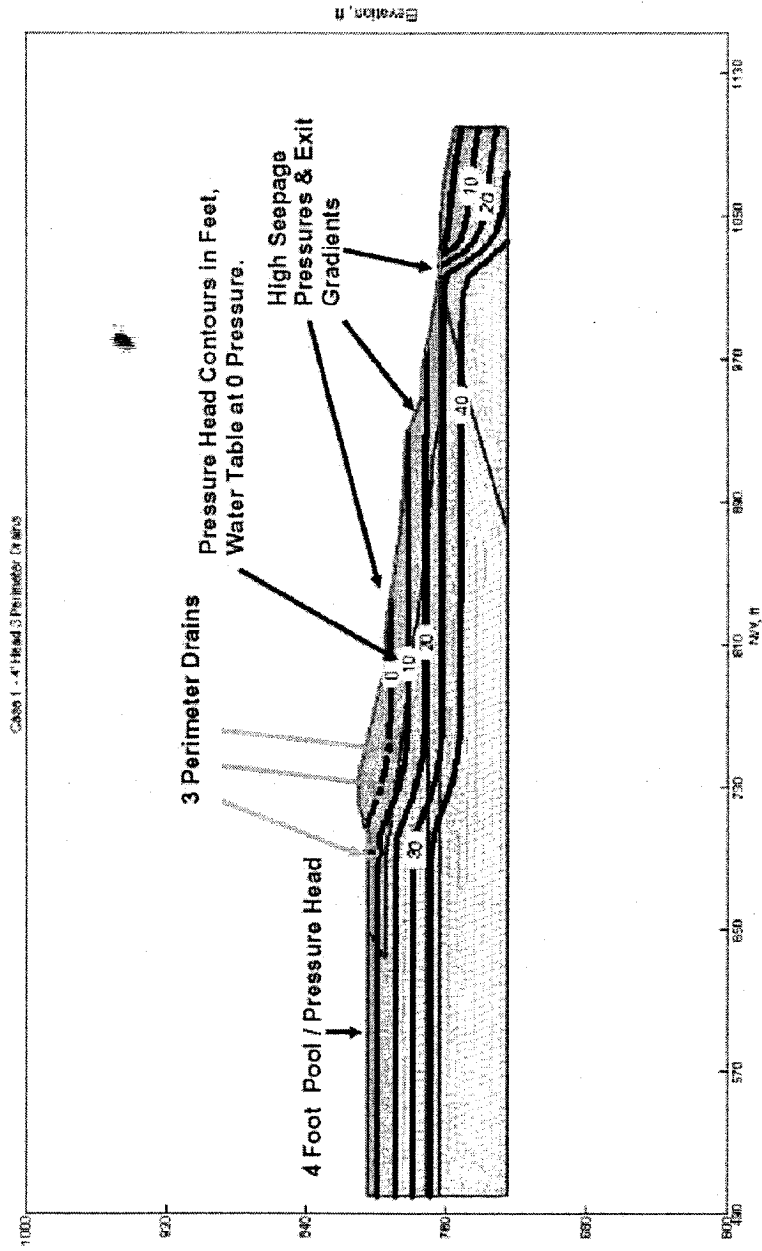


Figure 4. Case 1. Perimeter Drains for Stage C (Stage 1) Still Produce Large Exit Gradients At Steady State.

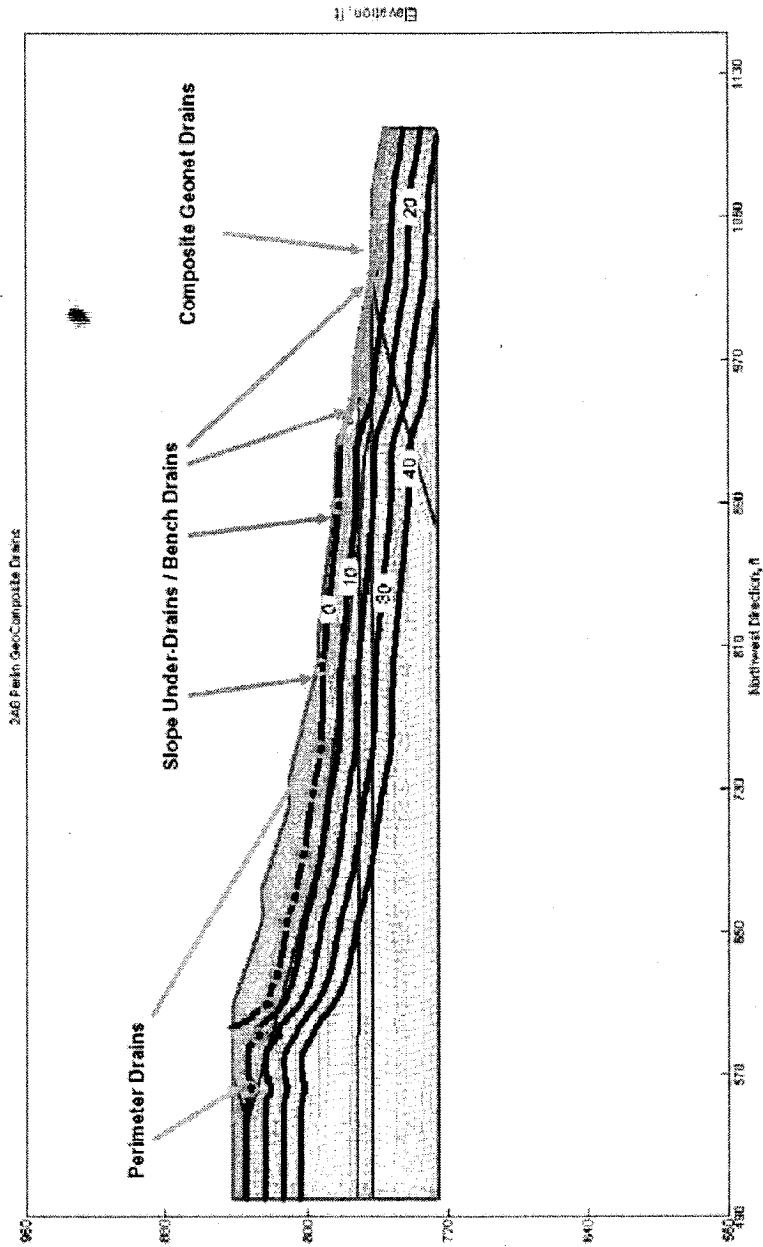
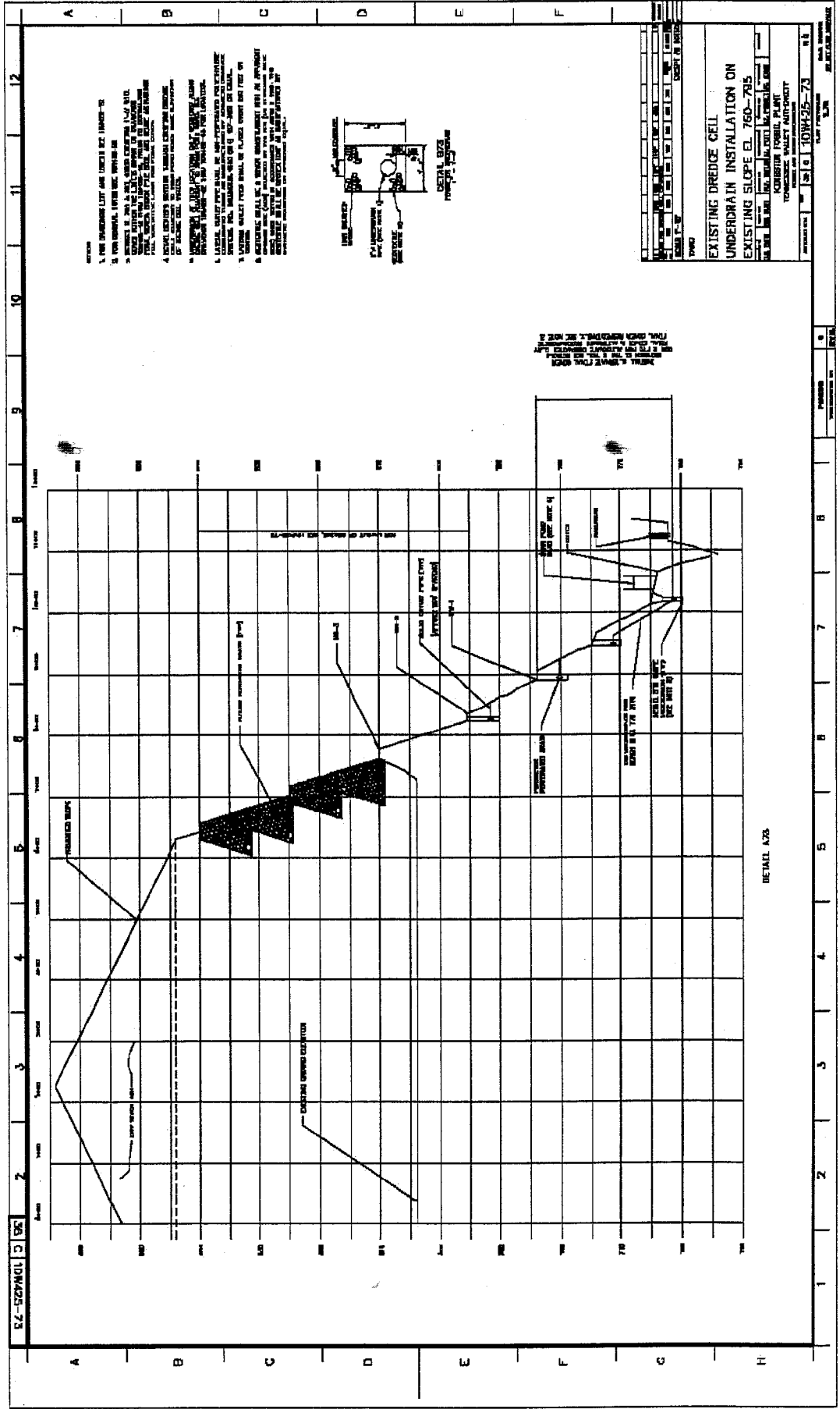
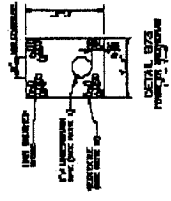


Figure 7. Case 2. Perimeter, Bench, and Composite Geonet Drains for Stage E (Stage E) Control Exit Gradients.



- NOTES**
1. THE DREDGED BANK AND UNDERDRAIN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGED BANK AND UNDERDRAIN.
  2. THE DREDGE CELL SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL.
  3. THE DREDGE SUMP SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE SUMP.
  4. THE DREDGE CELL WALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL.
  5. THE DREDGE CELL FLOOR SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL FLOOR.
  6. THE DREDGE CELL ROOF SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL ROOF.
  7. THE DREDGE CELL WALL FOOTING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL FOOTING.
  8. THE DREDGE CELL WALL REINFORCING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL REINFORCING.
  9. THE DREDGE CELL WALL BRICKWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL BRICKWORK.
  10. THE DREDGE CELL WALL CONCRETE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL CONCRETE.
  11. THE DREDGE CELL WALL JOINT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL JOINT.
  12. THE DREDGE CELL WALL CURB SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL CURB.
  13. THE DREDGE CELL WALL CURB JOINT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL CURB JOINT.
  14. THE DREDGE CELL WALL CURB REINFORCING SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL CURB REINFORCING.
  15. THE DREDGE CELL WALL CURB BRICKWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL CURB BRICKWORK.
  16. THE DREDGE CELL WALL CURB CONCRETE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE DESIGN SPECIFICATIONS FOR THE DREDGE CELL WALL CURB CONCRETE.

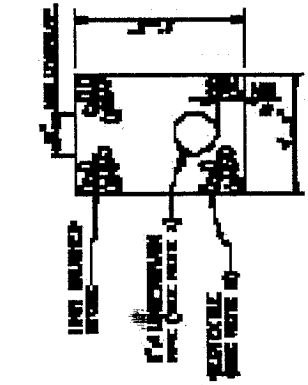


**EXISTING DREDGE CELL  
UNDERDRAIN INSTALLATION ON  
EXISTING SLOPE CL. 760-7915**

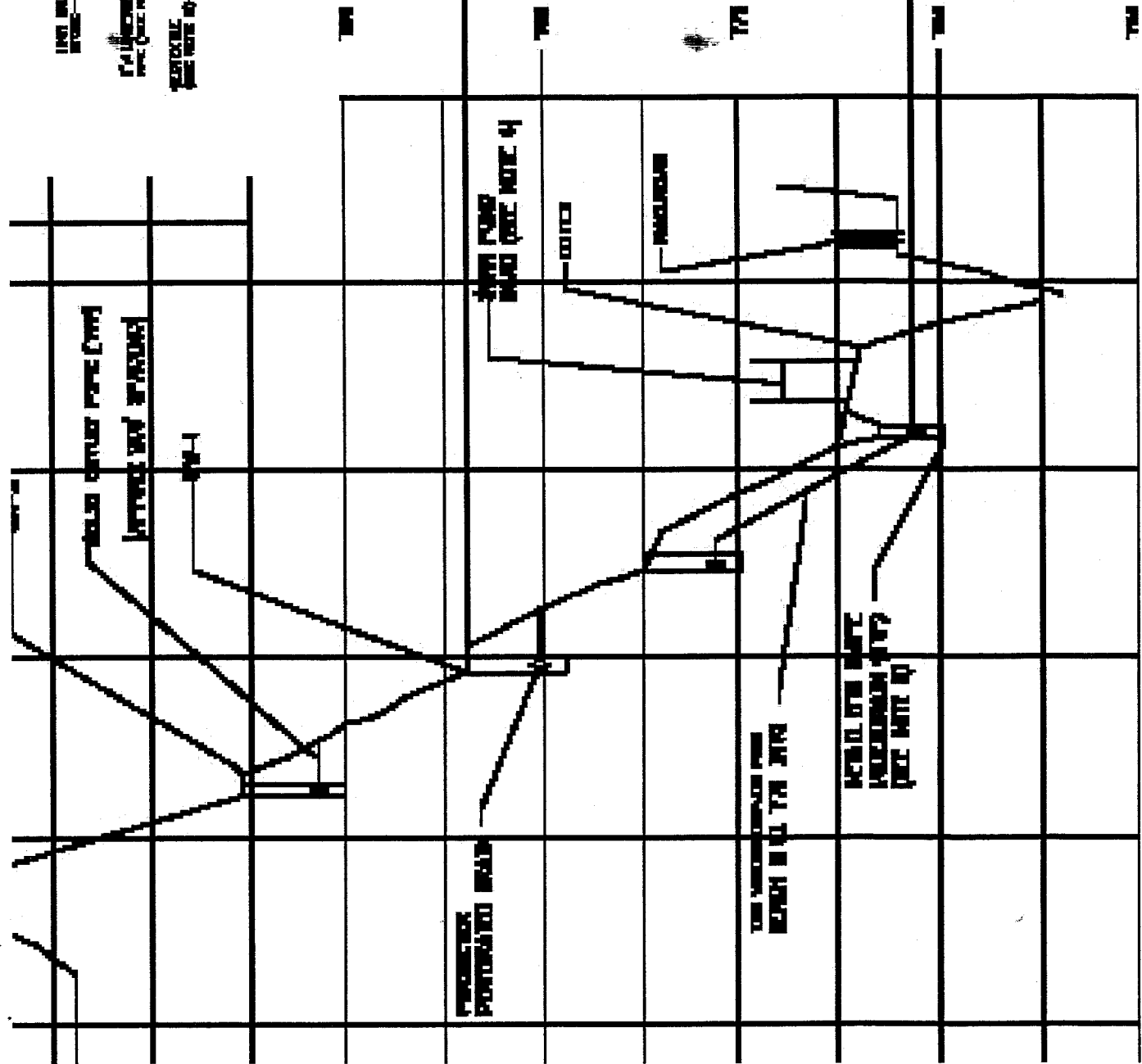
DATE: 11/10/50  
BY: R. W. BROWN  
CHECKED BY: J. W. BROWN  
DESIGNED BY: J. W. BROWN  
TOWN ENGINEER: J. W. BROWN

DETAIL A25

2. SHOW THE TRANSITION FROM THE  
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DETAIL B73  
 SECTION 101



# Permanent Dredge Cell

- (KIF530) Capital Project Submittal - Haber
  - Answer Permit Questions
  - Phase 1 study for dredge cell fix
  - Next Steps – Timeline for Fix
    - FY05

# Dry Fly Ash Conversion

- **Preliminary Cost Estimate Developed \$ 25,000K**  
– Purkey
- **Advantages**
  - Handling
  - Marketing
  - Other
- **Disadvantages**
  - NH3 concerns likely will require liner in existing dredge cell
- **Next Steps ?**



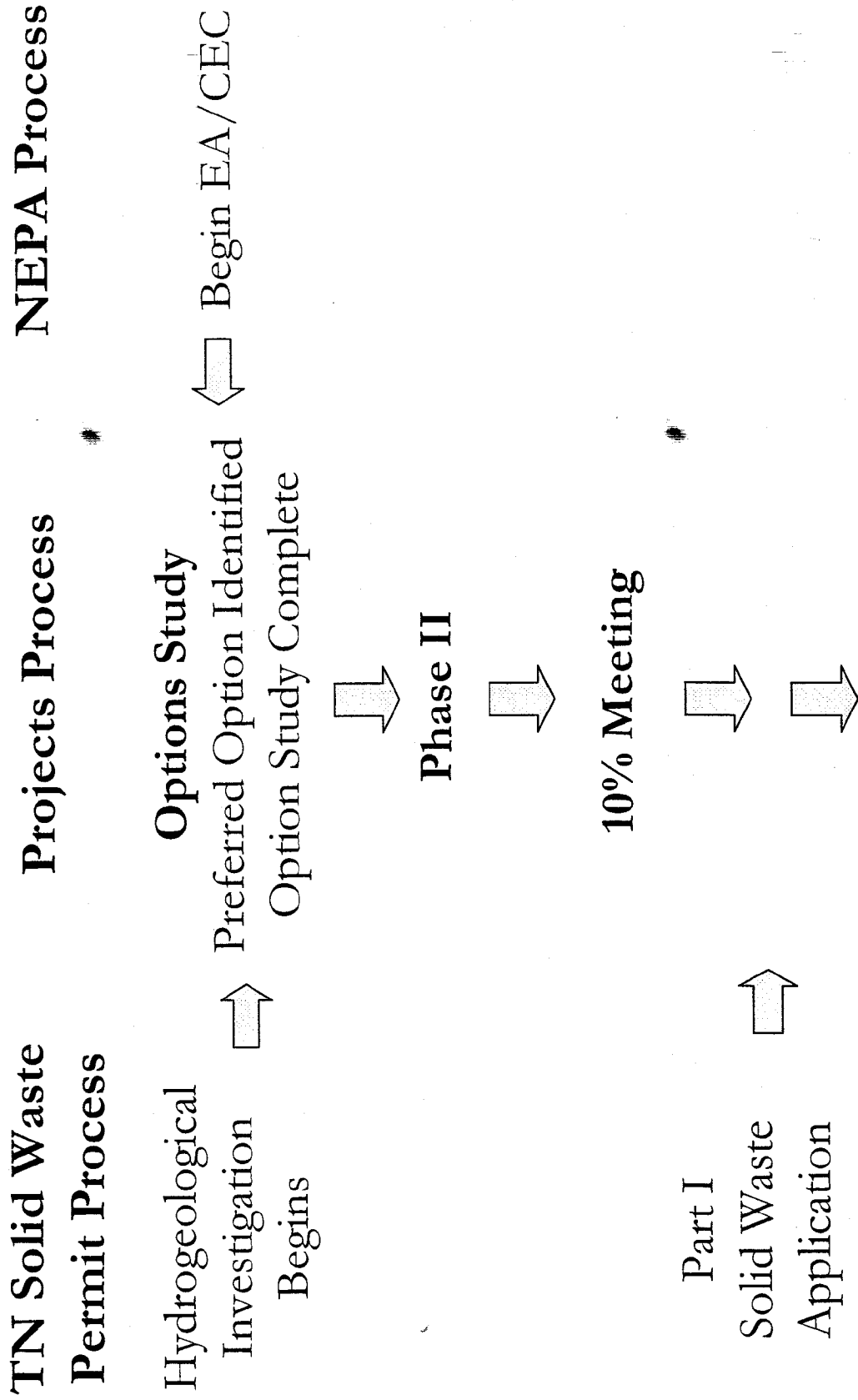
# Permit Package

## Current Status

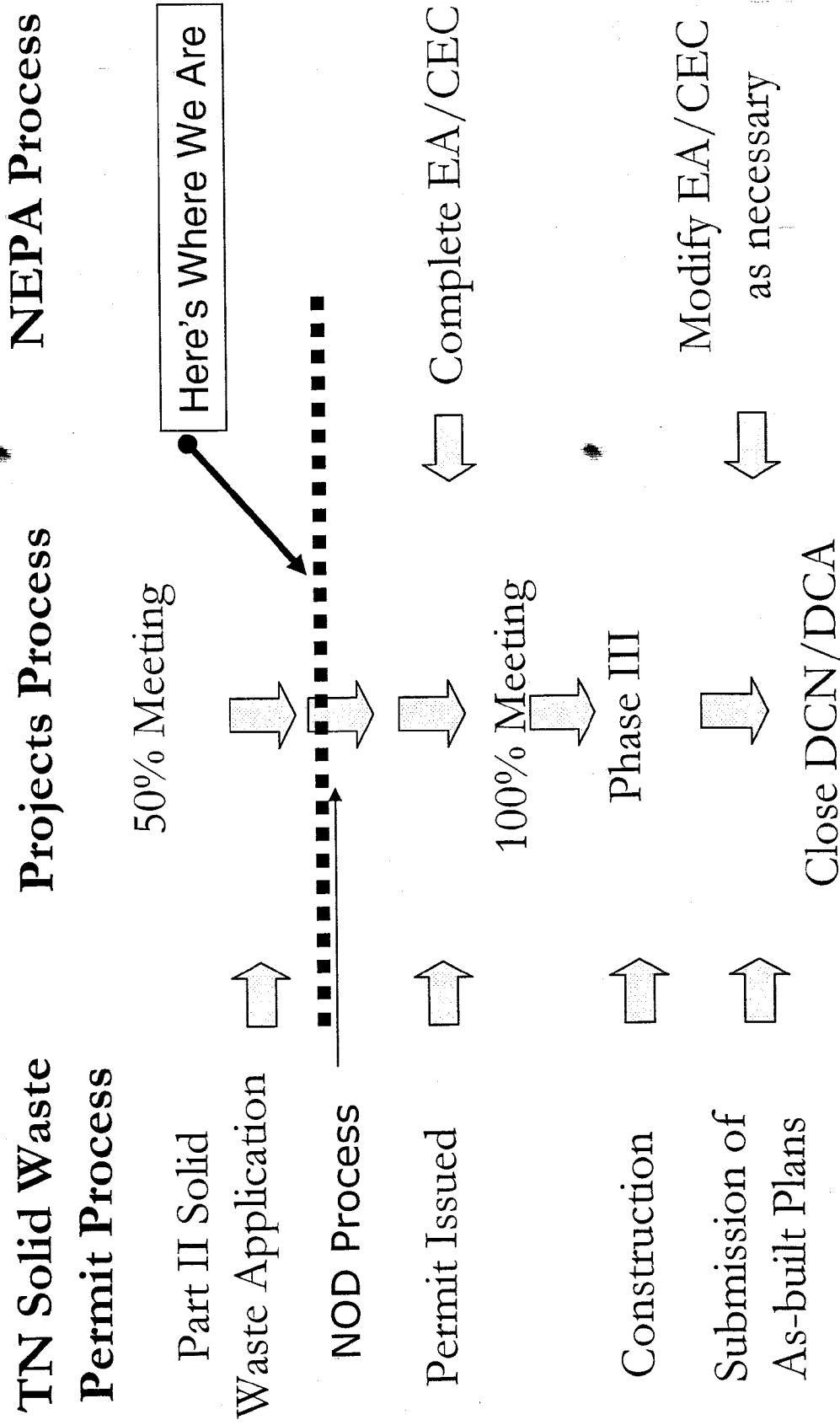
- Bowers

- Permit package has been submitted to TDEC

# Kingston Current Status



# Kingston Current Status



# Permit Package

## Issues

- **NH3 Impact from Dry Fly Ash has been a Major Issue during the HydroGeo Preparation**
- **Permitting Dry Fly Ash and/or Gypsum in the Pond Complex without a liner will be a challenge based on initial conversations with TDEC**

## Next Steps

- **A site visit/meeting with TDEC to review the permit area is anticipated.**
- **Draft HydroGeo is being reviewed prior to submittal to the state. (September)**

# Long Term – Pond or Peninsula

## Pond/Peninsula options

- **Review of Project History** - Bowers
  - Phase I Study – (May 2003) Peninsula & Pond Initial Costs
    - Peninsula: \$9,400K
    - Pond: \$25,000K - Initial Cost Estimate based on CUF
    - Drainage Layer Cost was a significant issue/viability of alternate drainage layer unknown at this point
    - Commitment to Plant (Earl's Request) to re-examine costs at a later date however refinement of in-pond cost difficult without significant engineering effort and site investigation

# Long Term – Pond or Peninsula

## Pond/Peninsula options

- **Review of Project History (Continued) - Bowers**
  - Dredge Cell Problem
  - TDEC requires permit for interim dredge cell
  - Decision is made in meeting at KIF to pursue permit for all waste/all options
  - Part II Package Developed that included alternative Drainage Blanket to reduce costs.
  - Package also included a proposed fix for the Dredge Cell Leak
  - Design Complexity
  - Operational Complexity

# **Long Term – Pond or Peninsula (continued)**

- **Either option can be likely permitted per Environmental Affairs; however, to ensure that adequate time is available for permitting the peninsula, a project commitment must be made by January 1, 2005. Engineering will present a recommendation to the FGD JPT based on lowest NPV, Dec. 01, 2004.**
- **To arrive at this recommendation by that date the following steps will be taken:** -Petty

# Long Term – Pond or Peninsula (continued)

- A firm, GeoSyntec, has been selected for Peer review as requested by Earl Deskins. Peer Review of Design/Permit Package Completed by Oct 31. (Purpose is to resolve question of difficulty of operation and constructability.)
- Pond Option will be estimated with no buffer requirement and with liner (Capital Installation cost). (Calvin Toney (Complete Oct 15))
- The HydroGeo will be submitted in September and after which discussions will be held with TDEC to obtain a better feel for likely answer to the buffer question. (by Nov 1.)
- Revisit the cost estimate on the peninsula option (Calvin Toney Oct. 15) Include assumed cost for Karst mitigation and wetland mitigation.
- Set up table of total cost based on NPV for wet and dry ash
  1. Gypsum and Ash in Pond Option
  2. Ash in Pond, Gypsum on Peninsula Option
- Set up a decision matrix with cost, risks, advantages and disadvantages stated.
- Present to the FGD JPT at the December meeting.

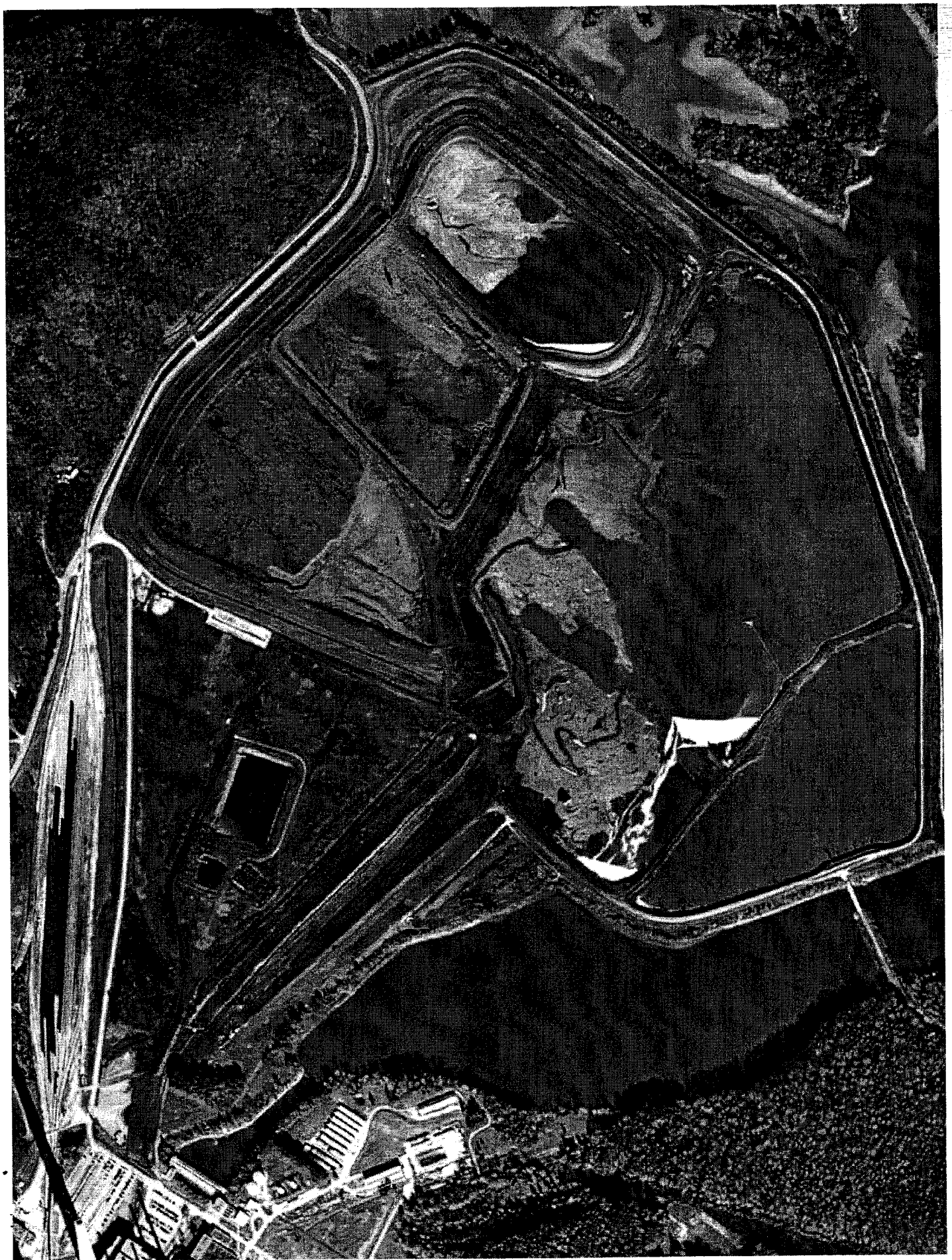


# Kingston Scope Packages

Wet Ash Only in Pond – Gyp On Peninsula	Dry Ash Only in Pond – Gyp on Peninsula	Wet ash in Pond – Gyp in Pond	Dry ash in Pond – Gyp in Pond
KIF530 (5/21/04) Scope is for Waste Storage Facility \$16,375k Capital (conceptual value – no cost estimate)	KIF530 (5/21/04) Scope is for Waste Storage Facility \$16,375k Capital (conceptual value – no cost estimate)	KIF530 (5/21/04) Scope is for Waste Storage Facility \$16,375k Capital (conceptual value – no cost estimate)	KIF530 (5/21/04) Scope is for Waste Storage Facility \$16,375k Capital (conceptual value – no cost estimate)
	(less the French drain cost) Plus the liner		(less the French drain cost) Plus the liner
	12/03 Cost Estimate Scope is for Dry Fly Ash Conversion \$25,000k Capital Cost		12/03 Cost Estimate Scope is for Dry Fly Ash Conversion \$25,000k Capital Cost
FGD Project pay for Gyp Transportation System (TBD) and Site Development. (initial est. at 9,400K) Cost to Refined	FGD Project pay for Gyp Transportation System (TBD) and Site Development. (initial est. at 9,400K) Cost to Refined	FGD Project pays for Prorated portion of Development of Pond Area and Gyp Transport System TBD	FGD Project pays for Prorated portion of Development of Pond Area and Gyp Transport System TBD
O&M TBD	O&M TBD	O&M TBD	O&M TBD
<b>Total Cost (NPV) TBD</b>	<b>Total Cost (NPV) TBD</b>	<b>Total Cost (NPV) TBD</b>	<b>Total Cost (NPV) TBD</b>

# Kingston Decision Matrix

Factors	Wet Ash Only in Pond – Gyp On Peninsula	Dry Ash Only in Pond – Gyp on Peninsula	Wet ash in Pond – Gyp in Pond	Dry ash in Pond – Gyp in Pond
Capacity (CY)				
Facility Life Expectancy (Years)				
Total Costs NPV (From Chart)				
Time Required for Implementation				
Risk/Other Factors				
Advantages				
Disadvantages				
The Bottom Line				



Toney, Calvin L.

From: Melton, Gary [Gary.Melton@parsonsec.com]  
Sent: Tuesday, December 14, 2004 9:47 AM  
To: Toney, Calvin L.  
Cc: Hughes, Michael; Smith, Daniel R.

Calvin,  
Dan and I meet and clarified some issues on Option 3 and Option 7, Option 1 and Option 5, and Option 2 and Option 6. We concluded that the changes should be made and reflected in your cost estimate. Resending options 3 and 7. The attached document has the latest for option 3 and option 7 takeoffs. The changes that have been made are in bold. If you have any questions contact Dan or myself.  
Thank You,

Gary D. Melton, E.I.T.  
Parsons E & C  
633 Chestnut St, Suite 400 Fax: (423) 266-0922  
Chattanooga, TN 37450  
Email: gary.melton@parsonsec.com  
Phone: (423) 757-9974

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**Option 2 & Option 6 PRELIMINARY KIF Dry Ash in Pond & Gypsum on Peninsula (Wet ash in Dredge Cell/Ph1, and Phase 2. Phase 3 not constructed. Gypsum on Peninsula)**

ITEM	DESCRIPTION	UNITS	QUANTITY	T-1 Spec	Comments/Assumptions
<b>1.000</b>	<b>Erosion Controls/Sediment Pond</b>				
1.010	Erect silt fence	lf	1000	571	Place at NE Corner of Dredge Cell
1.020					
1.030	Geotextile Erosion Protection Channel	sy	4300		Non woven
1.040	D50 9" Riprap	ton	5215		18" Riprap Layer Stage A & B
1.050	3" stone, 1' thick to prevent erosion (assume 105 pcf)	ton	2004		Erosion protection channel for Gypsum
1.060	Stage 1-6 CMP Metal Spillway	ea	4		2 Gypsum ponds @ 2 per pond
1.070	Cut	bcy	43		Excavation for placement of 48" half-pipe
1.080	Fill with 1032 crushed stone	ton	93		Compacted until a stable base is achieved.
1.090	1/2 of 48" riser stand pipe	lf	512		Fully bituminous coated & 14 gage thickness
1.100	30" dia CMP	lf	1000		Fully bituminous coated & 14 gage thickness
1.110	Bedding for 30" CMP	ton	135		6" Thick up to half pipe dia.
1.120	30" dia CMP stand pipe	lf	720		4 pipes at 6 stages with 30' per stage
1.130	D50 9" riprap outlet for metal spillway	ton	53		Minimum
1.140					
1.150	Galvanized corrugated metal anti-seep collar	ea	16		Min. 2 per dike
<b>2.000</b>	<b>Seed/Mulch</b>				
2.001	Seed/Mulch disturbed areas	ac	26		5600 ft x 200 ft (wide swale between toe of new earthen assume existing road upgrade
<b>3.000</b>	<b>South Access Road (gravel)</b>				
3.010	1032 crushed stone base 6" depth	ton	3520	305	Assume 1.5 miles of roadway (8000 lf); road is 16 ft
<b>4.000</b>	<b>Perimeter Road</b>				
4.010	1032 crushed stone	ton	6885		Add 6" crushed stone base & compact
4.020	Roller compact	sy	22667		(Omit for Option 2 and Option 6)
<b>5.000</b>	<b>Install Drains for Swan Pond Road</b>				
<b>6.000</b>	<b>Dredge Cell/Phase 1 Operational Cost</b>				
6.001	El. 810 to El. 866	cy	5476070		El. 810 to El. 866 in Dredge Cell
6.002	Dry Ash Stack Quantities	cy	678848		El. 810 to El. 866 in Dredge Cell
6.003	Wet Dip and Stack Bottom Ash Only	yr	12.9		Ash Production rate 475600 cy per year
6.004	Disposal Life (Assume dike & dredge ash)	mi	0.5		Round trip from the preceptors
6.005	Haul Distance				

6.006									
7.00	<b>Gypsum Stack Peninsula (7.00 through 16.02)</b>								
7.01	Clear and Grub								
7.02	Clear and grub <i>2110.100</i>	ac	90						
7.03	Strip 1 ft vegetation and topsoil - spoil at stockpile	bcy	129,000						
8.00	<b>Erosion Controls</b>								
8.01	Erect silt fence	lf	4,900						6 ft post spacing, trench bottom of fence, 10% hay bales
8.02	cut for stormwater runoff pond	bcy	2000	<i>1200</i>					2 ponds, assume 2.5 ac ft and 4.5 ac-ft; 0.5 ac and 0.9
8.03	fill for stormwater runoff pond	bcy	12,000	<i>14450</i>					
8.04	riprap for stormwater runoff pond	ton	4,300						Combined - 1 ft deep
8.05	72 in dia cmp for riser for outlet structure	lf	6						
8.06	48 in dia cmp for riser for outlet structure	lf	7						
8.07	cut holes in riser	ea	3						
8.08	48 in dia cmp outlet pipe (principle spillway)	lf	150						
8.09	Concrete for riser base (assume 7 ft x 7 ft x 2 ft)	cy	4						
8.10	Anti-seep collars (assume concrete)	ea	7						
8.11	pipe bedding	ton	20						
8.12	clean out stormwater runoff pond	bcy	2,300	<i>2070</i>					Assume 1 ft deep @ 1.4 ac
9.00	<b>Roads</b>								
9.01	South Access Road (gravel)								Assume 1.5 miles of roadway (8000 lf); road is 16 ft
9.02	Bottom Ash	bcy	2400						Assume 6 in bottom ash
9.03	crushed stone base	ton	2,900						Assume 4 inch stone (1032)
9.04									
9.05	Permanent Parking Lot (paved stone)								
9.06									
9.07	crushed stone base	ton	340						Assume 100 x 100 ft w/ 6 in crushed stone
9.08									
10.00	<b>Fencing</b>								
10.01	New fencing (including grounding)	lf	200						Assume fence to block road only - no perimeter fence
10.02	Gates, swinging	ea	1						personnel
10.03	Gates, sliding, w/ motorized operator	ea	1						20 ft wide
10.04									
11.00	<b>Seed/Mulch</b>								

Item	Description	Unit	Quantity	Cost	Notes
11.01	Seed/Mulch disturbed areas	ac	25		Areas outside dike
12.00	Borrow area development				
12.01	Add some costs for future borrow area development				By estimator
12.02					
13.00	Gypsum Disposal Facility				
13.01	Disposal facility construction	bcy	310,553	12070	
13.01	Earthwork cut	bcy	189,719	12070	
13.02	Earthwork fill	bcy	112,933	12070	
13.03	Spoil select cut for future 1 ft clay layer in final cover	bcy	7,900		Spoil at nearby location - assume clearing and grubbing, Spoil separately at 1 ac-site
13.04	Additional spoil material	ton	23,500		assume 2 ft deep riprap, 7300 lf ditch
13.05	Ditch riprap	sy	19,500		assume ditch has 24 ft top width
13.06	geotextile (if riprap is used)	cy	2,400		
13.07	Perimeter road surfacing - bottom ash	ton	2,900		6 in bottom ash topped w/ 4 in stone - 1.5 mi of roadway 16 ft wide
13.08	Perimeter road surfacing - crushed stone	ton	2,900		
13.09	Compacted clay liner	bcy	339,000	12070	Omit in option 2 and include in option 6 (Built in 6 lifts)
13.10	Drainage layer (1 ft thick) for liner (No 57 stone)	ton	168,000		Unit wt = 110 pcf
13.11	Geotextile for underdrain	sy	5,700		Wrapped around pipe
13.12	Perimeter underdrain pipe	lf	6,400		8 in dia HDPE, SDR = 17, perforated
13.13	Fittings for underdrain piping	ea	50		
13.14	Concrete anchors for underdrain piping	ea	85		Assume 75 ft spacing
13.15	Proofroll subgrade	ac	70		
14.00	Gypsum Peninsula Disposal Cost				
14.01	Fill for Underdrain system	cy	4,407		
14.02	6" dia perforated HDPE underdrains	lf	59,491		Elevations 770 to 850
14.03	Fill for Underdrain system	cy	3,525		
14.04	6" depth 1081 crushed stone (110 pcf)	ton	3,272		
14.05	Cut for Lateral outlet pipes	cy	551		
14.06	6" dia non-perforated HDPE Lateral outlet pipes	lf	7,436		Lateral pipe located every 200' on center
14.07	Fill for Lateral outlet pipes	cy	441		
14.08	6" depth 1081 crushed stone (110 pcf)	ton	409		
14.09	Gypsum Disposal Stack (wet sluice)	cy	553,583		Option 1A 3:1 slope w/ 15 ft bench
14.10	Wet cast Gyp Dike	cy	101,134		Elevations 770 to 850
14.11	Cut Rim ditches	cy	114,575		Elevations 770 to 850

		cy	20.0			
14.12	Life of Gypsum Disposal Stack	ls	240,000			Assume 327360 cubic yards per year (@ 84 pcf)
14.13	Allowance for karst geologic features	ls	100000			Based on % of Gypsum Disp cost
14.14	Addition geotechnical investigation					Groundwater elevations, monitoring wells, &
14.15						
15.00	Construction parking					
15.01	silt fence	lf	1,000			
15.02	Earthwork cut	bcy	1,000			
15.03	Earthwork fill	bcy	500			
15.04	Crushed stone base	ton	1,400			assume 100 x 100 ft x 6 in thick crushed stone base
16.00	Engineering					Use a 10 percentage of const costs
16.01	Engineering					
16.02						
17.000	Phase 2 Base Construction (Phase 2 only)					
17.001	Base Layers					
17.002	Cut for dredge cell	bcy	0			Pond not Req. for dry stacking ash
17.003	Compacted Fly Ash base (Fill)	cy	573650			Added 2' for consolidation
17.004	Proofroll subgrade	sy	177100			Fill from stock pile soil for final cover
17.005	2.5' Thick Bottom Ash Layer	cy	152717			El. 767
17.006	0.5' Thick Fly Ash Filter Layer	cy	30543			El. 767
17.007	18" dia Coarse Bottom Ash Drain Columns (Haul 2 mi, 1100 bcy)	lf	16920			564 columns (3 rows) average of drilled depth to clay layer of 30'. \$20 per lf installed. (SUBCONTRACTED)
17.008	Roto till Fly Ash Layer	sy	177100			
17.009	Bottom Ash Dike Fill	cy	0			
17.010	1' Layer of Bottom Ash	cy	61087			Omit for option 4 but include in option 8
17.011	Geosynthetic Clay Liner	sy	183260			Omit for option 4 but include in option 8
17.012	4" dia. Perforated PVC Pipe (underdrains) SDR 17.5	lf	26082			
17.013	Trenching for the drain system (4" dia. underdrains)	bcy	110968			
17.014	Strip existing 1' soil cover (Phase 1 expansion)	bcy	139133			Cut will be used as Fill
17.015	Anchor Trench Cut	cy	1306			El. 795, 810, & 845
17.016	Anchor Trench Fill & Compact	cy	1242			95% Standard Proctor Density
17.017						
17.018	2' Thick Bottom Ash Blanket Drain	cy	24640			
17.019	1' Thick Filter Drain Ash Layer	cy	12320			
17.020	Geomembrane	sy	36960			
17.021	Perforated Pipe ADS Drain Tube 6" Dia	lf	4946			
17.022	Geotextile for underdrain	sy	4121			



17.023	#57 Stone for underdrain pipe bedding (135 pcf)	ton	1001	
17.024	Solid Outlet Pipe ADS Drain 6" Dia	lf	1236	
17.025	#57 Stone for outlet pipe bedding (135 pcf)	ton	250	
17.026	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 760)	lf	302	10W425-29
17.027	1081 crushed stone, bedding 6" depth	ton	10	
17.028	6" dia Perforated HDPE Drain (El. 760)	lf	1512	10W425-68
17.029	1081 crushed stone	ton	286	
17.030	Geotextile woven monofilament	sy	1176	Trench
17.031	Cut for underdrain system	cy	224	
17.032	Back Fill for underdrain system	cy	168	
17.012	Certification	ls	31500	
17.013	QA/QC for construction of disposal facility	ls	457884	2 F.T.E. during construction at \$40,000 per year & 5 week each years of operation, 4 weeks a year for engineering, & 10000 per year for testing
18.000	Temporary slope protection (5' wide)	bcy	5815	
18.001	Cut for ditch	ton	4239	
18.002	9" D50 Riprap	sy	6978	581
18.003	Seed ditch	sy	6978	
18.004	Jute Matting	ton	2344	
19.000	Riprap Stilling Basin	bcy	3582	3' average depth of cut
19.001	Riprap D50 size 9"	ton	2344	
19.002	Cut for basin	bcy	3582	
20.000	Phase 2 Initial Construction	cy	614909	Phase 2 only (prorated based on volumes)
20.001	Dry Stack Ash Quantities	yr	1.3	475600 cy ash annual rate; Haul distance .5 mi
20.002	Initial Cons. Disposal Life	lf	0	Elevations 770, 780
20.003	Perforated Pipe ADS Drain Tube 6" Dia	sy	0	Woven Monofilament (Mirafi HP 370)
20.004	Geotextile for underdrain	ton	0	
20.005	#57 Stone for underdrain pipe bedding (135 pcf)	lf	0	
20.006	Solid Outlet Pipe ADS Drain 6" Dia	ton	0	
20.007	#57 Stone for outlet pipe bedding (135 pcf)	bcy	0	
21.000	Rim Ditches	lf	0	
21.001	Cut	bcy	0	130
22.000	Phase 2 Operational Cost			No Rim Ditching for option 2 and option 6 in Ph2/Ph3
22.001	Stage 1 (3 to 1 side slopes)			
22.002	Dry Stack Ash Quantities	cy	1589685	Phase 2 only
22.003	Stage 1 Disposal Life (Assume dry stack)	yr	3.3	475600 cy ash annual rate; Haul distance .5 mi

22.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0	Elevations 790, 800, 810 (not needed for dry stack)
22.005	Geotextile for underdrain	sy	0	Woven Monofilament
22.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0	
22.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0	
22.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0	
<b>23.000</b>	<b>Phase 2 Operational Cost</b>			
<b>23.001</b>	<b>Stage 2 (3 to 1 side slopes)</b>			
23.002	Dry Stack Ash Quantities	cy	1773076	
23.003	Stage 2 Disposal Life (Assume dry stack)	yr	3.7	475600 cy ash annual rate; Haul distance .5 mi
23.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0	Elevations 820, 830, 840 (not needed for dry stack)
23.005	Geotextile for underdrain	sy	0	Woven Monofilament
23.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0	
23.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0	
23.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0	
<b>24.000</b>	<b>Phase 2 Operational Cost</b>			
<b>24.001</b>	<b>Stage 3 (3 to 1 side slopes)</b>			
24.002	Dry Stack Ash Quantities	cy	1572022	
24.003	Stage 3 Disposal Life (Assume dry stack)	yr	3.3	475600 cy ash annual rate; Haul distance .5 mi
24.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0	Elevations 850, 860, 870 (not needed for dry stack)
24.005	Geotextile for underdrain	sy	0	Woven Monofilament
24.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0	
24.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0	
24.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0	

23.000	Phase 2 Operational Cost			
23.001	Stage 2 (3 to 1 side slopes)			
23.002	Dry Stack Ash Quantities	cy	1773076	
23.003	Stage 2 Disposal Life (Assume dry stack)	yr	3.7	475600 cy ash annual rate; Haul distance .5 mi
23.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0	Elevations 820, 830, 840 (not needed for dry stack)
23.005	Geotextile for underdrain	sy	0	Woven Monofilament
23.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0	
23.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0	
23.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0	
24.000	Phase 2 Operational Cost			
24.001	Stage 3 (3 to 1 side slopes)			
24.002	Dry Stack Ash Quantities	cy	1572022	
24.003	Stage 3 Disposal Life (Assume dry stack)	yr	3.3	475600 cy ash annual rate; Haul distance .5 mi
24.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0	Elevations 850, 860, 870 (not needed for dry stack)
24.005	Geotextile for underdrain	sy	0	Woven Monofilament
24.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0	
24.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0	
24.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0	

Cell	Value	Unit	Notes
0000	40600	Op. ash. ann. rate	
0001	0.0	For Dry Stacking Ash Only (Round Trip)	
0002	0.0	Elevations 820, 880, 840	
0003	0.0	Overhead clearance	
0004	0.0		
0005	0.0		
0006	0.0		
0007	0.0		
0008	0.0		
0009	0.0		
0010	0.0		
0011	0.0		
0012	0.0		
0013	0.0		
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0096	0.0		
0097	0.0		
0098	0.0		
0099	0.0		
0100	0.0		



- (6) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & Gypsum/Ash Generation 327360 cy annually.
- (7) Single Phase power is assumed for pump installed for Dredge Cell seepage retrofit. 3-phase power is assumed to not be required.

**Toney, Calvin L.**

---

**From:** Melton, Gary [Gary.Melton@parsonsec.com]

**Sent:** Tuesday, December 14, 2004 9:47 AM

**To:** Toney, Calvin L.

**Cc:** Hughes, Michael; Smith, Daniel R.

Calvin,

Dan and I meet and clarified some issues on ~~Option 3 and Option 7~~, Option 1 and Option 5, and Option 2 and Option 6. We concluded that the changes should be made and reflected in your cost estimate.

Resending options 3 and 7. The attached document has the latest for option 3 and option 7 takeoffs. The changes that have been made are in bold. If you have any questions contact Dan or myself.

Thank You,

Gary D. Melton, E.I.T.

Parsons E & C

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Chattanooga, TN 37450

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12/14/2004

TVA-00028401

Option 3 & Option 7  
 PRELIMINARY  
 KIF Wet Ash in Pond & Gypsum in Pond (Wet ash in Dredge Cell/Ph1. Wet gypsum in Phase 2. Phase 3 is dry stack ash)

ITEM	DESCRIPTION	UNITS	QUANTITY	T-1 Spec	Comments/Assumptions
1.000	Erosion Controls/Sediment Pond				
1.010	Erect silt fence	lf	1000	571	Place at NE Corner of Dredge Cell
1.020					
1.030	Geotextile Erosion Protection Channel	sy	4300		Non woven
1.040	D50 9" Riprap	ton	5215		18" Riprap Layer Stage A & B
1.050	3" stone, 1' thick to prevent erosion (assume 105 pcf)	ton	2004		Erosion protection channel for Gypsum
1.060	Stage 1-6 CMP Metal Spillway <i>12/1/030</i>	ea	4		2 Gypsum ponds @ 2 per pond
1.070	Cut	bcy	43		Excavation for placement of 48" half-pipe
1.080	Fill with 1032 crushed stone	ton	93		Compacted until a stable base is achieved.
1.090	1/2 of 48" riser stand pipe <i>12/1/030</i>	lf	512		Fully bituminous coated & 14 gage thickness
1.100	30" dia CMP	lf	1000		Fully bituminous coated & 14 gage thickness
1.110	Bedding for 30" CMP	ton	135		6" Thick up to half pipe dia.
1.120	30" dia CMP stand pipe	lf	720		4 pipes at 6 stages with 30' per stage
1.130	D50 9" riprap outlet for metal spillway	ton	53		Minimum
1.140					
1.150	Galvanized corrugated metal anti-seep collar	ea	16		Min. 2 per dike
2.000	Seed/Mulch				
2.001	Seed/Mulch disturbed areas	ac	26		5600 ft x 200 ft (wide swale between toe of new earthen dike and existing dike)
3.000	South Access Road (gravel)				
3.010	1032 crushed stone base 6" depth	ton	3520	305	assume existing road upgrade
4.000	Perimeter Road				
4.010	1032 crushed stone	ton	6885		Assume 1.5 mils of roadway (8000 lf); road is 16 ft
4.020	Roller compact	sy	22667		Add 6" crushed stone base & compact
5.000	Install Drains for Swan Pond Road				
5.001	6" dia Pipe Bollards	ea	24		Incorporate in Dredge Cell Cost
5.002	PVC Monitoring Wells	ea	6		Four for each monitoring well
5.003	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 772)	lf	474		Outer steel casing w/ latch & padlock concrete pad
5.004	Crushed stone, bedding 6" depth	ton	16		
5.005	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 780)	lf	520		1081
5.006	Crushed stone, bedding 6" depth	ton	18		1081
5.007	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 792)	lf	491		

5.008	Crushed stone, bedding 6" depth	ton	17	1081
5.009	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 810)	lf	1282	
5.010	Crushed stone, bedding 6" depth	ton	43	1081
5.011	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 817)	lf	1218	
5.012	Crushed stone, bedding 6" depth	ton	41	1081
5.013	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 825)	lf	1180	
5.014	Crushed stone, bedding 6" depth	ton	40	1081
5.015	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 832)	lf	1160	
5.016	Crushed stone, bedding 6" depth	ton	39	1081
5.017	Cut For 6" dia Non-Perforated HDPE	bcy	21,765.8	El. 763, 772, 780, 792, 810, 817, 825, 832
5.018	Backfill for 6" dia Non-Perforated HDPE	bcy	1,236.1	El. 763, 772, 780, 792, 810, 817, 825, 832
5.019	Cut For 6" dia Perforated HDPE	bcy	1,818.6	El. 763, 772, 780, 792, 810, 817, 825, 832
5.020	Backfill for 6" dia Perforated HDPE	bcy	1,273.0	El. 763, 772, 780, 792, 810, 817, 825, 832
5.021	6" dia Perforated HDPE perimeter underdrain (El. 763)	lf	2000	
5.022	1081 crushed stone	ton	378	
5.023	Geotextile woven monofilament	sy	1556	Trench, Mirafi HP 370
5.024	6" dia Perforated HDPE perimeter underdrain (El. 772)	lf	3790	
5.025	1081 crushed stone	ton	716	
5.026	Geotextile woven monofilament	sy	2948	Trench, Mirafi HP 370
5.027	6" dia Perforated HDPE perimeter underdrain (El. 780)	lf	4160	
5.028	1081 crushed stone	ton	786	
5.029	Geotextile woven monofilament	sy	3236	Trench, Mirafi HP 370
5.030	6" dia Perforated HDPE perimeter underdrain (El. 792)	lf	3925	
5.031	1081 crushed stone	ton	742	
5.032	Geotextile woven monofilament	sy	3053	Trench, Mirafi HP 370
5.033	6" dia Perforated HDPE perimeter underdrain (El. 810)	lf	6410	
5.034	1081 crushed stone	ton	1211	
5.035	Geotextile woven monofilament	sy	4986	Trench, Mirafi HP 370
5.036	6" dia Perforated HDPE perimeter underdrain (El. 817)	lf	6090	
5.037	1081 crushed stone	ton	1151	
5.038	Geotextile woven monofilament	sy	4737	Trench, Mirafi HP 370
5.039	6" dia Perforated HDPE perimeter underdrain (El. 825)	lf	5900	
5.040	1081 crushed stone	ton	1115	
5.041	Geotextile woven monofilament	sy	4589	Trench, Mirafi HP 370
5.042	6" dia Perforated HDPE perimeter underdrain (El. 832)	lf	5800	



5.043	1081 crushed stone	ton	1096		
5.044	Geotextile woven monofilament	sy	4511		Trench, Mirafi HP 370
5.045	12" dia Force Main HDPE perimeter underdrain (El. 763)	lf	2580		
5.046	1081 crushed stone	ton	575		Delivered but not installed
5.047	Submersible pumping station equipment package	ls	5000		
5.048	48' Dia precast concrete manhole	ls	3000		Trench, Mirafi HP 370
5.049	Geotextile woven monofilament	sy	2293		Mixture of fly ash, cement, bentonite clay
5.050	Grout seal SD - 24"	cy	54		Seal weld
5.051	1/4" thick A36 steel plate	ea	2		Mixture of fly ash, cement, bentonite clay
5.052	Grout seal SD - 24"	cy	53		Seal weld
5.053	1/4" thick A36 steel plate	ea	2		
5.054					
5.055	Grout seal SD - 24"	cy	23		Mixture of fly ash, cement, bentonite clay
5.056	1/4" thick A36 steel plate	ea	2		Seal weld
5.057					
5.058	CMP SD - 24"	lf	38		10W425-43
5.059	Excavation for 24"	bcy	25	20%	
5.060	Backfill for 24"	bcy	21	17	
5.061	Bedding for the 24" culvert	ton	4		
5.062					
5.063	CMP SD - 36"	lf	72		10W425-55
5.064	Excavation for 24"	bcy	67		
5.065	Backfill for 24"	bcy	47		
5.066	Bedding for the 24" culvert	ton	9		
5.067	Anchor Trench	bcy	8650	20%	10W425-69 Excavate into Bottom Ash
5.068	Upper & Lower HDPE Geomembrane <i>1-200 5/8" x 20' CHECK REEFERS US FABRICS</i>	sy	110688		10W425-69
5.069	Sediment Trap	bcy	3630		For erosion controls intake area during installation of under drains and final closure
6.000	Dredge Cell/Phase 1 Operational Cost				
6.001	EL. 810 to EL. 844				Dredge Cell/Phase 1 (EL. 810-844 in D.C.)
6.002	Bottom Ash Dike Fill <i>which is most expensive</i>	cy	622416		
6.003	Dredge Quantities	cy	4853654		
6.004	Wet Dip and Stack	cy	678848		El. 844 to El. 866 in Dredge Cell
6.005	Disposal Life (Assume dike & dredge ash)	yr	12.9		Ash Production rate 475600 cy per year
7.000	Phase 2 & Phase 3 Base Construction				
7.001	Base Layers	bcy	268500	40%	Dredge for Pond for additional F.W.V.
7.002	Cut for dredge cell	cy	910556		Added 2' for consolidation
7.003	Compacted Fly Ash base (Fill) <i>which is not expensive</i>	sy	281111		Fill from stock pile soil for final cover
7.004	Proofroll subgrade	cy	242407		El. 767
7.005	2.5' Thick Bottom Ash Layer <i>Compare to DADT</i>				

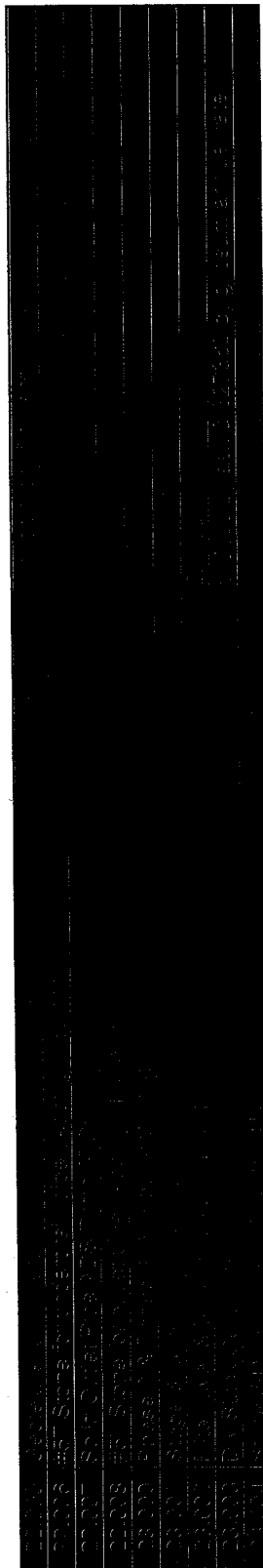
*EXT PAGE*

7.006	0.5' Thick Fly Ash Filter Layer	<i>combine to BADF</i>	cy	48481	El. 767	
7.007	18" dia Coarse Bottom Ash Drain Columns (Haul 2 mi, 1100 bcy)		lf	16920	564 columns (3 rows) average of drilled depth to clay layer of 30'. \$20 per lf installed. (SUBCONTRACTED)	
7.008	Roto till Fly Ash Layer		sy	281111		
7.009	Bottom Ash Dike Fill		cy	163614		
7.010	1' Layer of Bottom Ash		cy	99963	Omit for option 3 but include in option 7	
7.011	Geosynthetic Clay Liner		sy	290889	Omit for option 3 but include in option 7	
7.012	4" dia. Perforated PVC Pipe (underdrains) SDR 17.5		lf	41400		
7.013	Trenching for the drain system (4" dia. underdrains)		bcy	51533		
7.014	Strip existing 1' soil cover (Phase 1 expansion)		bcy	2319133	Cut will be used as Fill	
7.015	Anchor Trench Cut		cy	2073	El. 795, 810, & 845	
7.016	Anchor Trench Fill & Compact		cy	1971	95% Standard Proctor Density	
7.017						
7.018	2' Thick Bottom Ash Blanket Drain		cy	39111		
7.019	1' Thick Filter Drain Ash Layer		cy	19556		
7.020	Geomembrane		sy	58667		
7.021	Perforated Pipe ADS Drain Tube 6" Dia		lf	7850		
7.022	Geotextile for underdrain		sy	6542		
7.023	#57 Stone for underdrain pipe bedding (135 pcf)		ton	1590		
7.024	Solid Outlet Pipe ADS Drain 6" Dia		lf	1963		
7.025	#57 Stone for outlet pipe bedding (135 pcf)		ton	397		
7.026	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 760)		lf	480	10W425-29	
7.027	1081 crushed stone, bedding 6" depth		ton	16		
7.028	6" dia Perforated HDPE Drain (El. 760)		lf	2400	10W425-68	
7.029	1081 crushed stone		ton	454		
7.030	Geotextile woven monofilament		sy	1867	Trench	
7.031	Cut for underdrain system		cy	356		
7.032	Back Fill for underdrain system		cy	267		
7.012	Certification		ls	50000		
7.013	QA/QC for construction of disposal facility		ls	726800	2 F.T.E. during construction at \$40,000 per year & 5 week each years of operation, 4 weeks a year for engineering, & 10000 per year for testing	
8.000	Temporary slope protection (5' wide)		bcy	5815		
8.001	Cut for ditch		ton	4239		
8.002	9" D50 Riprap		sy	6978	581	
8.003	Seed ditch		sy	6978		
8.004	Jute Matting		sy	6978		
9.000	Riprap Stilling Basin					North American Green S150 or Synthetic Industries Land

9.001	Riprap D50 size 9"	ton	2344			3' average depth of cut
9.002	Cut for basin	bcy	3582 + 256			
10.000	Phase 2 Initial Construction					
10.001	Wet Sluice Sedimented Gypsum Quantities	cy	451295			Phase 2 only (prorated based on volumes) 327360 cy gypsum annual rate (Disposal life excludes dikes, bottom layer, filter layer, etc)
10.002	Initial Disposal Life	yr	1.4			Elevations 770, 780 Woven Monofilament (Mirafi HP 370)
10.003	Perforated Pipe ADS Drain Tube 6" Dia	lf	7370			
10.004	Geotextile for underdrain	sy	6142			
10.005	#57 Stone for underdrain pipe bedding (135 pcf)	ton	1492			
10.006	Solid Outlet Pipe ADS Drain 6" Dia	lf	1658			
10.007	#57 Stone for outlet pipe bedding (135 pcf)	ton	336			
11.000	Rim Ditches					
11.001	Cut	bcy	111899 + 130			Rim Ditching in Phase 2 only
12.000	Phase 2 Operational Cost					
12.001	Stage 1 (3 to 1 side slopes)					
12.002	Wet Cast Gypsum Dike Fill	cy	255189			Excavate gypsum from rim ditch & cast on outer & interior dikes
12.003	Wet Sluice Gypsum Quantities	cy	1334496			Phase 2 only
12.004	Stage 1 Disposal Life (Assume dike & sluice gyp)	yr	4.9			327360 cy gypsum annual rate
12.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	11495			Elevations 790, 800, 810 Woven Monofilament
12.006	Geotextile for underdrain	sy	9579			
12.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	2328			
12.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	2586			
12.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	524			
13.000	Phase 2 Operational Cost					
13.001	Stage 2 (3 to 1 side slopes)					
13.002	Wet Cast Gypsum Dike Fill	cy	263403			Excavate gypsum from rim ditch & cast on outer & interior dikes
13.003	Wet Sluice Gypsum Quantities	cy	1509673			
13.004	Stage 2 Disposal Life (Assume dike & sluice gyp.)	yr	5.4			327360 cy gypsum ash annual rate
13.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	11865			Elevations 820, 830, 840 Woven Monofilament
13.006	Geotextile for underdrain	sy	9888			
13.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	2403			
13.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	2670			
13.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	541			
14.000	Phase 3 Initial Construction					
14.001	Dry Stack Ash	cy	569783			Phase 3 only (prorated based on volumes)
14.002	Disposal Life (Assume Dry Stack Ash)	yr	1.2			475600 cy ash annual rate; Haul Distance .5 Miles
14.002	Perforated Pipe ADS Drain Tube 6" Dia	lf	0			Elevations 770, 780 (Not needed for Dry Stack)
14.003	Geotextile for underdrain	sy	0			Woven Monofilament (Mirafi HP 370)

14.004	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0		
14.005	Solid Outlet Pipe ADS Drain 6" Dia	lf	0		
14.006	#57 Stone for outlet pipe bedding (135 pcf)	ton	0		
15.000	Phase 3 Operational Cost				
15.001	Stage 1 (3 to 1 side slopes)				
15.002	Dry Stack Ash Quantities	cy	1349180		Phase 3 only
15.003	Stage 1 Disposal Life (Assume Dry Stack)	yr	2.8		475600 cy ash annual rate; Haul Distance .5 Miles
15.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0		Elevations 790, 800, 810 (Not needed for Dry Stack)
15.005	Geotextile for underdrain	sy	0		Woven Monofilament
15.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0		
15.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0		
15.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0		
16.000	Phase 3 Operational Cost				
16.001	Stage 2 (3 to 1 side slopes)				
16.002	Dry Stack Ash Quantities	cy	1504825		Phase 3 only
16.003	Stage 2 Disposal Life (Assume Dry Stack)	yr	3.2		475600 cy ash annual rate; Haul Distance .5 Miles
16.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0		Elevations 820, 830, 840 (Not needed for Dry Stack)
16.005	Geotextile for underdrain	sy	0		Woven Monofilament
16.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0		
16.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0		
16.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0		
17.000	Phase 3 Operational Cost				
17.001	Stage 3 (3 to 1 side slopes)				
17.002	Dry Stack Ash Quantities	cy	1334189		Phase 3 only
17.003	Stage 3 Disposal Life (Assume dry stack)	yr	2.8		475600 cy ash annual rate
17.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0		Elevations 850, 860, 870 (Not needed for Dry Stack)
17.005	Geotextile for underdrain	sy	0		Woven Monofilament
17.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0		
17.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0		
17.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0		
18.000	Phase 2 Operational Cost				
18.001	Stage 3 (3 to 1 side slopes)				
18.002	Wet Cast Gypsum Dike Fill	cy	227106		Excavate gyp. from rim ditch & cast on outer & interior dikes
18.003	Wet Sluice Gypsum Quantities	cy	1344916		
18.004	Stage 3 Disposal Life (Assume dike & sluice ash & gyp.)	yr	4.8		327360 cy gyp. annual rate

18.005	Perforated Pipe ADS Drain Tube 6" Dia	If	10230	Elevations 850, 860, 870
18.006	Geotextile for underdrain	sy	8525	Woven Monofilament
18.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	2072	
18.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	2302	
18.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	466	
19.000	Phase 2 Operational Cost			
19.001	Stage 4 (3 to 1 side slopes)			
19.002	Wet Cast Gypsum Dike Fill	cy	168831	Excavate gypsum from rim ditch & cast on outer & interior dikes
19.003	Wet Sluice Gypsum Quantities	cy	702654	
19.004	Stage 4 Disposal Life (Assume dike & sluice ash)	yr	2.7	327360 cy gypsum annual rate
19.005	Perforated Pipe ADS Drain Tube 6" Dia	lf	7605	Elevations 880, 890, 900
19.006	Geotextile for underdrain	sy	6338	Woven Monofilament
19.007	#57 Stone for underdrain pipe bedding (135 pcf)	ton	1540	
19.008	Solid Outlet Pipe ADS Drain 6" Dia	lf	1711	
19.009	#57 Stone for outlet pipe bedding (135 pcf)	ton	347	
20.000	Phase 3 Operational Cost			
20.001	Stage 4 (3 to 1 side slopes)			
20.002	Dry Stack Ash Quantities	cy	577613	
20.003	Stage 4 Disposal Life (Dry Stack Ash)	yr	1.2	475600 cy ash annual rate
20.004	Perforated Pipe ADS Drain Tube 6" Dia	lf	0	Elevations 880, 890 (Not needed for Dry Stack)
20.005	Geotextile for underdrain	sy	0	Woven Monofilament
20.006	#57 Stone for underdrain pipe bedding (135 pcf)	ton	0	
20.007	Solid Outlet Pipe ADS Drain 6" Dia	lf	0	
20.008	#57 Stone for outlet pipe bedding (135 pcf)	ton	0	



Assumptions

- (1) All earthwork quantities are in bank cubic yards (bcy) - no shrink or swell factors applied
- (2) Closure costs not included.
- (3) Liner is not required for option 3, but is required for option 7.
- (4) Bottom ash columns are subject to change with final design.
- (5) Engineering (inc. TVA over sight, subcontracts, and additional geotechnical investigation) - Assume 10% of construction costs.
- (6) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & Gypsum/Ash Generation 327360 cy annually.
- (7) Single Phase power is assumed for pump installed for Dredge Cell seepage retrofit. 3-phase power is assumed to not be required.

Toney, Calvin L.

From: Melton, Gary [Gary.Melton@parsonsec.com]  
Sent: Tuesday, December 14, 2004 9:47 AM  
To: Toney, Calvin L.  
Cc: Hughes, Michael; Smith, Daniel R.

Calvin,  
Dan and I meet and clarified some issues on Option 3 and Option 7, Option 1 and Option 5, and Option 2 and Option 6. We concluded that the changes should be made and reflected in your cost estimate. Resending options 3 and 7. The attached document has the latest for option 3 and option 7 takeoffs. The changes that have been made are in bold. If you have any questions contact Dan or myself.  
Thank You,

Gary D. Melton, E.I.T.  
Parsons E & C  
633 Chestnut St, Suite 400 Fax: (423) 266-0922  
Chattanooga, TN 37450  
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Option 1 & Option 5  
**PRELIMINARY**  
 KIF Wet Ash in Pond & Gypsum on Peninsula (Wet ash in Dredge Cell/Ph1, and Phase 2. Phase 3 not constructed. Gypsum on Peninsula)

ITEM	DESCRIPTION	UNITS	QUANTITY	T-1 Spec	Comments/Assumptions
1.000	<b>Erosion Controls/ Sediment Pond</b>				
1.010	Erect silt fence	lf	1000	571	Place at NE Corner of Dredge Cell
1.020					
1.030	Geotextile Erosion Protection Channel	sy	4300		Non woven
1.040	D50 9" Riprap	ton	5215		18" Riprap Layer Stage A & B
1.050	3" stone, 1' thick to prevent erosion (assume 105 pcf)	ton	2004		Erosion protection channel for Gypsum
1.060	Stage 1-6 CMP Metal Spillway	ea	4		2 Gypsum ponds @ 2 per pond
1.070	Cut	bcy	43-287		Excavation for placement of 48" half-pipe
1.080	Fill with 1032 crushed stone	ton	93		Compacted until a stable base is achieved.
1.090	1/2 of 48" riser stand pipe	lf	512		Fully bituminous coated & 14 gage thickness
1.100	30" dia CMP	lf	1000		Fully bituminous coated & 14 gage thickness
1.110	Bedding for 30" CMP	ton	135		6" Thick up to half pipe dia.
1.120	30" dia CMP stand pipe	lf	720		4 pipes at 6 stages with 30' per stage
1.130	D50 9" riprap outlet for metal spillway	ton	53		Minimum
1.140	Galvanized corrugated metal anti-seep collar	ea	16		Min. 2 per dike
2.000	<b>Seed/Mulch</b>				
2.001	Seed/Mulch disturbed areas	ac	26		5600 ft x 200 ft (wide swale between toe of new earthen dike and existing dike)
3.000	<b>South Access Road (gravel)</b>				
3.010	1032 crushed stone base 6" depth	ton	3520	305	assume existing road upgrade
4.000	<b>Perimeter Road</b>				
4.010	1032 crushed stone	ton	6885		Assume 1.5 miles of roadway (8000 lf); road is 16 ft wide
4.020	Roller compact	sy	22667		Add 6" crushed stone base & compact
5.000	<b>Install Drains for Swan Pond Road</b>				
5.001	6" dia Pipe Bollards	ea	24		<b>Incorporate in Dredge Cell Cost</b>
5.002	PVC Monitoring Wells	ea	6		Four for each monitoring well
5.003	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 772)	lf	474		Outer steel casing w/ latch & padlock concrete pad
5.004	Crushed stone, bedding 6" depth	ton	16		
5.005	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 780)	lf	520		1081
5.006	Crushed stone, bedding 6" depth	ton	18		
5.007	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 792)	lf	491		1081



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5.008	Crushed stone, bedding 6" depth	ton	17	1081	
5.009	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (El. 810)	lf	1282		
5.010	Crushed stone, bedding 6" depth	ton	43	1081	
5.011	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (El. 817)	lf	1218		
5.012	Crushed stone, bedding 6" depth	ton	41	1081	
5.013	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (El. 825)	lf	1180		
5.014	Crushed stone, bedding 6" depth	ton	40	1081	
5.015	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (El. 832)	lf	1160		
5.016	Crushed stone, bedding 6" depth	ton	39	1081	
5.017	Cut For 6" dia Non-Perforated HDPE	bcy	17658	El. 763, 772, 780, 792, 810, 817, 825, 832	
5.018	Backfill for 6" dia Non-Perforated HDPE	bcy	12361	El. 763, 772, 780, 792, 810, 817, 825, 832	
5.019	Cut For 6" dia Perforated HDPE	bcy	18186	El. 763, 772, 780, 792, 810, 817, 825, 832	
5.020	Backfill for 6" dia Perforated HDPE	bcy	12730	El. 763, 772, 780, 792, 810, 817, 825, 832	
5.021	6" dia Perforated HDPE perimeter underdrain (El. 763)	lf	2000		
5.022	1081 crushed stone	ton	378		
5.023	Geotextile woven monofilament	sy	1556	Trench, Mirafi HP 370	
5.024	6" dia Perforated HDPE perimeter underdrain (El. 772)	lf	3790		
5.025	1081 crushed stone	ton	716		
5.026	Geotextile woven monofilament	sy	2948	Trench, Mirafi HP 370	
5.027	6" dia Perforated HDPE perimeter underdrain (El. 780)	lf	4160		
5.028	1081 crushed stone	ton	786		
5.029	Geotextile woven monofilament	sy	3236	Trench, Mirafi HP 370	
5.030	6" dia Perforated HDPE perimeter underdrain (El. 792)	lf	3925		
5.031	1081 crushed stone	ton	742		
5.032	Geotextile woven monofilament	sy	3053	Trench, Mirafi HP 370	
5.033	6" dia Perforated HDPE perimeter underdrain (El. 810)	lf	6410		
5.034	1081 crushed stone	ton	1211		
5.035	Geotextile woven monofilament	sy	4986	Trench, Mirafi HP 370	
5.036	6" dia Perforated HDPE perimeter underdrain (El. 817)	lf	6090		
5.037	1081 crushed stone	ton	1151		
5.038	Geotextile woven monofilament	sy	4737	Trench, Mirafi HP 370	
5.039	6" dia Perforated HDPE perimeter underdrain (El. 825)	lf	5900		
5.040	1081 crushed stone	ton	1115		
5.041	Geotextile woven monofilament	sy	4589	Trench, Mirafi HP 370	
5.042	6" dia Perforated HDPE perimeter underdrain (El. 832)	lf	5800		

5.043	1081 crushed stone	ton	1096		
5.044	Geotextile woven monofilament	sy	4511		Trench, Mirafi HP 370
5.045	12" dia Force Main HDPE perimeter underdrain (El. 763)	lf	2580		
5.046	1081 crushed stone	ton	575		Delivered but not installed
5.047	Submersible pumping station equipment package	ls	5000		
5.048	48' Dia precast concrete manhole	ls	3000		
5.049	Geotextile woven monofilament	sy	2293		Trench, Mirafi HP 370
5.050	Grout seal SD - 24"	cy	54		Mixture of fly ash, cement, bentonite clay
5.051	1/4" thick A36 steel plate	ea	2		Seal weld
5.052	Grout seal SD - 24"	cy	53		Mixture of fly ash, cement, bentonite clay
5.053	1/4" thick A36 steel plate	ea	2		Seal weld
5.054					
5.055	Grout seal SD - 24"	cy	23		Mixture of fly ash, cement, bentonite clay
5.056	1/4" thick A36 steel plate	ea	2		Seal weld
5.057					
5.058	CMP SD - 24"	lf	38		10W425-43
5.059	Excavation for 24"	bcy	21 <sup>20b</sup>		
5.060	Backfill for 24"	bcy	15		
5.061	Bedding for the 24" culvert	ton	4		
5.062					
5.063	CMP SD - 36"	lf	72		10W425-55
5.064	Excavation for 36"	bcy	67 <sup>20b</sup>		
5.065	Backfill for 36"	bcy	47		
5.066	Bedding for the 36" culvert	ton	9		
5.067	Anchor Trench	bcy	8650 <sup>20b</sup>		10W425-69 Excavate into Bottom Ash
5.068	Upper & Lower LLDPE Geomembrane	sy	110688		10W425-69
5.069	Sediment Trap	bcy	3630 <sup>20b</sup>		For erosion controls intake area during installation of
6.000	<b>Dredge Cell/Phase 1 Operational Cost</b>				
6.001	<b>EL 810 to El. 866</b>				
6.002	Bottom Ash Dike Fill	cy	622416		Dredge Cell/Phase 1 (EL. 810-844 in D.C.)
6.003	Dredge Quantities	cy	4853654		
6.004	Wet Dip and Stack	cy	678848		El. 844 to El. 866 in Dredge Cell
6.005	Disposal Life (Assume dike & dredge ash)	yr	12.9		Ash Production rate 475600 cy per year
7.00	<b>Gypsum Stack Peninsula (7:00 through 16:02)</b>				
7.01	<b>Clear and Grub</b>				
7.02	Clear and grub	ac	90		
7.03	Strip 1 ft vegetation and topsoil - spoil at stockpile	bcy	129,000		
8.00	<b>Erosion Controls</b>				
8.01	Erect silt fence	lf	4,900		6 ft post spacing, trench bottom of fence, 10% hay bales
8.02	cut for stormwater runoff pond	bcy	2000 <sup>120b</sup>		2 ponds, assume 2.5 ac ft and 4.5 ac-ft; 0.5 ac and 0.9 ac

Option 1 and Option 5

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8.03	fill for stormwater runoff pond	bcy	12,000		
8.04	riprap for stormwater runoff pond	ton	4,300		Combined - 1 ft deep
8.05	72 in dia cmp for outlet structure	lf	6		
8.06	48 in dia cmp for riser for outlet structure	lf	7		
8.07	cut holes in riser	ea	3		
8.08	48 in dia cmp outlet pipe (principle spillway)	lf	150		
8.09	Concrete for riser base (assume 7ft x 7 ft x 2 ft)	cy	4		
8.10	Anti-seep collars (assume concrete)	ea	7		
8.11	pipe bedding	ton	20		
8.12	clean out stormwater runoff pond	bcy	2,300		Assume 1 ft deep @ 1.4 ac
9.00	<b>Roads</b>				
9.01	South Access Road (gravel)				Assume 1.5 miles of roadway (8000 lf); road is 16 ft wide
9.02	Bottom Ash	bcy	2400		Assume 6 in bottom ash
9.03	crushed stone base	ton	2,900		Assume 4 inch stone (1032)
9.04					
9.05	Permanent Parking Lot (paved stone)				
9.06					
9.07	crushed stone base	ton	340		Assume 100 x 100 ft w/ 6 in crushed stone
9.08					
10.00	<b>Fencing</b>				
10.01	New fencing (including grounding)	lf	200		Assume fence to block road only - no perimeter fence
10.02	Gates, swinging	ea	1		personnel
10.03	Gates, sliding, w/ motorized operator	ea	1		20 ft wide
10.04					
11.00	<b>Seed/Mulch</b>				
11.01	Seed/Mulch disturbed areas	ac	25		Areas outside dike
12.00	<b>Borrow area development</b>				
12.01	Add some costs for future borrow area development				By estimator
12.02					
13.00	<b>Gypsum Disposal Facility</b>				
13.01	Disposal facility construction				
13.01	Earthwork cut	bcy	310,553		
13.02	Earthwork fill	bcy	189,719		
13.03	Spoil select cut for future 1 ft clay layer in final cover	bcy	112,933		Spoil at nearby location - assume clearing and grubbing.
13.04	Additional spoil material	bcy	7,900		Spoil separately at 1 ac site
13.05	Ditch riprap	ton	23,500		assume 2 ft deep riprap, 7300 lf ditch
13.06	geotextile (if riprap is used)	sy	19,500		assume ditch has 24 ft top width
13.07	Perimeter road surfacing - bottom ash	cy	2,400		
13.08	Perimeter road surfacing - crushed stone	ton	2,900		6 in bottom ash topped w/ 4 in stone - 1.5 mi of roadway
13.09	Compacted clay liner	bcy	339,000		Omit in option 1 and include in option 5 (Built in 6 lifts)

NOT IN  
#3 Previous  
ESTIMATE

13.10	Drainage layer (1 ft thick) for liner (No 57 stone)	ton	168,000		Unit wt = 110 pcf
13.11	Geotextile for underdrain	sy	5,700		Wrapped around pipe
13.12	Perimeter underdrain pipe	lf	6,400		8 in dia HDPE, SDR = 17, perforated
13.13	Fittings for underdrain piping	ea	50		
13.14	Concrete anchors for underdrain piping	ea	85		Assume 75 ft spacing
13.15	Proofroll subgrade	ac	70		
14.00	<b>Gyp on Peninsula Disposal Cost</b>				
14.01	Fill for Underdrain system	cy	4,407		
14.02	6" dia perforated HDPE underdrains	lf	59,491		Elevations 770 to 850
14.03	Fill for Underdrain system	cy	3,525		
14.04	6" depth 1081 crushed stone (110 pcf)	ton	3,272		
14.05	Cut for Lateral outlet pipes	cy	551		
14.06	6" dia non-perforated HDPE Lateral outlet pipes	lf	7,436		Lateral pipe located every 200' on center
14.07	Fill for Lateral outlet pipes	cy	441		
14.08	6" depth 1081 crushed stone (110 pcf)	ton	409		
14.09	Gypsum Disposal Stack (wet sluice)	cy	5535853		Option 1A 3:1 slope w/ 15 ft bench
14.10	Wet cast Gyp Dike	cy	1011347		Elevations 770 to 850
14.11	Cut Rim Ditches	cy	114575		
14.12	Life of Gypsum Disposal Stack	cy	20.0		Assume 327360 cubic yards per year (@ 84 pcf)
14.13	Allowance for karst geologic features	ls	240,000		Based on % of Gypsum Disp cost
14.14	Addition geotechnical investigation	ls	100000		Groundwater elevations, monitoring wells, & determination of soft clayey soil underlying the site
14.15					
15.00	<b>Construction parking</b>				
15.01	silt fence	lf	1,000		
15.02	Earthwork cut	bcy	1,000		
15.03	Earthwork fill	bcy	500		
15.04	Crushed stone base	ton	1,400		assume 100 x 100 ft x 6 in thick crushed stone base
16.00	<b>Engineering</b>				Use a 10 percentage of const costs
16.01	Engineering				
16.02					
17.000	<b>Phase 2 Base Construction (Phase 2 only)</b>				
17.001	<b>Base Layers</b>				
17.002	Cut for dredge cell	bcy	268500		Dredge for Pond for additional F.W.V.
17.003	Compacted Fly Ash base (Fill)	cy	573650		Added 2' for consolidation
17.004	Proofroll subgrade	sy	177100		Fill from stock pile soil for final cover
17.005	2.5' Thick Bottom Ash Layer	cy	152717		EI. 767
17.006	0.5' Thick Fly Ash Filter Layer	cy	30543		EI. 767

18" dia Coarse Bottom Ash Drain Columns (Haul 2 mi)

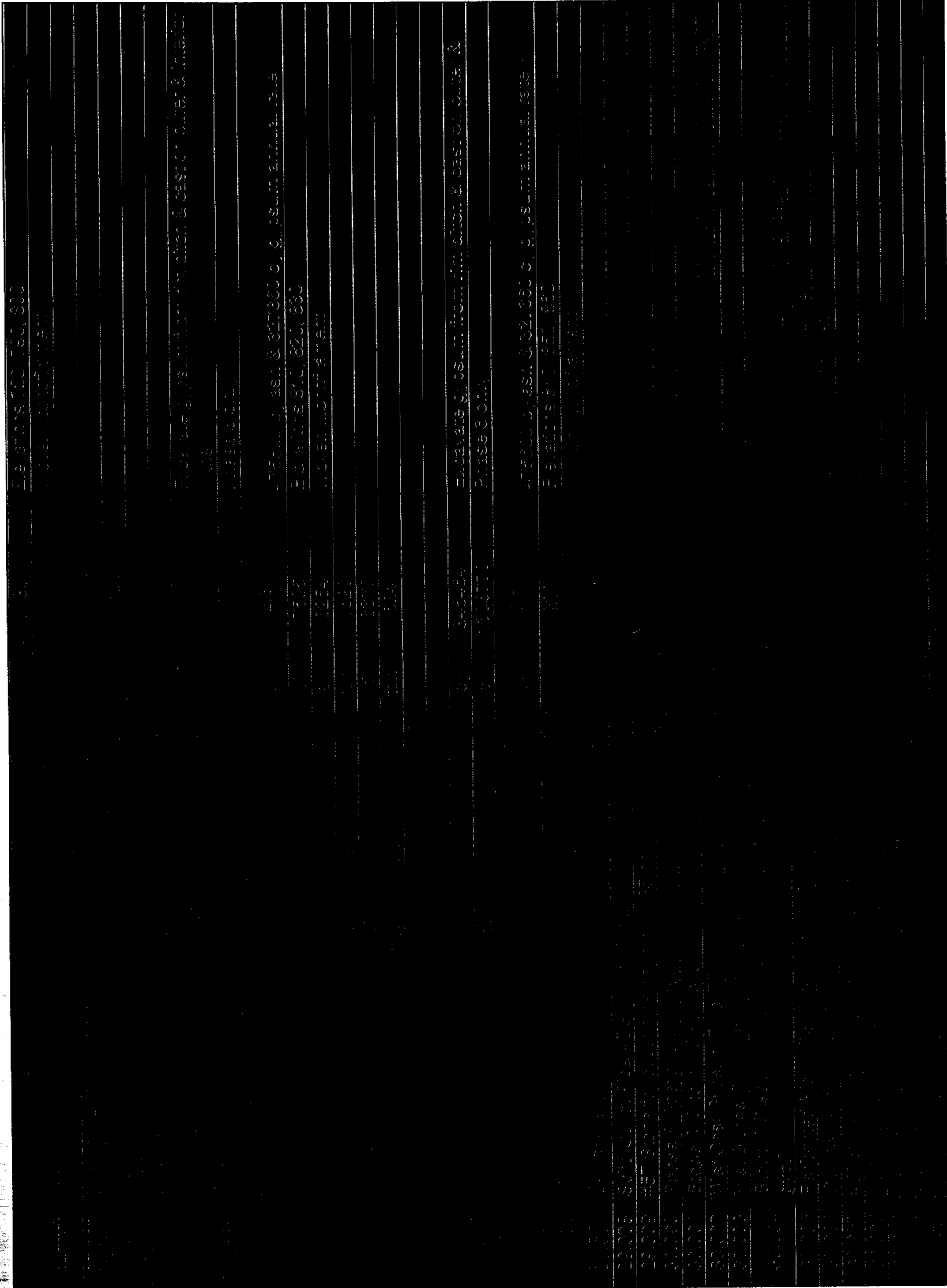
Option 1 and Option 5

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Item #	Description	Unit	Quantity	Notes
17.007	1100 bcy	If	16920	564 columns (3 rows) average of drilled depth to clay layer of 30'. \$20 per lf installed. (SUBCONTRACTED)
17.008	Roto till Fly Ash Layer	sy	177100	
17.009	Bottom Ash Dike Fill	cy	163614	
17.010	1" Layer of Bottom Ash	cy	61087	Omit for option 1 but include in option 5
17.011	Geosynthetic Clay Liner	sy	183260	Omit for option 1 but include in option 5
17.012	4" dia. Perforated PVC Pipe (underdrains) SDR 17.5	lf	26082	
17.013	Trenching for the drain system (4" dia. underdrains)	bcy	966	
17.014	Strip existing 1' soil cover (Phase 1 expansion)	bcy	19133	Cut will be used as Fill
17.015	Anchor Trench Cut	cy	1306	El. 795, 810, & 845
17.016	Anchor Trench Fill & Compact	cy	1242	95% Standard Proctor Density
17.017				
17.018	2" Thick Bottom Ash Blanket Drain	cy	24640	
17.019	1" Thick Filter Drain Ash Layer	cy	12320	
17.020	Geomembrane	sy	36960	
17.021	Perforated Pipe ADS Drain Tube 6" Dia	lf	4946	
17.022	Geotextile for underdrain	sy	4121	
17.023	#57 Stone for underdrain pipe bedding (135 pcf)	ton	1001	
17.024	Solid Outlet Pipe ADS Drain 6" Dia	lf	1236	
17.025	#57 Stone for outlet pipe bedding (135 pcf)	ton	250	
17.026	6" dia Non-Perforated HDPE Corrugated Tubing Lateral outlet pipes @ 200' O.C. (EL. 760)	lf	302	10W425-29
17.027	1081 crushed stone, bedding 6" depth	ton	10	
17.028	6" dia Perforated HDPE Drain (El. 760)	lf	1512	10W425-68
17.029	1081 crushed stone	ton	286	
17.030	Geotextile woven monofilament	sy	1176	Trench
17.031	Cut for underdrain system	cy	224	
17.032	Back Fill for underdrain system	cy	168	
17.012	Certification	ls	31500	
17.013	QA/QC for construction of disposal facility	ls	457884	2 F.T.E. during construction at \$40,000 per year & 5 week each years of operation, 4 weeks a year for engineering, & 10000 per year for testing
18.000	Temporary slope protection (5' wide)			
18.001	Cut for ditch	bcy	58151	
18.002	9" D50 Riprap	ton	4239	
18.003	Seed ditch	sy	6978	581
18.004	Jute Matting	sy	6978	North American Green S150 or Synthetic Industries Land
19.000	Riprap Stilling Basin			
19.001	Riprap D50 size 9"	ton	2344	
19.002	Cut for basin	bcy	3582	3' average depth of cut



		sy	8525	Woven Monofilament
24.006	Geotextile for underdrain	ton	2072	
24.007	#57 Stone for underdrain pipe bedding (135 pcf)	lf	2302	
24.008	Solid Outlet Pipe ADS Drain 6" Dia	ton	466	
24.009	#57 Stone for outlet pipe bedding (135 pcf)			





3000	Phase 2 QTO Estimated Costs	
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3178	Phase 2 QTO Estimated Costs	
3179	Phase 2 QTO Estimated Costs	
3180	Phase 2 QTO Estimated Costs	
3181	Phase 2 QTO Estimated Costs	
3182	Phase 2 QTO Estimated Costs	
3183	Phase 2 QTO Estimated Costs	
3184	Phase 2 QTO Estimated Costs	
3185	Phase 2 QTO Estimated Costs	
3186	Phase 2 QTO Estimated Costs	
3187	Phase 2 QTO Estimated Costs	
3188	Phase 2 QTO Estimated Costs	
3189	Phase 2 QTO Estimated Costs	
3190	Phase 2 QTO Estimated Costs	
3191	Phase 2 QTO Estimated Costs	
3192	Phase 2 QTO Estimated Costs	
3193	Phase 2 QTO Estimated Costs	
3194	Phase 2 QTO Estimated Costs	
3195	Phase 2 QTO Estimated Costs	
3196	Phase 2 QTO Estimated Costs	
3197	Phase 2 QTO Estimated Costs	
3198	Phase 2 QTO Estimated Costs	
3199	Phase 2 QTO Estimated Costs	
3200	Phase 2 QTO Estimated Costs	

15371242

Assumptions

- (1) All earthwork quantities are in bank cubic yards (bcy) - no shrink or swell factors applied
- (2) Closure costs not included.
- (3) Liner is not required for option 1, but is required for option 5.
- (4) Bottom ash columns are subject to change with final design.
- (5) Engineering (Inc. TVA over sight, subcontracts, and additional geotechnical investigation) - Assume 10% of construction costs.
- (6) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & Gypsum/Ash Generation 327360 cy annually.
- (7) Single Phase power is assumed for pump installed for Dredge Cell seepage retrofit. 3-phase power is assumed to not be required.

KINGSTON FOSSIL PLANT OPTION 1 - WET ASH IN POND GYPSUM ON PENINSULA  
(WITHOUT POND BUFFER)  
PRESENT WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars per Cycle	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Escalated Subtotal	PRESENT WORTH of uniting Capital Dollars			
						1.00	1.04	1.08	1.13	1.17	1.21	1.28	1.31	1.38	1.42	1.48	1.54	1.60	1.66	1.73	1.80	1.87	1.94	2.02	2.10	2.18	2.27	2.36	2.46	2.58					
<b>CAPITAL COSTS</b>																																			
1	Install Drain for Swan Pond Road	Lump Sum	\$1,987,828	1	\$1,987,828	\$1,987,828																										\$1,987,828	\$1,987,828		
2	Ash In Pond	Lump Sum	\$582,456	1	\$582,456	\$582,456																											\$582,456	\$582,456	
2A	Phase 2 Base Construction (Base Layer)	Lump Sum	\$5,431,987	2	\$2,715,994																												\$8,177,783	\$1,987,001	
3	Gypsum On Peninsula	Lump Sum	\$8,015,288	1	\$8,015,288																												\$8,015,288	\$8,015,288	
5	Miscellaneous	Lump Sum	\$1,974,027	4	\$493,507	\$493,507																											\$4,935,028	\$1,201,726	
6	Engineering / Geotech	Lump Sum	\$808,829	1	\$808,829	\$808,829																											\$808,829	\$808,829	
<b>Total Capital Costs</b>																																			
			\$19,780,156		\$3,892,415	\$3,892,415																										\$24,222,409	\$13,121,682		
<b>OPERATING COSTS</b>																																			
6	Design Call Phase 1	Lump Sum	\$11,584,517	12	\$962,779	\$962,779	\$1,004,283	\$1,043,450	\$1,084,144	\$1,126,342	\$1,168,230	\$1,214,830	\$1,263,423	\$1,313,980	\$1,366,519	\$1,421,179	\$1,477,927	\$1,537,148	\$1,598,072	\$1,660,697	\$1,724,973	\$1,791,841	\$1,861,341	\$1,933,495	\$2,008,322	\$2,085,842	\$2,166,063	\$2,249,004	\$2,334,684	\$2,423,124	\$2,514,433	\$2,608,620	\$15,986,413	\$7,237,188	
14	Gypsum On Peninsula Disposal Cost	Lump Sum	\$3,844,075	20	\$192,204																													\$3,844,075	\$1,118,949
20,22,23&24	Phase 2 Wet Ash (Initial Thru Stage 3)	Lump Sum	\$10,483,975	12	\$873,331																													\$10,483,975	\$1,991,891
	QA/QC For Construction Of Disposal	Lump Sum	\$470,247	24	\$19,594	\$19,594	\$20,458	\$21,233	\$22,091	\$22,930	\$23,763	\$24,571	\$25,363	\$26,138	\$26,907	\$27,671	\$28,421	\$29,156	\$29,877	\$30,584	\$31,277	\$31,956	\$32,621	\$33,272	\$33,909	\$34,532	\$35,142	\$35,739	\$36,322	\$36,891	\$37,445	\$37,984	\$38,508	\$811,095	\$188,039
<b>Total Operating Costs</b>																																			
			\$26,152,814		\$982,473	\$1,024,718	\$1,064,883	\$1,106,206	\$1,149,188	\$1,192,842	\$1,237,280	\$1,282,493	\$1,328,473	\$1,375,220	\$1,422,731	\$1,471,006	\$1,520,036	\$1,569,811	\$1,620,324	\$1,671,561	\$1,723,511	\$1,776,174	\$1,829,541	\$1,883,611	\$1,938,384	\$1,993,851	\$2,049,994	\$2,106,894	\$2,164,531	\$2,222,894	\$2,281,974	\$2,341,764	\$2,402,254	\$24,222,409	\$10,829,877
<b>Total Costs</b>																																			
			\$45,933,000		\$4,874,888	\$1,024,718	\$1,964,883	\$3,119,212	\$4,381,188	\$5,744,224	\$7,149,431	\$8,599,431	\$10,091,706	\$11,624,926	\$13,199,236	\$14,814,706	\$16,470,536	\$18,167,747	\$19,905,360	\$21,683,371	\$23,501,706	\$25,360,271	\$27,259,041	\$29,197,011	\$31,173,184	\$33,186,551	\$35,236,024	\$37,321,594	\$39,443,261	\$41,601,024	\$43,794,784	\$46,024,531	\$48,294,254	\$23,751,838	

Present Worth of this Option

\$ 23,751,838

KINGSTON FOSSIL PLANT OPTION 2 - DRY ASH IN POND GYPSUM ON PENINSULA  
(WITHOUT POND BUFFER)  
PRESENT WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2008 Dollars	Number of Cycles	2008 Dollars per Cycle	Year																								Escalated Subtotal	PRESENT WORTH of Using Capital Dollars	
						2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029					
<b>CAPITAL COSTS</b>						1.00	1.04	1.08	1.13	1.17	1.21	1.26	1.31	1.36	1.42	1.48	1.54	1.60	1.66	1.73	1.80	1.87	1.94	2.02	2.10	2.18	2.27	2.36	2.46	2.56	\$1,150,524	\$1,719,782
2	Ash In Pond	Lump Sum	\$592,456	1	\$592,456																										\$592,456	\$592,456
2A	Phase 2 Base Construction (Base Layers)	Lump Sum	\$3,971,817	2	\$1,985,909																										\$3,971,817	\$3,971,817
3	Gypsum On Peninsula	Lump Sum	\$9,014,991	1	\$9,014,991																										\$9,014,991	\$9,014,991
5	Miscellaneous	Lump Sum	\$1,247,957	4	\$311,989																										\$1,247,957	\$1,247,957
5A	Dry Fly Ash Conversion	Lump Sum	\$28,242,500	1	\$28,242,500																										\$28,242,500	\$28,242,500
8	Engineering / Gauduch	Lump Sum	\$808,989	1	\$808,989																										\$808,989	\$808,989
<b>Total Capital Costs</b>			\$43,868,710		\$43,868,710	\$28,242,500	\$ -	\$ -	\$10,501,824	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$3,391,628	\$3,527,281	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$47,966,414	\$47,966,414
<b>OPERATING COSTS</b>																																
8	Drillage Cell Phase 1	Lump Sum	\$20,011,519	12	\$1,667,626	\$1,667,626	\$1,739,361	\$1,807,198	\$1,877,036	\$1,949,028	\$2,023,040	\$2,100,071	\$2,180,177	\$2,263,304	\$2,349,584	\$2,439,027	\$2,531,634	\$2,627,407	\$2,726,446	\$2,828,759	\$2,934,446	\$3,043,517	\$3,156,072	\$3,272,111	\$3,390,734	\$3,512,951	\$3,638,762	\$3,768,168	\$3,901,179	\$4,037,795	\$27,664,095	\$12,707,592
14	Gypsum On Peninsula Disposal Cost	Lump Sum	\$3,644,075	20	\$182,204																										\$3,644,075	\$3,644,075
20,22,23,24,25	Phase 2 Dry Ash (Initial Three Stages 3)	Lump Sum	\$18,460,149	12	\$1,538,346																										\$18,460,149	\$18,460,149
	QA/QC For Construction Of Disposal	Lump Sum	\$470,247	24	\$19,594	\$19,594	\$20,436	\$21,233	\$22,091	\$22,900	\$23,733	\$24,721	\$25,708	\$26,738	\$27,807	\$28,920	\$30,076	\$31,279	\$32,531	\$33,832	\$35,186	\$36,592	\$38,059	\$39,578	\$41,162	\$42,804	\$44,500	\$46,301	\$48,153	\$470,247	\$314,095	
<b>Total Operating Costs</b>			\$42,586,289		\$4,187,248	\$1,687,248	\$1,739,797	\$1,828,429	\$1,899,738	\$2,184,874	\$2,270,084	\$2,359,817	\$2,452,982	\$2,551,089	\$2,653,124	\$2,759,249	\$2,869,618	\$2,984,231	\$3,103,097	\$3,226,211	\$3,353,681	\$3,485,504	\$3,621,691	\$3,762,242	\$3,907,266	\$4,061,860	\$4,226,033	\$4,398,795	\$4,580,147	\$42,586,289	\$44,112,684	
<b>Total Costs</b>			\$86,455,000		\$31,635,778	\$1,739,797	\$1,828,429	\$2,184,874	\$2,270,084	\$2,359,817	\$2,452,982	\$2,551,089	\$2,653,124	\$2,759,249	\$2,869,618	\$2,984,231	\$3,103,097	\$3,226,211	\$3,353,681	\$3,485,504	\$3,621,691	\$3,762,242	\$3,907,266	\$4,061,860	\$4,226,033	\$4,398,795	\$4,580,147	\$4,771,948	\$4,973,940	\$129,091,778	\$95,980,142	

Present Worth of this Option

\$ 55,980,142

KINGSTON FOSSIL PLANT OPTION 3 - WET ASH IN POND GYPSUM IN POND  
(WITHOUT BUFFER)

ESTIMATE NUMBER 0504303R1

PRESENT WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars per Cycle	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Escalated SubTotal	PRESENT WORTH of Total Capital Dollars					
<b>CAPITAL COSTS</b>																																					
1	Install Drains For Sween Pond Road	Lump Sum	\$1,967,628	1	\$1,967,628																												\$1,967,628	\$1,967,628			
4	Asht And Gypsum In Pond	Lump Sum	\$582,456	1	\$582,456																													\$582,456	\$582,456		
4A	Phase 2 Base Construction	Lump Sum	\$3,586,622	1	\$3,586,622																													\$3,586,622	\$3,586,622		
4B	Phase 3 Base Construction	Lump Sum	\$2,150,174	1	\$2,150,174																													\$2,150,174	\$2,150,174		
5	Miscellaneous	Lump Sum	\$1,638,838	3	\$562,279																													\$1,638,838	\$1,638,838		
5A	Dry Fly Ash Conversion	Lump Sum	\$24,175,980	1	\$24,175,980																													\$24,175,980	\$24,175,980		
z	Engineering	Lump Sum	\$349,210	1	\$349,210																													\$349,210	\$349,210		
<b>Total Capital Costs</b>																																					
			\$ 3,461,573														\$41,281,841																	\$ 41,281,841	\$ 41,281,841		
<b>OPERATING COSTS</b>																																					
6	Dredge Cell Phase 1	Lump Sum	\$12,624,840	12	\$1,052,070																															\$12,624,840	\$12,624,840
10,11,12,13,14,15	Phase 2 Wet Gypsum (Initial Thru Stage 4)	Lump Sum	\$5,189,249	20	\$259,462																															\$5,189,249	\$5,189,249
14,15,16,17&20	Phase 3 Dry Ash (Initial Thru Stage 4)	Lump Sum	\$17,748,174	12	\$1,470,681																															\$17,748,174	\$17,748,174
	QA/QC For Construction Of Disposal Facility	Lump Sum	\$748,424	24	\$31,101																															\$748,424	\$748,424
<b>Total Operating Costs</b>																																					
			\$ 20,210,687															\$ 20,210,687																	\$ 20,210,687	\$ 20,210,687	
<b>Total Costs</b>																																					
			\$ 5,672,260														\$ 61,562,528																		\$ 61,562,528	\$ 61,562,528	
<b>Escalated SubTotal</b>																																					
			\$ 30,166,737														\$ 30,166,737																		\$ 30,166,737	\$ 30,166,737	

Present Worth of this Option

\$ 30,166,737

KINGSTON FOSSIL PLANT OPTION 4 - DRY ASH IN POND GYPSUM IN POND  
(WITHOUT BUFFER)

PRESENT-WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars Per Cycle	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Established Subtotal	PRESENT WORTH of using Capital Dollars		
<b>CAPITAL COSTS</b>																																		
4	Ash And Gypsum In Pond	Lump Sum	\$592,456	1	\$592,456																												\$592,456	
4A	Phase 2 Base Construction	Lump Sum	\$4,145,589	1	\$4,145,589																												\$4,145,589	
4B	Phase 3 Base Construction	Lump Sum	\$2,763,726	1	\$2,763,726																												\$2,763,726	
5	Miscellaneous	Lump Sum	\$1,155,447	3	\$385,149																												\$1,155,447	
5A	Dry Fly Ash Conversion	Lump Sum	\$28,242,500	1	\$28,242,500																												\$28,242,500	
z	Engineering	Lump Sum	\$349,512	1	\$349,512																												\$349,512	
<b>Total Capital Costs</b>																																		
			\$37,239,230		\$37,239,230	\$39,559,617	\$5,197,341	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$39,559,617	
<b>OPERATING COSTS</b>																																		
6	Dredge Cell Phase 1	Lump Sum	\$21,092,112	12	\$1,757,676																												\$21,092,112	
10,11,12,13,18,19	Phase 2 Wet Gypsum (Initial Thru Stage 4)	Lump Sum	\$6,507,235	20	\$325,362																												\$6,507,235	
14,15,16,17,20	Phase 3 Dry Ash (Initial Thru Stage 4)	Lump Sum	\$14,798,998	12	\$1,233,250																												\$14,798,998	
	QA/QC For Construction Of Disposal Facility	Lump Sum	\$746,424	24	\$31,101																												\$746,424	
<b>Total Operating Costs</b>																																		
			\$45,122,770		\$45,122,770	\$1,787,944	\$1,864,825	\$1,937,253	\$2,013,718	\$2,087,831	\$2,162,446	\$2,237,446	\$2,312,446	\$2,387,446	\$2,462,446	\$2,537,446	\$2,612,446	\$2,687,446	\$2,762,446	\$2,837,446	\$2,912,446	\$2,987,446	\$3,062,446	\$3,137,446	\$3,212,446	\$3,287,446	\$3,362,446	\$3,437,446	\$3,512,446	\$3,587,446	\$3,662,446	\$3,737,446	\$3,812,446	\$45,122,770
<b>Total Costs</b>																																		
			\$82,362,000		\$82,362,000	\$41,347,561	\$11,062,166	\$11,134,506	\$11,206,846	\$11,279,186	\$11,351,526	\$11,423,866	\$11,496,206	\$11,568,546	\$11,640,886	\$11,713,226	\$11,785,566	\$11,857,906	\$11,930,246	\$12,002,586	\$12,074,926	\$12,147,266	\$12,219,606	\$12,291,946	\$12,364,286	\$12,436,626	\$12,508,966	\$12,581,306	\$12,653,646	\$12,725,986	\$12,798,326	\$12,870,666	\$12,943,006	\$82,362,000
<b>Present Worth of this Option</b>																																		
			\$51,049,709		\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709	\$51,049,709

(WITH BUFFER)

PRESENT WORTH

Table with columns: ITEM No., DESCRIPTION, UNITS, Total Cost 2005 Dollars, 2005 Dollars per Cycle, Number of Cycles, and years 2006-2029. Includes sections for CAPITAL COSTS and OPERATING COSTS.

Present Worth of this Option \$ 24,346,844

(WITH BUFFER)

PRESENT WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars Per Cycle	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Escalated Subtotal	PRESENT WORTH of Unit's Capital Dollars					
<b>CAPITAL COSTS</b>																																					
2	Ash In Pond	Lump Sum	\$582,456	1	\$582,456	\$582,456																												\$582,456	\$582,456		
2A	Phase 2 Base Construction (Base Layers)	Lump Sum	\$4,818,813	2	\$2,409,407		\$3,579,201																												\$7,299,530	\$1,884,351	
3	Gypsum On Peninsula	Lump Sum	\$9,014,991	1	\$9,014,991		\$671,248																												\$7,343,743	\$9,676,015	
5	Miscellaneous	Lump Sum	\$1,663,908	4	\$420,908																														\$2,183,187	\$1,024,982	
5A	Dry Fly Ash Conversion	Lump Sum	\$28,242,500	1	\$28,242,500																													\$28,242,500	\$28,242,500		
6	Engineering / Geotech	Lump Sum	\$908,520	1	\$908,520																													\$908,520	\$908,520		
<b>Total Capital Costs</b>																																					
			\$45,180,710			\$30,054,384											\$4,199,447																	\$49,245,516	\$9,016,794		
<b>OPERATING COSTS</b>																																					
6	Dredge Cell Phase 1	Lump Sum	\$20,011,819	12	\$1,667,652	\$1,667,652	\$1,739,381	\$1,807,196	\$1,877,676	\$1,949,028	\$2,025,040	\$2,104,017	\$2,186,177	\$2,271,704	\$2,360,733	\$2,451,402	\$2,550,658	\$2,652,252																		\$27,884,095	\$12,707,592
14	Gypsum On Peninsula Disposal Cost	Lump Sum	\$3,644,076	20	\$182,204																															\$6,785,299	\$1,116,949
20-22-23-24	Phase 2 Dry Ash (Initial Thru Stage 3)	Lump Sum	\$18,480,149	12	\$1,540,013																															\$40,832,844	\$3,550,114
	QA/QC For Construction Of Disposal	Lump Sum	\$470,247	24	\$19,594																															\$914,865	\$188,038
<b>Total Operating Costs</b>																																					
			\$42,566,290			\$1,687,245	\$1,759,737	\$1,829,429	\$1,896,738	\$2,164,874	\$2,270,084	\$2,388,817	\$2,482,862	\$2,551,080	\$2,633,124	\$2,730,249	\$2,840,231	\$2,889,016	\$5,440,231	\$2,889,097	\$3,004,681	\$3,124,848	\$3,249,842	\$3,379,835	\$3,515,029	\$3,655,630	\$3,801,855	\$3,953,929	\$4,112,087	\$4,276,570	\$4,447,833			\$76,128,084	\$17,912,694		
<b>Total Costs</b>																																					
			\$87,747,000			\$31,741,629	\$1,759,737	\$1,829,429	\$12,525,987	\$2,184,874	\$2,270,084	\$2,388,817	\$2,482,862	\$2,551,080	\$2,633,124	\$2,730,249	\$2,840,231	\$2,889,016	\$5,440,231	\$2,889,097	\$3,004,681	\$3,124,848	\$3,249,842	\$3,379,835	\$3,515,029	\$3,655,630	\$3,801,855	\$3,953,929	\$4,112,087	\$4,276,570	\$4,447,833			\$125,371,579	\$6,529,488		

Present Worth of this Option \$ 56,529,488

**KINGSTON FOSSIL PLANT OPTION 7 - WET ASH IN POND GYPSUM IN POND (WITH BUFFER)**

**PRESENT WORTH**

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars per Cycle	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Enacted Subtotal	PRESENT WORTH of Capital Costs
<b>CAPITAL COSTS</b>																													
1	Install Drains For Swan Pond Road	Lump Sum	\$1,067,628	1	\$1,067,628																							\$1,067,628	\$1,067,628
4	Ash And Gypsum In Pond	Lump Sum	\$592,456	1	\$592,456																							\$592,456	\$592,456
4A	Phase 1 Base Construction	Lump Sum	\$6,473,778	1	\$6,473,778	\$7,289,086																						\$7,289,086	\$7,289,086
4B	Phase 2 Base Construction	Lump Sum	\$2,672,800	1	\$2,672,800									\$4,102,400														\$4,102,400	\$4,102,400
5	Miscellaneous	Lump Sum	\$1,830,703	3	\$610,234	\$697,087								\$836,714														\$836,714	\$1,263,346
5A	Dry Fly Ash Conversion	Lump Sum	\$24,175,680	1	\$24,175,680									\$7,109,701														\$7,109,701	\$1,976,478
5B	Engineering	Lump Sum	\$346,607	1	\$346,607	\$349,607																						\$349,607	\$349,607
<b>Total Capital Costs</b>																													
			\$		\$	\$ 3,509,925								\$ 42,448,815														\$ 42,491,264	\$ 42,491,264
<b>OPERATING COSTS</b>																													
6	Dredge Cell Phase 1	Lump Sum	\$2,624,840	12	\$218,737	\$1,077,329	\$1,401,041	\$1,184,598	\$1,277,535	\$1,380,454	\$1,456,872	\$1,493,099	\$1,522,823	\$1,548,836	\$1,572,633	\$1,594,322	\$1,613,913	\$1,631,411	\$1,646,925	\$1,660,455	\$1,672,998	\$1,684,554	\$1,695,123	\$1,704,704	\$1,713,298	\$1,720,904	\$1,727,532	\$17,665,043	\$6,016,829
10,11,12,13,18&19	Phase 2 Wet Gypsum (Initial Thru Stage 4)	Lump Sum	\$5,188,250	20	\$259,413	\$293,162	\$293,162	\$315,066	\$327,292	\$340,383	\$353,999	\$368,158	\$382,885	\$398,200	\$414,126	\$430,693	\$447,921	\$465,838	\$484,454	\$503,880	\$524,004	\$544,964	\$566,783	\$590,434	\$615,911	\$643,242	\$672,446	\$6,927,747	\$1,990,255
14,15,16,17&20	Phase 3 Dry Ash (Initial Thru Stage 4)	Lump Sum	\$17,748,174	12	\$1,479,015	\$408,609	\$408,609	\$424,441	\$441,739	\$460,586	\$481,003	\$503,003	\$526,604	\$551,849	\$578,805	\$607,561	\$638,127	\$670,623	\$705,179	\$742,905	\$783,934	\$828,423	\$876,624	\$928,749	\$984,123	\$1,043,126	\$1,105,245	\$11,478,226	\$3,885,121
14,15,16,17&20	QA/QC For Construction Of Disposal Facility	Lump Sum	\$748,424	24	\$31,101	\$31,101	\$31,101	\$32,438	\$33,929	\$35,583	\$37,411	\$39,434	\$41,664	\$44,119	\$46,819	\$49,791	\$53,064	\$56,670	\$60,661	\$65,075	\$69,963	\$75,291	\$81,128	\$87,551	\$94,647	\$102,496	\$111,202	\$1,111,202	\$298,474
<b>Total Operating Costs</b>			\$		\$	\$ 1,833,890	\$ 2,109,586	\$ 1,830,308	\$ 1,993,890	\$ 2,161,645	\$ 2,332,111	\$ 2,505,598	\$ 2,682,249	\$ 2,862,594	\$ 3,046,442	\$ 3,234,889	\$ 3,428,071	\$ 3,626,223	\$ 3,828,627	\$ 4,035,599	\$ 4,247,484	\$ 4,464,643	\$ 4,687,440	\$ 4,916,366	\$ 5,151,934	\$ 5,394,780	\$ 5,645,594	\$ 59,888,759	\$ 15,270,978
<b>Total Costs</b>			\$		\$	\$ 5,343,815	\$ 4,219,172	\$ 3,660,616	\$ 3,987,780	\$ 4,323,290	\$ 4,664,222	\$ 5,009,197	\$ 5,365,142	\$ 5,728,408	\$ 6,101,357	\$ 6,481,332	\$ 6,869,472	\$ 7,265,754	\$ 7,670,446	\$ 8,084,226	\$ 8,507,193	\$ 8,939,077	\$ 9,380,317	\$ 9,831,531	\$ 10,293,184	\$ 10,766,344	\$ 11,251,747	\$ 117,380,019	\$ 31,084,672
<b>Present Worth of this Option</b>			\$		\$	\$ 31,084,672																						\$ 31,084,672	



KINGSTON FOSSIL PLANT OPTION 8 - DRY ASH IN POND GYPSUM IN POND

(WITH BUFFER)

PRESENT WORTH

Table with columns: ITEM No., DESCRIPTION, UNITS, Total Cost 2005 Dollars, 2005 Dollars per Cycle, Number of Cycles, and years 2005-2029. Includes sub-totals for CAPITAL COSTS, OPERATING COSTS, Total Capital Costs, and Total Operating Costs. Final Present Worth is \$53,599,548.

Present Worth of this Option

\$ 53,599,548

**KINGSTON FOSSIL PLANT  
OPTION 1 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)**

Estimate Number 05093O1R1      Option: 1      PCN Number: KIF530  
 Plant: KIF      Revision: 1      Estimate Type: Preliminary  
 Cost Engineer: C. L. Toney      Unit #: N      Estimate Accuracy: +/- 20%  
 Requesting Engr: Dan Smith      Phase: 2      Estimate Issue Date 01/21/2005

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<u>Phase II</u>		
Engineering		\$690,000
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$690,000</u></b>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$3,240,410
Labor ( T&L )	352,375.83	\$11,454,167
Labor ( Non-Manual )	22,630.56	\$1,131,528
Equipment		\$10,376,019
Subcontracts		\$16,834,222
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$2,205,930
Total Construction Cost		\$45,242,276
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$724
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$45,243,000</u></b>
<u>All Phases</u>		
Construction Partner	375,006.39	\$45,242,276
Long Lead Procurement		\$0
Engineering		\$690,000
Other / Other Organizations		\$0
Total Risk Dollars		\$724
<b><u>Total Project Costs</u></b>	<b><u>375,006.39</u></b>	<b><u>\$45,933,000</u></b>
<b><u>For Information only Total Environmental</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

**KINGSTON FOSSIL PLANT  
OPTION 1 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)**

Project name	KIF050301R1/FL Y&BOT ASH
Engineer	DAN SMITH
Estimator	C. L. Toney
Labor rate table	KIF 40 2004
Equipment rate table	TVA Equipment
Project Plant	Ash
Estimate #	KIF 050301R1
PCN #	KIF539
Requesting Engr	Dan Smith
Option	1
Revision	1
Phase	2
Estimate Type	Preliminary
Estimate Accuracy	+/- 20%
Est. Issue Date	01/21/2005
Funding Type	Capital
Unit	N

Notes  
Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not conducted. Gypsum on peninsula)  
All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liber is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum ash generating 227,500 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format  
Sorted by Location/Activity/Outage Set  
Detail summary



Location	Activity	Outage Seq	Description	Takeoff Quantity	Unit	Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		<b>Capital</b>	<b>Base Layers</b>			<b>1.00 lot</b>								
			Fill With 1032 Compacted Crushed Stone	93.00	in	0.400	37.20	1,197	604		586		26.99	2,510
			30" Diameter CMP Culvert	1,005.00	ft	6.600	500.00	17,382	26,342		3,882		47.61	42,611
			Bedding For 30" CMP, 6" Thick	136.50	ft	0.550	67.50	2,290	2,870		2,290		25.61	3,457
			30" Diameter CMP Stand Pipe (4" Pipes @ 8 Slopes w/07 Pre-Stage)	720.00	ft	0.750	540.00	16,652	19,036		2,273		52.70	37,940
			D50 6" Riprap C&P Stand Pipe (4" Pipes @ 8 Slopes w/07 Pre-Stage)	52.00	in	0.320	15.98	518	538		273		24.65	1,317
			Galvanized Corrugated Metal Ash-Seg Collar	16.00	ea	1.000	28.00	781	4,892		1,571		869.59	13,914
			Seed/Mulch Disturbed Areas	28.00	sq	0.320	28.00	781	4,892		1,571		869.59	13,914
			1032 Crushed Stone Base, 6" Depth	3,529.00	in	0.120	422.00	13,718	31,650		4,147		14.16	2,485.34
			1032 Roller Compacted Crushed Stone Base, 6" Depth	6,958.00	in	0.120	862.00	28,072	62,493		8,112		14.16	48,836
			<b>Base Layers</b>			<b>1.00 lot</b>							<b>0.00</b>	<b>0</b>
			Cut For Dredge Coll (268,600 bcy)	322,200.00	cy	0.040	12,888.00	429,505	804		338,937		2.98	1,786,482
			Compacted Fly Ash Base (F#1)	573,959.00	cy	1,300.000	441.27	1,088,578	26,342		691,253		0.76	950,862
			Profol Subgrade	177,109.00	sq	28,111.000	6.30	6,353	2,870		2,510		0.72	3,624
			2.5" Thick Bottom Ash Layer	162,717.00	sq	1,300.000	117.47	294,477	10,036		23,281		3.32	521,738
			0.5" Thick Fly Ash Filter Layer	30,543.00	sq	1,300.000	23.49	66,986	538		47,492		3.42	104,346
			18" Dia. Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	18,920.00	ft	1,400.000	139.50	74,394	4,892		20,646		0.54	347,537
			Roller Tilt Ash Layer	177,109.00	sq	1,300.000	125.98	304,718	10,036		254,109		3.32	94,989
			Bottom Ash Bed Fill	169,614.00	cy	6.070	1,026.74	49,629	40,942		7,782		1.77	556,869
			4" Diameter Perforated PVC Pipe (Underdrain) SDR 17.5	26,082.00	ft	0.200	222.00	6,878	8,186		1,872		14.891	8,650
			Trenching For The Drain System (4 Dia Underdrain, 966 bcy)	1,800.00	cy	800.000	28.70	14,726	14,036		3,330		8.31	28,058
			Ship Existing 1" Soil Cover (Phase 1 Expansion), 19,133 bcy	22,980.00	cy	0.320	261.20	7,819	4,892		9,835		1.27	10,649
			Anchor Trench Cut	1,308.00	sq	0.320	397.44	11,441	6,878		38,281		17.13	10,649
			2.0" Thick Bottom Ash Shaped Drain	24,649.00	cy	1,300.000	18.95	45,684	8,186		19,140		3.42	42,090
			1.0" Thick Filter Drain Ash Layer	12,320.00	cy	0.200	9.46	22,548	2,870		4,202		3.79	38,384
			Geomembrane	36,980.00	sq	0.050	1,948.00	62,636	8,186		4,202		7.96	110,551
			Perforated Pipe ADS Drain Tube, 6" Diameter	4,948.00	ft	0.200	999.20	29,498	8,186		2,661		2.66	39,304
			Geotextile For Underdrain	4,121.00	sq	0.150	150.15	4,242	8,186		1,276		1.27	14,684
			Geotextile For Underdrain Bedding (135 sq)	1,001.00	sq	0.150	150.15	4,242	8,186		1,276		1.27	14,684
			Solid Outlet Pipe ADS Drain, 6" Diameter	1,256.00	ft	0.200	247.20	7,694	8,186		1,050		7.96	6,642
			#57 Stone For Outlet Pipe Bedding (135 sq)	280.00	ft	0.150	37.50	1,144	50		289		1.7	258
			#57 Stone For Outlet Pipe Bedding (135 sq)	302.00	ft	0.200	60.40	5,353	2,503		1,284		7.96	12,040
			6" Dia Non-Part HDPE Corrugated Tubing Lateral Outlet Pipes (EL 790)	1,512.00	ft	0.200	302.40	4,118	2,320		487		25.61	3,324
			1081 Crushed Stone Bedding 6" Depth	2,895.00	in	0.500	1,421.80	5,860	2,381		82		2.66	3,154
			6" Dia Perforated HDPE Drain (EL 760)	1,179.00	ft	0.500	43.90	1,380	2,381		391		7.46	1,870
			1081 Crushed Stone	1,982.00	cy	0.250	42.00	1,208	504		504		10.20	31,500.00
			Geotextile Woven Membrane	168.00	sq	0.250	42.00	1,208	504		504		10.20	31,500.00
			Cut For Underdrain System	1.00	ls									
			Backfill For Underdrain System	1.00	ls									
			Certification											
			Contingency @ 10%											
			<b>Capital</b>											
			<b>Ash in Pond</b>											
			<b>02</b>											
			<b>Clear And Grub</b>			<b>1.00 lot</b>								
			Clear And Grub	90.00	sq	72.000	6,490.00	169,776	-		180,944		142.10	354,716
			Disc Future Burrow Area (Assumed For Compacted Clay Material)	20.00	sq	8.000	3.33	7,990	-		884		1.29	161,616
			Strip 1 ft Vegetation And Topsoil - Spoil At Stockpile	129,000.00	cy	0.026	2,590.00	10,897	-		12,281		3.33	29,282
			Cut For Ditch (6,815 bcy)	6,978.00	cy	1,200.000	58.26	40,371	49,111		21,037		0.51	105,315
			D50 6" Riprap	4,299.00	in	0.320	1,359.48	5,654	-		3,583		2.98	6,860
			Seed Ditch	6,978.00	sq	0.012	83.72	2,389	5,464		427		1.18	6,237
			Julie Mailing	6,978.00	sq	0.020	750.08	22,324	23,838		12,075		24.66	69,237
			Riprap D50 Size 6"	2,344.00	in	0.250	3.58	6,787	2,462		1,554		2.81	14,156
			Cut For Basin (1,562 bcy)	4,300.00	cy	1,200.000	359.98	6,789	2,462		1,554		2.81	13,784
			Erect Sill Fence (French Basin) Of Fence, 10% Hay Bales	4,900.00	ft	0.059	359.98	6,789	2,462		1,554		2.81	13,784
			Seed/Mulch Disturbed Areas	25.00	ac			526	320				0.86	846
			Sill Fence	1,000.00	ft	0.020	20.00	626	134				0.86	846
			<b>Disposal Facility Construction</b>			<b>1.00 lot</b>								
			Allowance For Karst Geologic Features	1.00	ls									
			Wetland Mitigation Costs	1.00	ls									
			Cut For Stormwater Runoff Pond (2,000 bcy)	2,400.00	cy	600.000	3.00	3,199	-		2,526		2.24	6,189
			Classroll Stormwater Runoff Pond (2,300 bcy)	2,760.00	cy	363.333	7.20	3,939	-		2,950		3.30	47,482
			Fill For Stormwater Runoff Pond (12,000 bcy)	14,000.00	cy	1,904.000	7.56	22,757	-		18,118		2.57	6,170
			Bottom Ash (South Access Road)	2,400.00	cy	1,904.000	1.28	3,052	-		701		2.24	1,345
			Cut and Fill Balance (600 bcy)	600.00	cy	2,800.000	0.21	645	-		502		2.50	1,901
			Cut & Spoil Additional Material	400.00	cy	1,904.000	0.21	645	-		285,808		2.24	510,463
			Cut and Fill Balance (189,271.9 bcy)	227,693.00	cy	2,800.000	81.31	244,458	-		188,929		2.50	307,207
			Cut & Spoil Select Cut For Future 1 ft Clay Layer in Final Cover	145,501.00	cy	2,800.000	76.18	244,458	-		188,929		2.50	307,207
			Crushed Stone Base (South Access Road)	2,900.00	in	0.120	348.00	1,137	3,036		3,117		14.16	47,056
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00	in	0.120	40.80	1,327	3,036		4,017		14.16	19,824
			Crushed Stone Base	1,400.00	in	0.120	168.00	5,464	12,707		1,860		14.16	19,824
			Riprap For Stormwater Runoff Pond	4,300.00	in	0.200	860.00	43,731	109,781		109,781		3.79	23,943
			Riprap For Ditch (2x width, 2' deep)	23,500.00	in	0.200	4,700.00	139,881	239,995		174,004		3.79	55,343
			Ditch for Riprap (2x width, 2' deep)	1,300.00	ft	0.044	292.50	10,911	28,079		4,211		21.02	35,473
			Geotextile (1 Rowsp in, 1 Rowsp in)	200.00	ft	0.015	292.50	10,911	28,079		4,211		21.02	35,473
			New Fencing (Including Signaling)	1.00	ea									
			Personnel Signaling Sign	1.00	ea									
			Striping Signs, 20 FT Wide With Motorized Operator	20.00	in	0.500	10.00	268	199		34		17.489	17,489

**4938152**  
**4933915**  
**543126**  
**529205**  
**574951**  
**582451**

Location	Activity	Outside Seq	Description	Takeoff Quantity	Units	Productivity	Labor Quantity	Hours	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		Capital	Perimeter Road Surfacing - Bottom Ash Perimeter Road Surfacing - Cured Stone Drainage Layer (1 Ft Thick) For Liner No. 57 Stone Geotextile For Underdrain Pipe 6" Dia. HDPE SDR 17 Perforated Pipe Composite Clay Liner, 6" Liner (330,000 bcy) 6" Dia. HDPE Standard Filings Concrete Anchors For Underdrain Piping Precast Substrate 72" Dia. CAP For Outlet Structure 48" Dia. CAP For Rise For Outlet Structure 48" Dia. CAP Outlet Pipe (Pinnacle Spillway) Cul. Ideas In Rise Seed / Fertilizer / Lime For Bare Area Composite Concrete For Rise Base (Assume 1' x 7' x 2) Anti-Sleep Collars (Assume Concrete) Contingency @ 15% Gypsum On Penhaul 05	2,400.00 2,800.00 188,000.00 5,700.00 6,400.00 406,800.00 50.00 70.00 8.00 8.00 150.00 20.00 4.00 7.00 1.00	1,904,000 0.120 0.096 0.011 0.200 0.200 12.500 7.000 2.000 1.091 0.620 3.000 10.000 75.000 1.000	1.26 348.00 16,128.00 59.85 1,290.00 336.00 10.00 1,002.50 12.00 7.64 93.00 3.00 40.00 525.00 40.00	3,952 1,319 507,984 1,723 34,559 1,080,289 407 34,472 6,497 214 537 2,010 74 1,854 16,884 2,689,631 81,685,917 2,659,631	26,523 1,452,276 7,698 10,993 1,689,887 407 10,167 1,851 7,404 74 823 5,078 1,948,716 1,948,716 1,439,716	3,116 3,417 297,040 439 5,439 1,108,289 407 2,278 4,090 30 542 15 105 1,373 2,321,040 2,321,040 908,975	1,175,905 1,175,905 1,175,805 1,175,805	2.57 13.76 16.67 7.96 5.23 13.10 556.68 175.67 378.24 10.37 26.82 90 2,355.93 3,347.80 1,176,805.00 1,176,805.00 9,015,289	6,170 41,058 2,217,010 6,535 50,987 2,228,285 655 47,309 12,577 2,527 1,185 1,958 47,719 2,221 23,433 1,176,805 9,015,289 9,015,289		
		Capital	Non Manual Wooding Test, Misc Other & Demolize Contingency @ 15% Capital Miscellaneous 05	1.00 1.00 1.00	22,830.560 11,748.622 1.000	22,830.56 11,748.62 1.00	1,311,528 380,000 1,591,518	0 0 7,331,580	205,000 205,000 205,000	257,479 257,479 257,479	0 257,479 257,479	0 257,479 257,479	1,311,528.00 586,000.00 257,479.00 1,974,007 1,974,007	
		Capital	EV, 810 TO EV, 666 Bottom Ash Dike Fill Dredge Well, Dip And Stack Disposal Life (Assume Dike & Dredge Ash) O & M Dip Callout Opr Coat Engr/Geotech Capital Additional Geotechnical Investigation Contingency @ 15% Capital Engr/Geotech 06	1.00 622,418.00 4,852,654.00 876,848.00 12.90 1.00 1.00	1,300,000 376,000 1,610,260 1,091,076 48,954.36 1,891,076 48,954.36 1,891,076	478,718 1,610,260 34,377.08 34,377.08 12.90 1.00 1.00	1,591,518 531,959 1,811,528 1,511,528 1,891,076 1,891,076 1,891,076	7,331,580 7,331,580 7,331,580 7,331,580 7,331,580 7,331,580 7,331,580	205,000 205,000 205,000 205,000 2,231,890 2,231,890 2,231,890	257,479 257,479 257,479 257,479 15,405 15,405 15,405	0 1.57 2.56 2.56 0.00 102,700.00 15,405.00 118,105 118,105 11,612,652	0 2,126,405 7,651,590 1,981,563 0 102,700 18,405 118,105 118,105 11,612,652		
		O & M	Call For Underdrain System 6" Dia Perforated HDPE Perimeter Underdrains Fill For Underdrain System 108" Cured Stone, 6" Depth (110 pcf) Call For Lateral Outlet Pipes 6" Dia Non-Perforated HDPE Lateral Outlet Pipes Fill For Lateral Outlet Pipes 108" Cured Stone, 6" Depth (110 pcf) Gypsum Disposal Stack (Wet Sludge) Wet Gyp Gypsum Disposal Dike Call Rim Ditches Life Of Gypsum Disposal Stack Gyp On Penhaul Cat 14	4,407.00 59,491.00 3,525.00 3,272.00 551.00 7,438.00 441.00 408.00 5,535,853.00 1,011,347.00 114,575.00 20.00 1.00	0.200 0.200 0.250 0.150 0.200 0.250 0.150 0.150 375,000 375,000 375,000 375,000 375,000	881.40 11,888.20 881.25 490.80 110.20 1,487.20 110.25 61.35 2,696.93 306.53 89.733 39,940.32 39,940.32 0.00	26,372 324,733 23,388 14,128 3,172 40,590 3,174 1,786 792,065 89,733 89,733 1,320,101 1,320,101 0	98,486 29,699 29,699 12,308 3,712 3,712 3,712 144,187 144,187 144,187 144,187 144,187	2,231,890 2,231,890 2,231,890 2,231,890 2,231,890 2,231,890 2,231,890 2,231,890 2,231,890 2,231,890 2,231,890 2,231,890 2,231,890 2,231,890	15,405 15,405 15,405 15,405 15,405 15,405 15,405 15,405 15,405 15,405 15,405 15,405 15,405 15,405	102,700 102,700 102,700 102,700 102,700 102,700 102,700 102,700 102,700 102,700 102,700 102,700 102,700 102,700	0 0 0 0 0 0 0 0 0 0 0 0 0 0		
		O & M	CA/CC For Construction Of Disposal Facility O & M Ph 2 Base Construct 17	1.00	1.00	1.00	0.00 0.00 0.00	0 0 0	0 0 0	470,247 470,247 470,247	0 0 0	0 0 0	470,246.87 470,247 470,247	470,247 470,247 470,247
		O & M	Dredge Ash Initial Disposal Life Perforated Pipe ADS Drain Tube, 6" Diameter 17	461,296.00 0.90 7,370.00	0.200	1,412.00	40,239	12,189	709,888	6,256	1.57 0.00 7.96	709,888 0 58,688	709,888 0 58,688	709,888 0 58,688

Location	Activity	Outage Sng	Description	Talent Quantity	Loss Productivity	Hours	Rate	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount			
2	Ph 2 Operation Cost	O & M	Geotextile For Underdrain	6,142.00 sy	0.021	126.34	3,004		12,437		430		266	15,471		
			#57 Stone For Outlet Pipe Bedding (135 pd)	1,485.00 in	0.150	223.80	6,442		13,542		1,902			14,672	21,887	
			Solid Outlet Pipe ADS Drain 6" Diameter	1,959.00 lf	0.200	331.80	8,950		2,744		3,950		428	14,672	4,829	
			#57 Stone For Outlet Pipe Bedding (135 pd)	338.00 in	0.150	50.40	1,451		4,972		709,568			10,427	824,763	
			O & M			2,206.14		60,777		43,972	709,568			10,427	824,763	
			Ph 2 Initial Contr			2,206.14		60,777		43,972	709,568			10,427	824,763	
			20			2,206.14		60,777		43,972	709,568			10,427	824,763	
3	Ph 2 Operation Cost	O & M	<b>1.00 lot</b>	1,300,000		136.30	475,359		2,098,277		395,482		0.00	871,821		
			Stage 1 (3 To 1 Side Slopes)	255,189.00 sv		1,300,000		475,359		2,098,277		395,482		3.42	2,098,277	
			Compacted Fly Ash Dike Fill (50% F.A. & 50% B.A.)	1,334,498.00 sv										1.57	0	
			Dredge Ash											0.00	0	
			Stage 2 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs										7.96	91,533	
			Perforated Pipe ADS Drain Tubes 6" Diameter	11,495.00 lf	0.200	2,299.00	62,748		19,028		9,761		670	2,988	26,687	
			Geotextile For Underdrain	9,579.00 sv	0.021	197.04	5,921		18,398		2,131		2,988	14,672	34,151	
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,328.00 in	0.150	349.20	10,952		21,311		4,290		2,195	7,96	20,592	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,586.00 lf	0.200	517.20	14,118		4,756		688			14,672	7,687	
			#57 Stone For Outlet Pipe Bedding (135 pd)	524.00 in	0.150	78.60	2,293		4,756		688			14,672	7,687	
O & M			17,574.59		570,198		68,589	2,098,277			412,725	3,148,748				
Ph 2 Operation Cost			17,574.59		570,198		68,589	2,098,277			412,725	3,148,748				
22																
4	Ph 2 Operation Cost	O & M	<b>1.00 lot</b>	1,300,000		202.82	480,598		2,373,715		408,223		0.00	895,883		
			Stage 2 (3 To 1 Side Slopes)	253,403.40 sv		1,300,000		480,598		2,373,715		408,223		3.42	2,373,715	
			Compacted Fly Ash Dike Fill (50% F.A. & 50% B.A.)	1,509,873.00 sv										1.57	0	
			Dredge Ash											0.00	0	
			Stage 3 Disposal Life (Assume Dike & Dredge Ash)	3.70 yrs										7.96	94,478	
			Perforated Pipe ADS Drain Tubes 6" Diameter	11,885.00 lf	0.200	2,373.00	64,765		19,639		10,075		692	2,66	28,516	
			Geotextile For Underdrain	9,865.00 sv	0.021	203.40	5,022		20,022		2,811		3,064	14,672	35,281	
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,463.00 in	0.150	360.45	1,076		4,418		2,287			7,96	21,281	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200	534.00	14,574		4,911		680			14,672	7,596	
			#57 Stone For Outlet Pipe Bedding (135 pd)	541.00 in	0.150	81.15	2,338		4,911		680			14,672	7,596	
O & M			18,140.47		598,514		70,801	2,373,715			426,011	3,459,041				
Ph 2 Operation Cost			18,140.47		598,514		70,801	2,373,715			426,011	3,459,041				
23																
4	Ph 2 Operation Cost	O & M	<b>1.00 lot</b>	1,300,000		174.70	483,046		2,114,681		352,632		0.00	775,878		
			Stage 3 (3 To 1 Side Slopes)	221,109.00 sv		1,300,000		483,046		2,114,681		352,632		3.42	2,114,681	
			Compacted Fly Ash Dike Fill (50% F.A. & 50% B.A.)	1,344,979.00 sv										1.57	0	
			Dredge Ash											0.00	0	
			Stage 3 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs										7.96	81,480	
			Perforated Pipe ADS Drain Tubes 6" Diameter	10,230.00 lf	0.200	2,046.00	55,641		15,932		8,897		597	2,66	22,881	
			Geotextile For Underdrain	6,525.00 sv	0.021	175.36	5,003		17,282		2,842		1,852	14,672	30,395	
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,072.00 in	0.150	310.00	8,947		15,897		3,610			7,96	18,330	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,302.00 lf	0.200	480.40	12,956		4,230		634			14,672	6,836	
			#57 Stone For Outlet Pipe Bedding (135 pd)	486.00 in	0.150	69.80	2,012		4,230		634			14,672	6,836	
O & M			15,640.64		507,414		61,041	2,114,681			357,306	3,050,423				
Ph 2 Operation Cost			15,640.64		507,414		61,041	2,114,681			357,306	3,050,423				
24																

Estimate Totals

Category	Amount	Unit	Rate	Code	Count
Labor	12,565,695	hrs	375,006.389		716
Material	3,240,410				7,834
Subcontract	16,834,222				23
Equipment	10,378,019	hrs	255,507.245		70
Other	2,205,530				23
	45,242,276				23
Engineered Materials - Ph 2		100,000 %		C	
Adjustment - Engr Materials	45,242,276	(100,000) %		C	
Environmental Costs		100,000 %		C	
Adjustment Environmental	45,242,276	(100,000) %		C	
FPG Civil Engrs - Phase 2	30,077	0.191 % @ 42.00 A		A	716
Mod Civil Engrs - Phase 2	564,086	2.089 % @ 72.00 A		A	7,834
FPG Prod Civil Cost - Phase 2	877	0.006 % @ 42.00 A		A	23
FPG Prod Civil Sched - Phase 2	2,823	0.019 % @ 42.00 A		A	70
FPG Estimating - Phase 2	977	0.006 % @ 42.00 A		A	23
FPG Engr Records - Phase 2	977	0.006 % @ 42.00 A		A	23
Engr Contyey @15% - Phase 2	690,000	0.571 % @ 42.00 A		A	2,143
	45,932,276				
Rounding	724			L	
	45,933,000				
<b>Total</b>	<b>45,933,000</b>				



**KINGSTON FOSSIL PLANT**  
**OPTION 2 - DRY ASH IN POND & GYPSUM ON PENINSULA**  
**(WITHOUT BUFFER OPTION)**

Estimate Number	05093O2R1	Option:	2	PCN Number:	KIF530
Plant:	KIF	Revision:	1	Estimate Type:	Preliminary
Cost Engineer:	C. L. Toney	Unit #:	N	Estimate Accuracy:	+/- 20%
Requesting Engr:	Dan Smith	Phase:	2	Estimate Issue Date	01/21/2005

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>

<u>Phase II</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$690,001
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$690,001</u></b>

<u>Phase III</u>	<u>Hours</u>	<u>Dollars</u>
Construction ( Partner )		
Permanent Material		\$2,500,802
Labor ( TL )	924,796.05	\$28,645,347
Labor ( Non-Manual )	14,850.12	\$742,506
Equipment		\$21,988,635
Subcontracts		\$27,569,077
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$4,317,749
Total Construction Cost		\$85,764,116
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$883
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$85,764,999</u></b>

<u>All Phases</u>	<u>Hours</u>	<u>Dollars</u>
Construction Partner	939,646.17	\$85,764,116
Long Lead Procurement		\$0
Engineering		\$690,001
Other / Other Organizations		\$0
Total Risk Dollars		\$883

<b><u>Total Project Costs</u></b>		<b><u>939,646.17</u></b>	<b><u>\$86,455,000</u></b>
<b><u>For Information only Total Environmental Costs</u></b>			<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>			<b><u>\$0</u></b>

**KINGSTON FOSSIL PLANT  
OPTION 2 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)**

Project name KIF/0509302R1/FL Y&BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project	Ash
Plant	KIF
Estimate #	0509302R1
FCN #	KIF530
Requesting Engr	Dan Smith
Option	2
Revision	1
Phase	2
Estimate Type	Preliminary
Estimate Accuracy	+/- 20%
Est. Issue Date	01/21/2005
Funding Type	Capital
Unit	N

Notes

Dry ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula)

All cost are based in 2005 dollars. Additional rules are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsur/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage runoff. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity/Outage Set  
Detail summary





Location	Activity	Outage Seq	Description	Takeoff Quantity	Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount
			Ph 2 Base Construct	17		0.00 hrs 0.00 hrs	0	0	470,247 470,247	0			470,247 470,247
			Ph 2 Initial Constr										
			Dry Stack Ash Quantities		614,869.00 cv	599.01 cd	1,224,324			821,071		3.33	2,045,395
			Initial Construction Disposal Life (Assume Dry Ash Stack)		1.30 yrs							0.00	0
			O & M										
			Ph 2 Initial Constr	20		40,248.50 hrs 40,248.50 hrs	1,224,324			821,071			2,045,395
			O & M										
			Ph 2 Operational Cost										
			Stage 1 (3 To 1 Side Slopes)		1.00 lot							0.00	0
			Dry Stack Ash Quantities		1,599,065.00 cv	1,445.17 cd	3,165,166			2,122,663		3.33	5,287,829
			Stage 1 Disposal Life (Assume Dry Stack Area)		3.30 yrs							0.00	0
			O & M										
			Haul Distance (Round Trip)		0.50 mile								
			O & M										
			Ph 2 Operational Cost	22		104,052.11 hrs 104,052.11 hrs	3,165,166			2,122,663			5,287,829
			O & M										
			Ph 2 Operational Cost										
			Stage 2 (3 To 1 Side Slopes)		1.00 lot							0.00	0
			Dry Stack Ash Quantities		1,773,076.00 cv	1,611.88 cd	3,530,309			2,367,540		3.33	5,897,849
			Stage 2 Disposal Life (Assume Dry Stack Area)		3.70 yrs							0.00	0
			O & M										
			Ph 2 Operational Cost	23		116,056.88 hrs 116,056.88 hrs	3,530,309			2,367,540			5,897,849
			O & M										
			Ph 2 Operational Cost										
			Stage 3 (3 To 1 Side Slopes)		1.00 lot							0.00	0
			Dry Stack Ash Quantities		1,672,022.00 cv	1,428.11 cd	3,128,998			2,098,078		3.33	5,229,076
			Stage 2 Disposal Life (Assume Dry Stack Area)		3.30 yrs							0.00	0
			O & M										
			Ph 2 Operational Cost	24		102,895.99 hrs 102,895.99 hrs	3,128,998			2,098,078			5,229,076
			O & M										
			Ph 2 Operational Cost										

Estimate Totals

Labor	29,397,853	699,546,174	hrs
Material	2,500,802		
Subcontract	27,568,077	648,348,670	hrs
Equipment	21,988,635		
Other	4,317,749		
	85,764,116		

Engineered Materials - Ph 2		100,000	%	C	
Adjustment - Engr Materials		(100,000)	%		
		65,764,116			

Environmental Costs		100,000	%	C	
Adjustment Environmental		(100,000)	%		
		65,764,116			

FPG Mech Engr - Phase 2	15,001	0.038	% @ 42.00	A	357
FPG Elec Engr - Phase 2	15,001	0.038	% @ 42.00	A	357
FPG Civil Engr - Phase 2	30,068	0.076	% @ 42.00	A	716
Non-TVA Engr - Phase 2	594,058	0.739	% @ 42.00	A	1,416
FPG Proj Chrl Cost - Phase 2	979	0.002	% @ 42.00	A	23
FPG Proj Chrl Sched - Phase 2	2,355	0.007	% @ 42.00	A	70
FPG Cost Estimating - Phase 2	979	0.002	% @ 42.00	A	23
FPG Engr Records - Phase 2	979	0.002	% @ 42.00	A	23
Engr Conting(0) 15% - Phase 2	90,000	0.228	% @ 42.00	A	2,143
	690,001				

Rounding	883				
	883	88,455,000			

Total 86,455,000

**KINGSTON FOSSIL PLANT  
OPTION 3 - WET ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)**

Estimate Number 0509303R1      Option: 3      PCN Number: KIF530  
 Plant: KIF      Revision: 1      Estimate Type: Preliminary  
 Cost Engineer: C. L. Toney      Unit #: N      Estimate Accuracy: +/- 20%  
 Requesting Engr: Dan Smith      Phase: 2      Estimate Issue Date 01/21/2005

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
	<u>Total Phase I</u>	<u>\$0</u>
<u>Phase II</u>		
Engineering		\$348,702
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
	<u>Total Phase II</u>	<u>\$348,702</u>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$1,359,322
Labor ( T&L )	618,225.30	\$19,469,286
Labor ( Non-Manual )	20,149.78	\$1,007,489
Equipment		\$16,516,909
Subcontracts		\$30,783,866
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$3,337,918
Total Construction Cost		\$72,474,791
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$507
Other / Other Organizations		\$0
	<u>Total Phase III</u>	<u>\$72,475,298</u>
<u>All Phases</u>		
Construction Partner	638,375.08	\$72,474,791
Long Lead Procurement		\$0
Engineering		\$348,702
Other / Other Organizations		\$0
Total Risk Dollars		\$507
	<u>Total Project Costs</u>	<u>\$72,824,000</u>
	<u>For Information only Total Environmental</u>	<u>\$0</u>
	<u>For Information only Total Demolition Costs</u>	<u>\$0</u>

KIF/0509303R1/FLV&BOT ASH

**KINGSTON FOSSIL PLANT  
OPTION 3 - WET ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)**

Project name KIF/0509303R1/FLV&BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project: Ash

Plant: KIF

Estimate # 0509303R1

PCN # KIF530

Requesting Engr Dan Smith

Revision 3

Phase 1

Estimate Type Preliminary

Estimate Accuracy +/- 20%

Est. Issue Date 01/21/2005

Funding Type Capital

Unit N

Notes (Wet ash in dredge cell/Phase 1. Wet gypsum in Phase 2. Phase 3 is dry slack ash)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsumash generating 327,300 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by 'Location/Activity/Outage Seq'  
Detail summary



Location	Activity	Usage Seq	Description	Plant Quantity	Prod	Labo	Labo Quantity	Labo Amount	Material Amount	Sq. Feet	Equip Amount	Other Amount	Total Cash/Unit	Total Amount	
Inlet Dams/Swan Pond	Capitol		6" Dia Pipe Rollalls	24.00 ea	1.900		36.00 mh	1.036	4.992			246	266.78	6.163	
			PVC Monitoring Wells	6.00 ea	0.203		94.80 mh	2.847	788			403	2,054.00	12,324	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.500		6.00 mh	2.847	788			27	7.96	3.774	
			Crushed Stone Bedding @ Depth	16.00 lf	0.200		8.00 mh	2.847	788			27	7.96	4.10	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 780)	520.00 lf	0.200		104.00 mh	2.847	788			31	25.61	4.141	
			Crushed Stone Bedding @ Depth	18.00 lf	0.500		8.00 mh	2.847	788			47	7.96	4.81	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 792)	491.00 lf	0.200		8.00 mh	2.847	788			29	25.61	3.810	
			Crushed Stone Bedding @ Depth	17.00 lf	0.500		8.00 mh	2.847	788			29	25.61	4.35	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 810)	1,282.00 lf	0.200		256.40 mh	6.848	2,122			73	25.61	10,228	
			Crushed Stone Bedding @ Depth	43.00 lf	0.500		8.00 mh	2.847	788			70	25.61	7.96	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.200		243.60 mh	6.848	2,108			70	25.61	10,050	
			Crushed Stone Bedding @ Depth	41.00 lf	0.500		8.00 mh	2.847	788			70	25.61	8,689	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 825)	1,800.00 lf	0.200		360.00 mh	6.848	2,108			70	25.61	10,505	
			Crushed Stone Bedding @ Depth	40.00 lf	0.500		8.00 mh	2.847	788			68	25.61	5,385	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 932)	1,800.00 lf	0.200		360.00 mh	6.848	2,108			68	25.61	10,247	
			Crushed Stone Bedding @ Depth	40.00 lf	0.500		8.00 mh	2.847	788			66	25.61	5,237	
			Crusher Screen Bedding @ Depth	38.00 lf	0.500		8.00 mh	2.847	788			66	25.61	999	
			Cut For 6" Dia Non-Perforated HDPE (17,688 lbs)	21,180.00 lb	0.200		4,236.00 mh	121.956	3,271			38,025	746	158,020	
			Backfill For 6" Dia Non-Perforated HDPE (18,189 lbs)	21,630.00 lb	0.200		4,326.00 mh	126.748	3,421			44,461	746	162,227	
			Cut For 6" Dia Perforated HDPE (12,381 lbs)	14,532.00 lb	0.200		3,708.00 mh	106.746	3,710			37,103	746	152,748	
			Backfill For 6" Dia Perforated HDPE (12,381 lbs)	14,532.00 lb	0.200		3,816.00 mh	109.934	3,810			45,810	746	155,744	
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 783)	2,600.00 lf	0.200		400.00 mh	10.917	3,310			1,688	482	7.96	15,926
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 789)	378.00 lf	0.150		56.70 mh	1.632	3,431			109	2.88	4.173	5,545
			Spectrolite Woven Nonfilament	1,558.00 lf	0.021		32.01 mh	613	3,151			109	2.88	4.173	5,545
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,790.00 lf	0.200		756.00 mh	20.698	6,273			3,218	7.96	14,677	30,179
			1091 Crushed Stone	716.00 lf	0.150		107.40 mh	3.052	8,409			913	2.88	14.677	10,503
			1091 Crushed Stone	2,948.00 lf	0.021		60.64 mh	1,730	5,989			206	2.88	7,905	7,905
			Gradable Woven Nonfilament	4,180.00 lf	0.200		832.00 mh	22,707	7,134			1,002	7.96	14,677	31,255
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	786.00 lf	0.150		117.90 mh	3,394	8,552			226	2.88	3,532	11,530	
		1091 Crushed Stone	3,236.00 lf	0.021		66.56 mh	1,688	5,898			226	2.88	6,679	6,679	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 782)	3,925.00 lf	0.200		785.00 mh	21,425	6,497			3,333	7.96	14,677	31,254	
		1091 Crushed Stone	782.00 lf	0.150		111.30 mh	3,204	8,135			946	2.88	14,677	10,885	
		Gradable Woven Nonfilament	3,053.00 lf	0.021		62.80 mh	1,792	6,182			214	7.96	8,187	8,187	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	6,410.00 lf	0.200		1,282.00 mh	34,888	10,610			5,443	2.88	14,677	48,454	
		1091 Crushed Stone	1,211.00 lf	0.150		181.65 mh	5,229	10,952			1,541	2.88	14,677	13,761	
		Gradable Woven Nonfilament	4,080.00 lf	0.200		1,02.56 mh	3,342	10,086			349	2.88	6,679	18,515	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	6,090.00 lf	0.200		1,218.00 mh	33,424	10,447			5,171	2.88	14,677	48,454	
		1091 Crushed Stone	1,519.00 lf	0.150		226.56 mh	6,288	12,606			1,468	2.88	7.96	18,515	
		Gradable Woven Nonfilament	4,237.00 lf	0.200		97.44 mh	2,780	9,292			331	2.88	6,679	12,703	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 859)	6,900.00 lf	0.200		1,380.00 mh	32,025	9,952			5,010	2.88	14,677	48,454	
		1091 Crushed Stone	1,115.00 lf	0.150		167.25 mh	4,814	10,121			1,421	2.88	7.96	18,515	
		Gradable Woven Nonfilament	4,598.00 lf	0.200		94.40 mh	2,693	9,292			321	2.88	6,679	12,703	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200		1,160.00 mh	31,659	9,800			4,925	2.88	14,677	48,454	
		1091 Crushed Stone	1,089.00 lf	0.150		164.40 mh	4,732	9,949			1,397	2.88	7.96	18,515	
		Gradable Woven Nonfilament	4,511.00 lf	0.200		92.78 mh	2,647	9,134			316	2.88	6,679	12,097	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 783)	4,511.00 lf	0.250		645.00 mh	17,604	5,219			2,741	7.96	14,677	33,432	
		1091 Crushed Stone	2,500.00 lf	0.150		382.25 mh	2,483	5,085			703	2.88	5,435	5,435	
		Submersible Pumping Station Equipment Package	1.00 ea	58.000		60.00 mh	2,266	3,051			478	7.96	5,338	5,338	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 783)	1.00 ea	80.000		60.00 mh	1,810	3,051			478	7.96	5,338	5,338	
		Spectrolite Woven Nonfilament	2,293.00 lf	0.021		47.17 mh	1,346	4,643			180	2.88	6,679	10,148	
		Gradable Woven Nonfilament	1.00 ea	1.000		54.00 mh	2,858	3,613			499	2.88	6,679	9,118	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	2.00 ea	4.000		8.00 mh	304	1,487			60	2.88	2,632	4,786	
		Seal Weld 1/4" Thick A-36 Steel Plate	53.00 lf	1.000		53.00 mh	2,803	3,613			499	2.88	6,679	9,118	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	2.00 ea	4.000		8.00 mh	304	1,487			60	2.88	2,632	4,786	
		Gradual Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000		8.00 mh	304	1,487			60	2.88	2,632	4,786	
		Seal Weld 1/4" Thick A-36 Steel Plate	23.00 lf	1.000		23.00 mh	1,210	1,210			212	2.88	2,037	2,037	
		Gradual Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000		8.00 mh	304	1,487			60	2.88	2,632	4,786	
		Seal Weld 1/4" Thick A-36 Steel Plate	38.00 lf	0.460		18.24 mh	102	773			88	2.88	1,328	1,328	
		24" CMP Storm Drain	30.00 lf	0.900		6.00 mh	173	773			77	2.88	248	248	
		Excavation For 24" Dia Pipe (28 lbs)	21.00 lf	0.320		4.20 mh	193	773			66	2.88	171	171	
		Backfill For 24" Diameter CMP (11 lbs)	4.00 lf	0.500		2.00 mh	58	38			7	2.88	36	36	
		Excavation For 36" Dia Pipe (87 lbs)	72.00 lf	0.600		14.40 mh	58	38			7	2.88	36	36	
		Backfill For 36" Diameter CMP (47 lbs)	81.00 lf	0.200		19.20 mh	466	2,709			207	2.88	672	672	
		Bedding For 36" Culvert	57.00 lf	0.320		18.24 mh	525	86			15	2.88	88.22	88.22	
		Excavation For 48" Dia Pipe (217 lbs)	10.30 lf	0.200		4.50 mh	130	492			15	2.88	36	36	
		Backfill For 48" Diameter CMP (11 lbs)	110.880 lf	0.050		22.176 mh	59,760	247,653			14,113	7.96	416,651	416,651	
		Anchor Bolts - Steel - 1/2" Dia - 8" Long (6,660 lbs)	1.00 lb	110.880		110.880 mh	5,534.40	157,885			3,719	2.88	10,503	10,503	
		Upper A Liner - HDPE Geomembrane	1.00 lb	0.040		174.24 mh	5,907	4,927			2,318	2.88	7,851	7,851	
		Sealing Tapes (13,920 lbs)	1.00 lb	0.040		174.24 mh	5,907	4,927			2,318	2.88	7,851	7,851	
		Contingency @ 10%													
		Capitol					35,789.66 hrs	1,016,066	485,205	12,324	286,158	178,875	1,801,028	1,801,028	
		Inlet Dams/Swan Pond					35,789.66 hrs	1,016,066	485,205	12,324	286,158	178,875	1,801,028	1,801,028	
		Capitol					35,789.66 hrs	1,016,066	485,205	12,324	286,158	178,875	1,801,028	1,801,028	
Ash / Sycamore In Pond															
		Capital													
			Erect Still Fence	1,000.00 lf	0.098		68.57 mh	1,994	502			317	2.81	2,813	
			Gradable Woven Nonfilament Erosion Protection Channel	4,300.00 lf	0.016		88.80 mh	983	5,712			175	7.91	7,911	
			D50 # Riprap	5,215.00 lf	0.320		1,999.50 mh	49,987	63,057			26,686	248	120,568	
			3" Stone, 1" Thick Top Spillway Erosion Assumns 105 pd)	2,004.00 lf	0.096		192.36 mh	6,056	18,190			3,086	13,057	21,312	
			6" Sig 1-6 CMP Mill Spillway (1/2 of 48" Dia Rise Stand Pipe @ 128 F/ft)	4.00 ea	180.084		684.33 mh	20,450	20,198			10,860.64	43,443	43,443	
			Cul Excavation For Placement Of 48" Dia Full-Round Pipe @ 33 lf)	62.00 lf	0.400		20.80 mh	589				177	14.91	778	

Location	Activity	Output Size	Description	Timeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		Capital	Fill With 1032 Compacted/Crushed Stone	93.00 in	0.400	37.20 mh	1,107	804	-	599	-	26.99	2,510
			30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	17,487	28,442	-	3,682	-	47.81	47,811
			Bedding For 30" CMP, 6" Thick	1,000.00 lf	0.500	67.50 mh	1,943	1,284	-	230	-	25.81	2,511
			30" Diameter CMP Stand Pipe (Pipes @ 0 Slopes w/0' For Stage)	720.00 lf	0.750	540.00 mh	16,823	19,038	-	2,219	-	52.70	37,940
			360" 6" Riprap Outlet For Metal Spillway	53.00 in	0.330	16.98 mh	505	539	-	273	-	24.95	1,317
			Galvanized Corrugated Metal Anti-Sweep Collar	16.40 sq	18.000	295.00 mh	7,461	4,882	-	1,571	-	85.59	13,914
			Sheepwash Discharge Area	26.40 sq	1.200	292.40 mh	13,728	31,950	-	64,619	-	4,147	2,485,340
			1032 Crushed Stone Base, 6" Depth	3,520.00 in	0.120	422.40 mh	13,728	31,950	-	64,619	-	14.16	47,838
			1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 in	0.120	826.20 mh	26,872	62,489	-	129,337	-	14.16	47,838
		1.00 lot	Base Layers		0.040	-	420.505	-	-	-	-	0.00	0
			Cut For Dimple Cell (258,500 box)	322,200.00 sq	1,300.000	12,888.00 mh	12,888.00	-	-	338,937	-	2.39	768,442
			Compacted Fly Ash Base (Fill)	910,556.00 sq	28,111.100	700.43 cd	1,896.457	26,442	-	1,414,641	-	3.42	3,110,798
			Proportional Subgrade	281,111.00 sq	0.070	10.00 cd	8.487	-	-	4,080	-	0.05	12,577
			2.5" Thick Bottom Ash Layer	242,407.00 sq	1,300.000	198.47 cd	481.584	-	-	378,604	-	3.42	828,153
			0.5" Thick Fly Ash Filler Layer	48,481.00 sq	1,300.000	37.29 cd	90.396	-	-	75,320	-	3.42	165,629
			18" Dia Center Bottom Ash Drain Columns (Final 2 miles, 1,100 box)	18,820.00 lf	1,400.000	200.79 cd	117.843	-	-	347,537	-	0.94	347,537
			Roller III Fly Ash Layer	281,111.00 sq	1,300.000	125.86 cd	304.775	-	-	32,770	-	3.42	858,966
			Bottom Ash Dike Fill	163,614.00 lf	0.070	28.70 cd	79.694	-	-	12,320	-	1.27	156,401
			4" Diameter Perforated PVC Pipes (Underdrains) SDR 17.5	41,400.00 lf	0.200	388.00 mh	10,653	64,987	-	13,728	-	7.46	13,721
			Trenching For The Drain System (4" Dia Underdrains) 1,553 box	1,640.00 lf	0.200	388.00 mh	10,653	64,987	-	13,728	-	7.46	13,721
			Slip Exfoliating 1" Soil Cover (Phase 1 Expansion), 19,433 box	22,980.00 sq	800.000	28.70 cd	14,128	-	-	14,930	-	1.27	29,058
			Anchor Trench Fill & Compact	2,073.00 sq	0.200	414.60 mh	11,659	-	-	6,286	-	8.31	11,659
			2.0" Thick Bottom Ash Barbed Drain	1,871.00 sq	0.330	30.09 cd	72.655	-	-	15,607	-	1.13	15,607
			1.0" Thick Filter Drain Ash Layer	38,111.00 sq	1,300.000	15.04 cd	38.429	-	-	30,352	-	3.42	66,811
			Geomembrane	58,667.00 sq	0.050	2,833.35 mh	42,848	131,282	-	7,480	-	3.79	222,424
			Perforated Pipe ADS Drain Tubes, 6" Diameter	7,660.00 lf	0.200	157.00 mh	4,244	12,993	-	6,956	-	1.89	52,596
			Geotextile For Underdrain (135 pct)	6,542.00 lf	0.021	134.57 mh	3,839	13,247	-	4,959	-	2.69	52,596
			#57 Stone For Outlet Pipe Bedding (135 pct)	1,590.00 lf	0.150	238.50 mh	6,885	14,432	-	2,027	-	14.61	22,352
			Solid Outlet Pipe ADS Drain, 6" Diameter	1,993.00 lf	0.200	392.90 mh	10,715	3,248	-	1,897	-	1.89	22,652
			#7 Stone For Outlet Pipe Bedding (135 pct)	397.00 lf	0.150	59.55 mh	1,114	3,248	-	506	-	14.61	5,821
			6" Dia Non-Port HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 750)	480.00 lf	0.200	96.00 mh	2,620	794	-	27	-	1.89	3,822
			1081 Crushed Stone, Bedding 6" Depth	16.00 in	0.500	8.00 mh	230	152	-	27	-	2.89	258
			6" Dia Perforated HDPE Drain (EL. 750)	2,400.00 lf	0.200	480.00 mh	13,000	4,317	-	2,039	-	7.89	18,111
			1081 Crushed Stone	454.00 in	0.500	227.00 mh	6,524	4,317	-	773	-	2.89	11,625
			Geotextile Woven Malmatment	1,887.00 sq	0.021	38.40 mh	1,095	3,780	-	131	-	2.89	5,025
			Cut For Underdrain System	356.00 sq	0.200	71.20 mh	2,059	3,780	-	605	-	1.89	2,665
			Bedfill For Underdrain System	287.00 sq	0.250	68.75 mh	1,921	4,892	-	801	-	1.89	2,722
			Certification	1.00 ls	1,280.000	5.92 cd	10,981	43,111	-	13,041	-	2.89	50,000
			Cul For Ditch (5,815 box)	6,978.00 sq	0.320	1,356.48 mh	40,371	5,484	-	2,057	-	4.86	80,814
			D90 8" Riprap	4,239.00 in	0.012	63.74 mh	2,389	23,858	-	42	-	1.19	48,227
			Steel Ditch	6,978.00 sq	0.12	750.08 mh	22,324	23,858	-	1,075	-	3.30	24,95
			Julia Matting	6,978.00 sq	0.320	1,356.48 mh	40,371	5,484	-	2,057	-	4.86	80,814
			Riprap D90 Size 8"	2,344.00 in	1,290.000	3.58 cd	8,787	574,334	-	7,460	-	1.89	757,914.00
			Cul For Basin (3,592 box)	4,300.00 sq	1.00 ls	-	-	-	-	-	-	-	-
			Contingency @ 10%	1.00 ls	-	-	-	-	-	-	-	-	-
			Capital	1.00 ls	-	-	-	-	-	-	-	-	-
			Ash / Gypsum In Pond	1.00 ls	-	-	-	-	-	-	-	-	-
25	Miscellaneous	Capital	Dry Fly Ash Conversion Capital Cost	1.00 ls	-	-	-	-	-	-	-	-	-
			Non Manual	1.00 ls	-	-	-	-	-	-	-	-	-
			Mobilize, Drag Test, Misc Other, & Demobilize	1.00 ls	-	-	-	-	-	-	-	-	-
			Contingency @ 10%	1.00 ls	-	-	-	-	-	-	-	-	-
			Capital	1.00 ls	-	-	-	-	-	-	-	-	-
			Miscellaneous	1.00 ls	-	-	-	-	-	-	-	-	-
26	Drg Culprt Opr Cost	O & M	EW, 810 To EW, 844	1.00 lot	-	-	-	-	-	-	-	-	-
			Bottom Ash Dike Fill	823,416.00 sq	1,350.000	476.78 cd	1,159,419	-	-	968,986	-	3.42	2,128,405
			Drudge	4,851,654.00 sq	235.000	2,869.71 cd	646,382	-	-	2,013,493	-	1.57	7,631,590
			Weld Dip And Stack	678,969.00 sq	-	-	-	-	-	-	-	4.22	2,668,855
			Disposal Life (Assume Dike & Drudge Ash)	12.90 yr	-	-	-	-	-	-	-	0.00	0
			Drg Culprt Opr Cost	06	-	-	-	-	-	-	-	-	-
27	Ph 2&Ph 3 Base Const	O & M	QA/QC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	-	-	-	-	-
			O & M	1.00 ls	-	-	-	-	-	-	-	-	-
			Ph 2&Ph 3 Base Const	07	-	-	-	-	-	-	-	-	-

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Location	Activity	Outage Seq	Description	Talent Quantity	Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount					
Ph 2 Initial Constr	O & M		<b>Wet Sludge Sedimented Gypsum Quantities</b>															
			<b>Initial Disposal Life</b>	451,295.00 cy	1.40 yrs								0.00	0				
			Perforated Pipe ADS Drain Tube 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	40,228	12,198	6,288	7.96	58,696							
			Geotextile For Underdrain	6,142.00 sq	0.021	126.54 mh	3,804	12,517	490	2.88	16,471							
			#57 Stone For Outlet Pipe Bedding (135 pc)	1,492.00 in	0.150	223.80 mh	6,442	13,542	1,408	14.67	21,887							
			Solid Outlet Pipe ADS Drain 6" Diameter	1,658.00 lf	0.200	331.60 mh	9,950	3,950	1,428	7.96	13,202							
			#57 Stone For Outlet Pipe Bedding (135 pc)	336.00 in	0.150	50.40 mh	1,451	3,950	428	14.67	4,829							
			O & M	2,206.14 hrs		60,777	43,972				115,175							
			Ph 2 Initial Constr	2,206.14 hrs		60,777	43,972				115,175							
			10			60,777	43,972				115,175							
1	O & M		Rim Ditches	134,279.00 cy	238.000	571.40 cd	187,316			389,280		4.22	587,076					
			Cut (111,899 bc)			4,571.20 hrs	167,816			389,280				587,076				
2	O & M		Rim Ditches	4,571.20 hrs		167,816			389,280				587,076					
			11			167,816			389,280				587,076					
Ph 2 Operation Cost	O & M		<b>Stage 1 (3 To 1 Side Slopes)</b>	1.00 lot	238.000							0.00	0					
			Wet Cast Gypsum Dike Fill	255,189.00 cy		1,085.91 cd	316,923			758,170			4.22	1,077,683				
			<b>Wet Sludge Disposal Life (Assumes Dikes &amp; Sludge Gypsum)</b>	1,334,496.00 cy	4.90 yrs									0.00	0			
			Perforated Pipe ADS Drain Tube 6" Diameter	11,485.00 lf	0.200	2,289.00 mh	62,746	19,026	9,761	7.96	91,533							
			Geotextile For Underdrain	9,975.00 sq	0.021	207.64 mh	5,821	19,386	670	2.88	28,997							
			#57 Stone For Outlet Pipe Bedding (135 pc)	2,328.00 in	0.150	349.20 mh	10,652	21,131	2,968	14.67	34,151							
			Solid Outlet Pipe ADS Drain 6" Diameter	2,986.00 lf	0.200	517.20 mh	14,116	4,280	2,196	7.96	23,592							
			#57 Stone For Outlet Pipe Bedding (135 pc)	624.00 in	0.150	78.60 mh	2,263	4,756	668	14.67	7,687							
			O & M	12,128.33 hrs		413,121	68,589				1,257,343							
			Ph 2 Operation Cost	12,128.33 hrs		413,121	68,589				1,257,343							
12			413,121	68,589				1,257,343										
3	O & M		<b>Stage 2 (3 To 1 Side Slopes)</b>	1.00 lot	238.000							0.00	0					
			Wet Cast Gypsum Dike Fill	285,403.00 cy		1,120.86 cd	329,189			758,193			4.22	1,132,382				
			<b>Wet Sludge Disposal Life (Assume Dike &amp; Sludge Gypsum)</b>	1,509,673.00 cy	5.40 yrs									0.00	0			
			Perforated Pipe ADS Drain Tube 6" Diameter	11,865.00 lf	0.200	2,373.00 mh	64,795	18,638	10,075	7.96	84,478							
			Geotextile For Underdrain	9,988.00 sq	0.021	209.40 mh	5,892	20,022	692	2.88	28,516							
			#57 Stone For Outlet Pipe Bedding (135 pc)	2,403.00 in	0.150	350.40 mh	10,376	21,811	3,064	14.67	35,261							
			Solid Outlet Pipe ADS Drain 6" Diameter	2,870.00 lf	0.200	534.00 mh	14,574	4,419	2,297	7.96	21,461							
			#57 Stone For Outlet Pipe Bedding (135 pc)	541.00 in	0.150	81.15 mh	2,336	4,911	690	14.67	7,987							
			O & M	12,518.91 hrs		427,043	70,801				1,297,825							
			Ph 2 Operation Cost	12,518.91 hrs		427,043	70,801				1,297,825							
13			427,043	70,801				1,297,825										
14	O & M		<b>Ph 3 Initial Constr</b>	593,783.00 cy	1,100.000	517.98 cd	1,134,475			750,816		3.33	1,885,291					
			Dry Ash Stack											0				
			<b>Disposal Life (Assumes Dry Stack Ash)</b>	1.20 yrs										0.00	0			
			O & M	37,284.68 hrs		1,134,475					760,816			1,885,291				
			Ph 3 Initial Constr	37,284.68 hrs		1,134,475					760,816			1,885,291				
			14			1,134,475					760,816			1,885,291				
			15	O & M		<b>Stage 1 (3 To 1 Side Slopes)</b>	1.00 lot	1,100.000								0.00	0	
						Dry Stack Ash Quantities	1,348,160.00 cy		1,228.53 cd	2,886,305			1,801,523				3.33	4,487,828
						<b>Stage 1 Disposal Life (Assume Dike Stack)</b>	2.80 yrs										0.00	0
						O & M	88,309.96 hrs		2,886,305					1,801,523			4,487,828	
Ph 3 Operation Cost	88,309.96 hrs					2,886,305					1,801,523			4,487,828				
15						2,886,305					1,801,523			4,487,828				
16	O & M					<b>Stage 2 (3 To 1 Side Slopes)</b>	1.00 lot	1,100.000								0.00	0	
						Dry Stack Ash Quantities	1,504,625.00 cy		1,368.02 cd	2,989,204			2,009,592				3.33	5,005,556
						<b>Stage 2 Disposal Life (Assume Dry Stack)</b>	3.20 yrs										0.00	0
						O & M	1,368.02 cd		2,989,204					2,009,592			5,005,556	
			Ph 3 Operation Cost	1,368.02 cd		2,989,204					2,009,592			5,005,556				
			16			2,989,204					2,009,592			5,005,556				

Location	Activity	Outage Seq	Description	Forecast Quantity	Productivity	Unit	Quantity	Rate	Amount	Material	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 3 Operation Cost		Ph 3 Operation Cost												
		O & M	Dry Stack Ash Quantities	1,334,189.00	1,100,000	cy	1,212.90	cd	2,559,457	-	-	1,781,506	-	3.33	4,437,963
		O & M	Stage 3 Disposal Life (Assume Dry Stack)	2.80		Yrs	67,328.74	hrs	2,656,457	-	-	1,781,506	-	0.00	4,437,963
			Ph 3 Operation Cost												
			17				87,328.74	hrs	2,656,457	-	-	1,781,506	-		4,437,963
	Ph 2 Operation Cost		Ph 2 Operation Cost												
		O & M	Stage 3 (3 To 1 Side Slopes)	1.00		lot								0.00	0
			Wet Gypsum Dike Fill	227,106.00	235,000	cy	959.41	cd	253,528	-	-	675,259	-	4.22	959,096
			Wet Sluice Gypsum Quantities	1,344,916.00		cy								0.00	0
			Stage 3 Disposal Life (Assume Dike & Sluice Ash & Gypsum)	4.80		Yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	10,230.00	0.200	lf	2,046.00	mm	55,841	16,932	-	8,887	-	7.96	81,460
			Geebuckle For Underdrain	8,525.00	0.021	sf	175.96	mm	5,003	17,282	-	597	-	2.69	22,681
			#67 Stone For Outlet Pipe Bedding (135 pd)	2,072.00	0.150	ln	310.80	mm	8,947	18,807	-	2,942	-	14.67	30,356
			Solid Outlet Pipe ADS Drain, 8" Diameter	2,302.00	0.200	lf	459.40	mm	12,656	3,810	-	1,955	-	7.96	16,536
			#67 Stone For Outlet Pipe Bedding (135 pd)	466.00	0.150	ln	89.90	mm	2,012	4,230	-	594	-	14.67	1,118,978
			O & M				10,793.73	hrs	389,194	61,041	-	688,743	-	1,118,978	1,118,978
			Ph 2 Operation Cost												
			18				10,793.73	hrs	389,194	61,041	-	688,743	-		1,118,978
	Ph 2 Operation Cost		Ph 2 Operation Cost												
		O & M	Stage 4 (3 To 1 Side Slopes)	1.00		lot								0.00	0
			Wet Gypsum Dike Fill	186,831.00	235,000	cy	718.43	cd	210,997	-	-	501,996	-	4.22	712,993
			Wet Sluice Gypsum & Ash Quantities	702,554.00		cy								0.00	0
			Stage 4 Disposal Life (Assume Dike & Sluice Ash)	2.70		Yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,695.00	0.200	lf	1,521.00	mm	41,512	12,586	-	6,456	-	7.96	60,557
			Geebuckle For Underdrain	6,339.00	0.021	sf	130.37	mm	3,178	13,931	-	443	-	2.69	16,996
			#67 Stone For Outlet Pipe Bedding (135 pd)	1,540.00	0.150	ln	231.00	mm	6,950	15,872	-	1,964	-	14.67	22,591
			Solid Outlet Pipe ADS Drain, 8" Diameter	1,711.00	0.200	lf	342.20	mm	8,350	3,872	-	1,453	-	7.96	13,524
			#67 Stone For Outlet Pipe Bedding (135 pd)	347.00	0.150	ln	52.05	mm	1,488	3,152	-	442	-	14.67	5,095
			O & M				8,024.06	hrs	273,716	45,381	-	512,756	-	1,118,978	831,853
			Ph 2 Operation Cost												
			19				8,024.06	hrs	273,716	45,381	-	512,756	-		831,853
	Ph 3 Operation Cost		Ph 3 Operation Cost												
		O & M	Stage 4 (3 To 1 Side Slopes)	1.00		lot								0.00	0
			Dry Stack Ash Quantities	577,613.00	1,100,000	cy	525.10	cd	1,150,295	-	-	771,271	-	3.33	1,921,536
			Stage 4 Disposal Life (Dry Stack Ash)	1.20		Yrs								0.00	0
			O & M				37,807.40	hrs	1,150,295	-	-	771,271	-		1,921,536
			Ph 3 Operation Cost												
			20				37,807.40	hrs	1,150,295	-	-	771,271	-		1,921,536

10, 11, 12, 13, 18, 19 (5,186,250)  
14, 15, 16, 17, 20 (4,174,817.74)

Estimate Totals

		hrs		
Labor	20,475,775	636,375.079	hrs	
Material	1,359,322			
Subcontract	30,783,866			
Equipment	16,515,909	471,708.879	hrs	
Other	3,337,518			
	72,474,790			
Engineered Materials - Ph 2		100,000 %		C
Adjustment - Engr Materials		(100,000) %		C
	72,474,790			
Environmental Costs		100,000 %		C
Adjustment Environmental		(100,000) %		C
	72,474,790			
FPG Mech Engr - Phase 2	7,001	0.026 % @ 42.00 A		187
FPG Elec Engr - Phase 2	7,001	0.026 % @ 42.00 A		187
FPG Civil Engr - Phase 2	16,001	0.060 % @ 42.00 A		331
Non-TVA Engr - Phase 2	281,004	0.611 % @ 72.00 A		3,923
FPG Proj Onft Cost - Phase 2	995	0.004 % @ 45.00 A		74
FPG Proj Onft Sched - Phase 2	3,000	0.011 % @ 45.00 A		24
FPG Cost Estimating - Phase 2	1,000	0.004 % @ 42.00 A		24
FPG Engr Records - Phase 2	1,000	0.004 % @ 42.00 A		24
Engr Conf/Co@ 10% - Phase 2	31,100	0.118 % @ 42.00 A		755
	346,707			
	72,823,492			
Rounding	508			
	508			
	72,824,000			
<b>Total</b>	<b>72,824,000</b>			

Toney, Calvin L.

From: Knox, Robert  
 Sent: Monday, January 31, 2005 4:02 PM  
 To: Toney, Calvin L.  
 Cc: Purkey, Ronald E.; Radford, Larry D.; Lowery, Kenny R.  
 Subject: KIF - Differential Disposal Costs

Toney,

Option 1.  
 Basis: One operator, one dozer, one trackhoe  
 Material: maintain only gypsum  
 \$2.65/yd

Option 3.  
 Basis: Two operator, one dozer, two trackhoe  
 Material: mix of gypsum and fly ash  
 More material to deal with during the mixing time period.  
 \$4.22/yd

Thank you,  
Robert Knox

2002 @ 30.85/Hr/EA 493.60  
 1220 Dozer @ 22.50/Hr/EA 180  
 1226 P 3/4 Tractor @ 63.13/Hr/EA 505

\$ 293.692/cd  
 698.741/cd  
 -----  
 \$ 992.433/cd

1.25  
 2.973  
 -----  
 4.22

LABOR = \$ 587.384  
 EQPT = 698.741  
 -----  
 1,286.125

698.78769 cd x \$587.384 = 410,457  
 698.78769 cd x 698.741 = 488,272  
 -----  
 898,729  
 227,106 = 3.9573/cy

966.409 cd \$ 587.384 = 567,653  
 966.409 cd \$ 698.741 = 675,270  
 -----  
 \$ 1,242,923  
 227,106 cy  
 \$ 5.4729/cy

4.223/cy

2002 @ 36.71  
 say 305cd  
 305 cy/cd

**KINGSTON FOSSIL PLANT  
OPTION 4 - DRY ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)**

Estimate Number 05093O4R1    Option: 4    PCN Number: KIF530  
 Plant: KIF    Revision: 1    Estimate Type: Preliminary  
 Cost Engineer: C. L. Toney    Unit #: N    Estimate Accuracy: +/- 20%  
 Requesting Engr: Dan Smith    Phase: 2    Estimate Issue Date 01/21/2005

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<b><u>Phase II</u></b>		
Engineering		\$348,700
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$348,700</u></b>
<b><u>Phase III</u></b>		
Construction ( Partner )		
Permanent Material		\$864,118
Labor ( T&L )	897,347.99	\$27,878,403
Labor ( Non-Manual )	13,662.12	\$683,106
Equipment		\$22,346,088
Subcontracts		\$26,837,162
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$3,403,611
Total Construction Cost		\$82,012,489
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$811
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$82,013,300</u></b>
<b><u>All Phases</u></b>		
Construction Partner	911,010.11	\$82,012,489
Long Lead Procurement		\$0
Engineering		\$348,700
Other / Other Organizations		\$0
Total Risk Dollars		\$811
<b><u>Total Project Costs</u></b>	<b><u>911,010.11</u></b>	<b><u>\$82,362,000</u></b>
<b><u>For Information only Total Environmental</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

**KINGSTON FOSSIL PLANT  
OPTION 4 - DRY ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFEER OPTION)**

Project name KIF0509304R1/LV2BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project	ASH
Plant	KIF
Estimate #	0509304R1
PCNN #	KIF530
Requesting Engr	Dan Smith
Option	4
Revision	1
Phase	2
Estimate Type	Preliminary
Estimate Accuracy	+/- 20%
Est. Issue Date	01/21/2005
Funding Type	Capital
Unit	N

Notes  
All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost
- (5) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & 0/gypsum/ash generating 327,300 cy annually.
- (6) Single phase power is assumed for pump installed for dredge call seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity/Outage Seq  
Detail Summary





Location	Activity	Change Seq	Description	Target Quantity	Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Lin	Total Amount		
0	Ph 2 Initial Constr	O & M	QA/QC For Construction Of Disposal Facility	100 lb		0.00 hrs	0	0	746,424	0	-	746,423.50	746,424		
			Ph 2 Base Construct	07			0.00 hrs	0	0	746,424	0	-	746,423.50	746,424	
10	Ph 2 Initial Constr	O & M	<b>Wet Sludge Sedimented Gypsum Quantities</b>	<b>451,295.00 cy</b>								<b>0.00</b>	<b>0</b>		
			<b>Initial Cons: Disposal Life</b>	<b>1.40 yrs</b>									<b>0.00</b>	<b>0</b>	
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,472.00 mh	40,228	12,188	6,258	7.95	58,696	-	-	58,696	
			Geotextile For Underdrain	6,142.00 sq	0.250	1,535.50 mh	3,839	12,457	430	2.66	16,471	-	-	16,471	
			#57 Stone For Outlet Pipe Bedding (135 pc)	1,452.00 in	0.150	223.80 mh	6,442	13,542	1,902	14.67	21,897	-	-	21,897	
			Solid Outlet Pipe ADS Drain 6" Diameter	1,659.00 lf	0.200	331.80 mh	9,050	2,744	428	7.95	13,202	-	-	13,202	
			#57 Stone For Outlet Pipe Bedding (135 pc)	335.00 in	0.150	50.40 mh	1,451	3,050	428	14.67	4,928	-	-	4,928	
			O & M			2,206.14 hrs	60,777	43,972	10,427	115.775	115,175	-	-	115,175	
			Ph 2 Initial Constr	10		2,206.14 hrs	60,777	43,972	10,427	115.175	115,175	-	-	115,175	
			11	Ph 2 Operation Cost	O & M	Cur (111,993 bay)	134,278.00 cy	235.000	571.40 cd	167,816	12,457	399,260	399,260	4.22	567,076
Rim Ditches	11		4,571.20 hrs			167,816	167,816	399,260	567,076	-	-	567,076			
12	Ph 2 Operation Cost	O & M	<b>Stage 1 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>		
			<b>Wet Case Gypsum Dike Fill</b>	<b>265,189.00 cy</b>									<b>4.22</b>	<b>1,077,693</b>	
			<b>Wet Sludge Gypsum Quantities</b>	<b>1,334,496.00 cy</b>										<b>0.00</b>	<b>0</b>
			<b>Stage 1 Disposal Life (3 To 1 Side Slopes)</b>	<b>4.90 yrs</b>										<b>0.00</b>	<b>0</b>
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,498.00 lf	0.200	2,299.60 mh	61,246	19,028	9,781	7.95	81,533	-	-	81,533	
			Geotextile For Underdrain	9,579.00 sq	0.250	1,970.25 mh	4,928	19,340	2,588	2.66	25,672	-	-	25,672	
			#57 Stone For Outlet Pipe Bedding (135 pc)	2,328.00 in	0.150	349.20 mh	1,032	2,111	286	14.67	3,415	-	-	3,415	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,599.00 lf	0.200	517.80 mh	1,616	4,358	669	7.95	20,562	-	-	20,562	
			#57 Stone For Outlet Pipe Bedding (135 pc)	524.00 in	0.150	78.60 mh	2,269	4,758	669	14.67	7,667	-	-	7,667	
			O & M			12,128.33 hrs	413,721	275,024	775,024	14.67	1,257,343	-	-	1,257,343	
Ph 2 Operation Cost	12		12,128.33 hrs	413,721	275,024	775,024	14.67	1,257,343	-	-	1,257,343				
13	Ph 2 Operation Cost	O & M	<b>Stage 2 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>		
			<b>Wet Case Gypsum Dike Fill</b>	<b>253,403.00 cy</b>									<b>4.22</b>	<b>1,112,382</b>	
			<b>Wet Sludge Gypsum Quantities</b>	<b>1,509,673.00 cy</b>										<b>0.00</b>	<b>0</b>
			<b>Stage 2 Disposal Life (Assume Dike &amp; Sludge Gypsum)</b>	<b>5.40 yrs</b>										<b>0.00</b>	<b>0</b>
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,988.00 lf	0.200	2,373.60 mh	64,765	19,639	10,075	7.95	84,478	-	-	84,478	
			Geotextile For Underdrain	9,888.00 sq	0.250	2,033.40 mh	5,002	20,022	2,692	2.66	28,916	-	-	28,916	
			#57 Stone For Outlet Pipe Bedding (135 pc)	2,403.00 in	0.150	360.45 mh	1,032	2,181	3,054	14.67	3,523	-	-	3,523	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200	534.00 mh	1,616	4,419	680	7.95	21,595	-	-	21,595	
			#57 Stone For Outlet Pipe Bedding (135 pc)	541.00 in	0.150	81.15 mh	2,338	4,911	799,891	14.67	1,297,825	-	-	1,297,825	
			O & M			12,518.91 hrs	427,045	70,891	799,891	14.67	1,297,825	-	-	1,297,825	
Ph 2 Operation Cost	13		12,518.91 hrs	427,045	70,891	799,891	14.67	1,297,825	-	-	1,297,825				
14	Ph 3 Initial Constr	O & M	Dry Stack Ash Quantities	677,412.00 cy	1,100.000	615.83 cd	1,348,771	-	894,530	-	-	3.33	2,253,301		
			<b>Initial Construction Disposal Life (Assume Dry Ash Stack)</b>	<b>1.40 yrs</b>									<b>0.00</b>	<b>0</b>	
			Ph 3 Initial Constr	14		44,339.70 hrs	1,348,771	904,530	2,253,301	0	0	-	2,253,301		
15	Ph 3 Operational Cost	O & M	<b>Stage 1 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>		
			Dry Stack Ash Quantities	1,348,180.00 cy	1,100.000	1,228.53 cd	2,698,305	-	1,801,523	-	-	-	3.33	4,487,828	
			<b>Stage 1 Disposal Life (Assume Dry Stack Area)</b>	<b>2.50 yrs</b>										<b>0.00</b>	<b>0</b>
O & M			89,300.90 hrs	2,698,305	2,000,305	4,698,610	0	0	-	-	4,698,610				
Ph 3 Operational Cost	15		89,300.90 hrs	2,698,305	2,000,305	4,698,610	0	0	-	-	4,698,610				

Location	Activity	Outage Bag	Description	Task Quantity	Prod. Productivity	Labor Quantity	Other Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 3 Operational Cost	O & M	15 Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 2 Disposal Life (Assume Dry Stack) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1.00 lot 1,904,625.00 cy 3.20 yrs 0.50 mile	1,100,000	1,388.02 cd	2,898,204	-	-	2,008,352	-	0.00	5,005,556
	Ph 2 Operational Cost	O & M	16 Wet Coal Gravel Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Gravel Bed For Underdrain #57 Stone For Outlet Pipe Bedding (135 pd) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pd) O & M Ph 2 Operational Cost	227,109.00 cy 1,344,516.00 cy 4.80 yrs	238,000	996.41 cd	263,628	16,932	-	675,288	-	4.22	959,086
	Ph 3 Operational Cost	O & M	17 Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1.00 lot 1,391,189.00 cy 2.80 yrs 0.50 mile	1,100,000	1,212.90 cd	2,868,457	-	-	1,781,508	-	0.00	4,437,963
	Ph 2 Operational Cost	O & M	18 Stage 4 (3 To 1 Side Slopes) Wet Coal Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Gravel Bed For Underdrain #57 Stone For Outlet Pipe Bedding (135 pd) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pd) O & M Ph 2 Operational Cost	1.00 lot 168,831.00 cy 702,654.00 cy 2.70 yrs	235,000	718.43 cd	210,997	12,688	-	501,996	-	4.22	712,993
	Ph 3 Operational Cost	O & M	19 Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Assume Dike & Dry Stack Ash) O & M Ph 3 Operational Cost	1.00 lot 577,613.00 cy 1.20 yrs	1,100,000	526.10 cd	1,150,065	-	-	771,271	-	0.00	1,921,336
	Ph 2 Operational Cost	O & M	20 Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Assume Dike & Dry Stack Ash) O & M Ph 2 Operational Cost	1.00 lot 577,613.00 cy 1.20 yrs	1,100,000	37,807.40 hrs 37,807.40 hrs	1,150,065 1,150,065	-	-	771,271 771,271	-	0.00	1,921,336
													1,921,336

10,11,12,13,18+19 (41,507,235)  
14,15,16,17+20 (34,740,999)

Estimate Totals

Material	28,561,509	911,010.112	hrs
Subcontract	884,118		
Equipment	26,837,162	682,822,905	hrs
Other	22,346,088		
	3,403,811		
	82,012,488		

Engineered Materials - Ph 2		100,000	%	C	
Adjustment - Engr Materials		(100,000)	%	C	
		82,012,488			

Environmental Costs		100,000	%	C	
Adjustment Environmental		(100,000)	%	C	
		82,012,488			

FP3 Mech Engr - Phase 2	17,000	0.844	% @ 42.00	A	405
FP3 Elec Engr - Phase 2	17,000	0.844	% @ 42.00	A	405
FP3 Civil Engr - Phase 2	16,001	0.844	% @ 42.00	A	381
Non-V/A Engr - Phase 2	260,993	0.308	% @ 72.00	A	3,825
FP3 Proj Civil Cost - Phase 2	1,002	0.003	% @ 42.00	A	24
FP3 Proj Mech Cost - Phase 2	1,002	0.003	% @ 42.00	A	24
FP3 Proj Elec Cost - Phase 2	1,002	0.003	% @ 42.00	A	24
FP3 Proj Other Cost - Phase 2	1,002	0.003	% @ 42.00	A	24
Engr Contingency @ 10% - Phase 2	31,720	0.083	% @ 42.00	A	759
	348,700				

Rounding	812	82,362,000		L	
<b>Total</b>		<b>82,362,000</b>			

**KINGSTON FOSSIL PLANT**  
**OPTION 5 - WET ASH IN POND & GYPSUM ON PENINSULA**  
**(WITH BUFFER OPTION)**

<b>Estimate Number</b>	05093O5R1	<b>Option:</b>	5	<b>PCN Number:</b>	KIF530
<b>Plant:</b>	KIF	<b>Revision:</b>	1	<b>Estimate Type:</b>	Preliminary
<b>Cost Engineer:</b>	C. L. Toney	<b>Unit #:</b>	N	<b>Estimate Accuracy:</b>	+/- 20%
<b>Requesting Engr:</b>	Dan Smith	<b>Phase:</b>	2	<b>Estimate Issue Date</b>	01/21/2005

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<u>Phase II</u>		
Engineering		\$689,999
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$689,999</u></b>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$3,680,722
Labor ( TL )	363,279.96	\$11,794,786
Labor ( Non-Manual )	28,149.14	\$1,407,457
Equipment		\$10,531,333
Subcontracts		\$16,834,222
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$2,347,901
Total Construction Cost		\$46,596,421
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$580
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$46,597,001</u></b>
<u>All Phases</u>		
Construction Partner	391,429.10	\$46,596,421
Long Lead Procurement		\$0
Engineering		\$689,999
Other / Other Organizations		\$0
Total Risk Dollars		\$580
<b><u>Total Project Costs</u></b>	<b><u>391,429.10</u></b>	<b><u>\$47,287,000</u></b>
<b><u>For Information only Total Environmental Costs</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

KINGSTON FOSSIL PLANT  
OPTION 5 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)

Project name KIF050930SR1/FLY&BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project	Ash
Plant	KIF
Estimate #	050930SR1
PCN #	KIF530
Requesting Engr	Dan Smith
Option	5
Revision	1
Phase	2
Estimate Type	Preliminary
Estimate Accuracy	+/- 20%
Est. Issue Date	01/21/2005
Funding Type	Capital
Unit	N

Notes

Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula).  
All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsumash generating 327,350 cy annually.
- (5) Single phase power is assumed for pump. Installed for dredge cell seepage return. 3-phase power is assumed not to be required.

Report format

Sorted by Location/Activity/Outage Set  
Detail summary



Location	Activity	Quantity Req	Description	Transfer Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Lin	Total Amount
Gypsum On Peninsula	Capitol	03	Fill With 1023 Compacted/Crushed Stone 30" Diameter CMP Culvert Bedding For 30" CMP, 6" Thick 30" Diameter CMP Stand Pipe (4 Pipes @ 8 Stages w/30" Per Stage) 650 9' Riprap Outlet For Metal Siphony Galvanized Compacted Metal Anil-Sept Collar Seed/Mulch Disturbed Areas 1023 Crushed Stone Base, 6" Depth 1023 Pallet Compacted Crushed Stone Base, 6" Depth <b>Base Layers</b> C&I For Dredge Call (255,500 bcy) Compacted Fly Ash Base (F III) Profile/ Slograde 2.5" Thick Bottom Ash Layer 0.5" Thick Fly Ash Filter Layer 18" Dia Coarse Bottom Ash Drain Columns (Incl. 2 miles, 1,100 bcy) 960 TII Fly Ash Fill Bottom Ash Dike Fill 1.0" Layer Of Bottom Ash Geosynthetic Clay Liner 4" Diameter Perforated PVC Pipe (Underdrains) 50R 17.5 Trenching For The Drain System (4" Dia Underdrains) 998 bcy Strip Existing 1" Soil Cover (Phase 1 Expansion) 18,133 bcy Ancho Trench Coll Ancho Trench Fill & Compact 2.0" Thick Bottom Ash Drain Drain 1.0" Thick Filter Drain Ash Layer Geomembrane Perforated Pipe ADS Drain Tube, 6" Diameter Geostatic For Underdrain 657 Stone For Outlet pipe Bedding (135 psf) Solid Outlet Pipe ADS Drain 6" Diameter 657 Stone For Outlet pipe Bedding (135 psf) 6" Dia Non-Per HDPE Compulsed Using Lateral Outlet Pipes (EL. 790) 1061 Crushed Stone, Bedding 6" Depth 6" Dia Perforated HDPE Drain (EL. 790) 1061 Crushed Stone Geostatic Woven Membrantment C&I For Underdrain System Bedfill For Underdrain System Certification @ 10% Capital Ash In Pond <b>02</b>	83.00 In 1,000.00 In 135.00 In 720.00 In 63.00 In 28.00 ea 3,582.00 In 6,952.00 In <b>1.00 lot</b> 322,200.00 CY 573,650.00 CY 177,700.00 SY 152,717.00 SY 30,543.00 CY 16,620.00 In 177,100.00 SY 183,614.00 CY 61,087.00 CY 183,260.00 SY 29,992.00 SY 1,600.00 CY 22,968.00 SY 13,926.00 SY 1,742.00 CY 24,640.00 CY 12,850.00 SY 30,848.00 In 4,211.00 SY 4,016.00 In 1,298.00 In 1,590.00 In 350.00 In 362.00 In 16.00 In 1,512.00 In 1,366.00 In 1,127.00 SY 483.00 SY 1,200.00 SY 1,300.00 SY 0.200 0.200 0.200 0.200 0.200 0.150 0.150 0.200 0.600 0.200 0.500 0.021 44.90 SY 1,290 1,209 1.00 In <b>1.00 lot</b> 72,000 6,000 128,000.00 SY 6,578.00 In 4,239.00 In 1,200.00 SY 0.320 6,978.00 SY 6,978.00 SY 2,344.00 In 4,300.00 SY 4,990.00 In 25.00 SY 1,000.00 In <b>1.00 lot</b> 1.00 In 1.00 In 890.00 393.33 1,684.00 SY 14,400.00 SY 2,400.00 SY 2,400.00 SY 600.00 SY 2,800.00 1,900.00 4,300.00 SY 22,990.00 SY 145,001.00 SY 145,001.00 SY 340.00 In 1,400.00 In 4,300.00 In 23,500.00 In 7,300.00 In 19,500.00 SY 200.00 In <b>1.00 ea</b> 72,000 6,000 128,000.00 SY 6,578.00 In 4,239.00 In 1,200.00 SY 0.320 6,978.00 SY 6,978.00 SY 2,344.00 In 4,300.00 SY 4,990.00 In 25.00 SY 1,000.00 In <b>1.00 lot</b> 1.00 In 1.00 In 890.00 393.33 1,684.00 SY 14,400.00 SY 2,400.00 SY 2,400.00 SY 600.00 SY 2,800.00 1,900.00 4,300.00 SY 22,990.00 SY 145,001.00 SY 145,001.00 SY 340.00 In 1,400.00 In 4,300.00 In 23,500.00 In 7,300.00 In 19,500.00 SY 200.00 In <b>1.00 ea</b>	0.400 0.600 0.250 0.250 0.250 0.120 0.120 <b>0.00</b> 0.945 1,300.000 28,111.100 1,300.000 1,300.000 1,400.000 1,300.000 1,300.000 0.025 0.070 890.000 0.320 1,300.000 1,300.000 0.200 0.200 0.200 0.200 0.200 0.150 0.150 0.200 0.600 0.200 0.500 0.021 0.200 0.209 1.209 1.00 In <b>1.00 lot</b> 72,000 6,000 128,000.00 SY 6,578.00 In 4,239.00 In 1,200.00 SY 0.320 6,978.00 SY 6,978.00 SY 2,344.00 In 4,300.00 SY 4,990.00 In 25.00 SY 1,000.00 In <b>1.00 lot</b> 1.00 In 1.00 In 890.00 393.33 1,684.00 SY 14,400.00 SY 2,400.00 SY 2,400.00 SY 600.00 SY 2,800.00 1,900.00 4,300.00 SY 22,990.00 SY 145,001.00 SY 145,001.00 SY 340.00 In 1,400.00 In 4,300.00 In 23,500.00 In 7,300.00 In 19,500.00 SY 200.00 In <b>1.00 ea</b>	37.20 mh 67.50 mh 540.00 mh 16.98 mh 295.00 mh 422.40 mh 626.20 mh <b>1.00 lot</b> 12,693.00 mh 44,427.00 49,340.00 11,410.00 23,490.00 74,304.00 126.60 mh 46.90 mh 113.791 115.928 48,828 1,232.00 mh 28.70 cd 397.44 mh 18.85 cd 9.48 cd 1,848.00 mh 889.20 mh 84.77 mh 150.15 mh 247.20 mh 37.90 mh 60.40 mh 5.00 mh 302.40 mh 143.00 mh 24.19 mh 44.90 mh 42.00 mh 88,646.26 hrs 88,646.26 hrs <b>88,846.26 hrs</b> 2,910.150 2,910.150 <b>2,910.150</b> 183.775 3.33 cd 2,580.00 mh 5.82 cd 1,359.48 mh 83.74 mh 750.00 mh 3.98 cd 335.99 mh 20.00 mh <b>1.00 lot</b> 3.00 cd 7.20 cd 1.98 cd 7.98 cd 0.21 cd 0.21 cd 1.21 cd 18.16 cd 348.00 mh 48.00 mh 48.00 mh 850.00 mh 4,700.00 mh 320.00 mh 520.00 mh <b>1.00 ea</b> 3.00 cd 7.20 cd 1.98 cd 7.98 cd 0.21 cd 0.21 cd 1.21 cd 18.16 cd 348.00 mh 48.00 mh 48.00 mh 850.00 mh 4,700.00 mh 320.00 mh 520.00 mh <b>1.00 ea</b>	1.107 17.497 1,943 18,223 505 7,481 13,739 28,872 <b>429.505</b> 1,969.578 5,353 294,477 59,895 74,304 304.725 113.791 115.928 48,828 6,678 14,128 7,519 11,441 45,899 22,949 52,750 8,104 8,344 8,104 2,418 4,322 6,747 3,750 1,079 1,548 144 6,253 4,116 6,990 1,290 1,209 2,910.150 2,910.150 <b>2,910.150</b> 183.775 3.33 79,390 10,981 40,971 2,996 22,324 6,787 9,795 526 <b>3.196</b> 3,196 22,757 3,052 646 466 244,655 146,178 113,119 1,327 348.00 48.00 48.00 25,955 19,884 10,914 <b>3,196</b> 3,196 22,757 3,052 646 466 244,655 146,178 113,119 1,327 348.00 48.00 48.00 25,955 19,884 10,914 <b>3,196</b>	804 28,442 67,500 18,038 538 4,882 31,950 62,493 <b>1,969.578</b> 5,353 294,477 59,895 74,304 304.725 113.791 115.928 48,828 6,678 14,128 7,519 11,441 45,899 22,949 52,750 8,104 8,344 8,104 2,418 4,322 6,747 3,750 1,079 1,548 144 6,253 4,116 6,990 1,290 1,209 847,209 847,209 <b>847,209</b> 43,111 5,494 23,638 2,482 320 <b>3,196</b> 3,196 22,757 3,052 646 466 244,655 146,178 113,119 1,327 348.00 48.00 48.00 12,707 18,441 100,781 238,995 28,829 <b>3,196</b> 3,196 22,757 3,052 646 466 244,655 146,178 113,119 1,327 348.00 48.00 48.00 12,707 18,441 100,781 238,995 28,829 <b>3,196</b>	599 3,682 230 2,279 273 1,571 64,619 4,147 8,112 <b>338,937</b> 891,223 2,870 237,738 47,452 20,845 254,191 64,609 12,160 7,992 1,972 1,972 3,330 9,835 19,281 18,340 4,712 4,200 239 1,279 1,579 1,992 1,992 2,445 256 17 1,294 487 92 391 504 2,093,729 2,093,729 <b>2,093,729</b> 180,944 884 82,238 12,041 21,837 477 12,015 7,420 1,554 62,134 <b>0.00</b> 513,500 260,000 2,525 2,380 3,30 47,452 3,118 7,01 542 255,408 196,528 3,417 4,01 1,630 18,441 100,781 238,995 995 <b>0.00</b> 513,500 260,000 2,525 2,380 3,30 47,452 3,118 7,01 542 255,408 196,528 3,417 4,01 1,630 18,441 100,781 238,995 995 <b>0.00</b>	28.99 47.61 25.61 52.70 24.85 698.59 2,485.34 14.16 14.16 <b>788,942</b> 1,989,922 2,870 62,178 94,348 20,54 94,948 658,966 298,998 598,381 88,533 8,650 29,058 10,218 17,131 3,42 3,42 3,78 2,98 2,98 1,679 1,679 1,679 1,679 2,445 256 17 1,294 487 92 391 504 31,500 31,500.00 628,474 628,474 <b>657,974</b> 3,961.32 142.10 1.26 3.30 24.99 0.51 8.280 2,935 2,935 2.91 2,485.34 0.69 <b>0.00</b> 513,500.00 260,000.00 2,525 2,380 3,30 47,452 3,118 7,01 542 255,408 196,528 3,417 4,01 1,630 18,441 100,781 238,995 995 <b>0.00</b> 513,500.00 260,000.00 2,525 2,380 3,30 47,452 3,118 7,01 542 255,408 196,528 3,417 4,01 1,630 18,441 100,781 238,995 995 <b>0.00</b>	2,510 47,611 3,457 37,980 1,317 13,014 64,619 48,978 0 <b>788,942</b> 1,989,922 2,870 62,178 94,348 20,54 94,948 658,966 298,998 598,381 88,533 8,650 29,058 10,218 17,131 3,42 3,42 3,78 2,98 2,98 1,679 1,679 1,679 1,679 2,445 256 17 1,294 487 92 391 504 31,500 31,500.00 628,474 628,474 <b>657,974</b> 3,961.32 142.10 1.26 3.30 24.99 0.51 8.280 2,935 2,935 2.91 2,485.34 0.69 <b>0.00</b> 513,500.00 260,000.00 2,525 2,380 3,30 47,452 3,118 7,01 542 255,408 196,528 3,417 4,01 1,630 18,441 100,781 238,995 995 <b>0.00</b> 513,500.00 260,000.00 2,525 2,380 3,30 47,452 3,118 7,01 542 255,408 196,528 3,417 4,01 1,630 18,441 100,781 238,995 995 <b>0.00</b>		

529,505  
52,951  
582,456

573,523  
573,515  
4,308,716



Location	Activity	Change Set	Description	Takeoff Quantity	Unit	Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
05	Miscellaneous	Capital	Sliding Gate, 20 Ft Wide, With Motorized Operator	1.00 ea		0.500	10.00 mh	265	189	17,459			17,459.00	17,459	
			Pipe Bedding	20.00 in	1,904,000	0.120	3,418	28,322	3,418		34			26.03	521
			Perimeter Road Surfacing - Graded Ash	2,400.00 sq ft	0.120	948.00 mh	1,176	28,322	3,418		2.57			2.57	6,170
			Perimeter Road Surfacing - Graded Slope	2,900.00 sq ft	0.099	358.00 mh	1,060,649	5,233	1,060,649		14.16			14.16	41,058
			Composite Clear Liner, 6" Lifts (339,000 sq)	499,000.00 sq ft	0.099	16,728.00 mh	507,754	257,040	2,317,010		13.20			13.20	2,282,285
			Drainage Layer (1 Ft Thick) For Liner (67 Stages)	159,000.00 sq ft	0.011	59.95 mh	1,452	7,608	203		1.97			1.97	2,217,010
			Geotextile For Underdrain Pipe	5,700.00 sq ft	0.200	1,280.00 mh	34,932	10,593	5,439		3.10			3.10	60,987
			6" Dia. HDPE SDR 17 Perforated Pipe	4,000.00 lf	0.200	10.00 mh	1,042	407	10,593		13.10			13.10	50,987
			Concrete Anchors For Underdrain Piping	85.00 ea	12.000	1,042.50 mh	34,932	10,593	5,439		3.10			3.10	60,985
			Proportional Substrate	70.00 sq	7.000	10.00 cd	1,042	10,593	10,593		13.10			13.10	47,309
			72" Dia. CMP For Outlet Structure	6.90 lf	2.000	12.00 mh	314	1,951	70		2.85			2.85	12,577
			48" Dia. CMP For Riser For Outlet Structure	7.00 lf	1.081	7.54 mh	1,935	70	542		7.07			7.07	376.24
			48" Dia. CMP Outlet Pipe (Pneumatic Spigot)	160.00 lf	0.822	83.00 mh	2,410	7,404	15		29.92			29.92	1,185
			Outlet Houses in Riser	3.00 ea	1.000	3.00 mh	74	47,719	15		1.95			1.95	90
			Seal / Felt / Liner / Lime Filler Borrow Area	20.00 sq	10.000	40.00 mh	1,284	823	105		3,347.60			3,347.60	2,221
			Composite Concrete for Riser Base (Assume 7 x 7 x 5')	4.00 sq	75.000	525.00 mh	16,984	5,076	1,373		3,947.60			3,947.60	2,221
			Anti-Sep Collars (Assume Concrete)	7.00 ea	1.000	40.00 mh	1,284	823	105		3,347.60			3,347.60	2,221
Contingency @ 15%	1.00 lb			61,985.91 hrs	1,949,716	2,320,799	1,175,868		1,175,868		1,175,868	1,175,868	6,014,991		
Gypsum On Penhaula	03			81,685.91 hrs	2,659,631	1,949,716	1,175,868		1,175,868		1,175,868	1,175,868	9,014,991		
06	Miscellaneous	Capital	Non Manual	1.00 lb		28,148.146	1,407,457						1,407,457.00	1,407,457	
			Madison, Drug Test, Misc Other & Demolition	1.00 lb	14,502.818	470,900								724,400.00	724,400
			Contingency @ 15%	1.00 lb		42,691.76 hrs	1,478,587	253,500	319,779		319,779		319,779	2,451,536	
			Disposal Life (Assume Dike & Dredge Ash)	12.90 yr		42,691.76 hrs	1,478,587	253,500	319,779		319,779		319,779	2,451,536	
			Dredge	4,853,956.00 cy	375,000	1,810.26 cd	1,810,260	7,651,580	1,284,503		2.65			2.65	11,554,547
			Wet Dip And Slack	678,848.00 cy		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Disposal Life (Assume Dike & Dredge Ash)	12.90 yr		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Dredge Ash	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Engr/Geotech	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Contingency @ 15%	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
11	Gyp On Penhaula Cat	O & M	EM, 810 To Elev, 866	622,416.00 cy	1,300,000	478.78 cd	1,584,419						0.00	2,125,405	
			Bottom Ash Dike Fill	4,853,956.00 cy		1,810.26 cd	1,810,260	7,651,580	1,284,503		2.65			2.65	11,554,547
			Wet Dip And Slack	678,848.00 cy		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Disposal Life (Assume Dike & Dredge Ash)	12.90 yr		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Dredge Ash	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Engr/Geotech	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Contingency @ 15%	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Addition Geotechnical Investigation	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Contingency @ 15%	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Engr/Geotech	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Contingency @ 15%	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Engr/Geotech	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
			Contingency @ 15%	1.00 lb		48,954.36 hrs	1,697,078	7,651,580	2,231,890		11,554,547			11,554,547	
17	Ph 2 Base Construct	O & M	Life Of Gypsum Disposal Stack (Wet Sludge)	5,535,853.00 cy	375,000	2,656.93 cd	792,055						2,656.93	303,221	
			Wet Cell Gypsum Gypsum Dike	1,011,347.00 cy	375,000	3,053.53 cd	89,733				2,656.93			2,656.93	303,221
			Out Run Ditches	114,975.00 cy	375,000	3,053.53 cd	89,733				2,656.93			2,656.93	303,221
			Life Of Gypsum Disposal Stack	20.00 yrs		39,940.32 hrs	1,320,104	144,187	2,179,787		3,644,075			3,644,075	
			Wet Cell Gypsum Disposal Stack	20.00 yrs		39,940.32 hrs	1,320,104	144,187	2,179,787		3,644,075			3,644,075	
			Out Run Ditches	114,975.00 cy	375,000	3,053.53 cd	89,733				2,656.93			2,656.93	303,221
			Life Of Gypsum Disposal Stack	20.00 yrs		39,940.32 hrs	1,320,104	144,187	2,179,787		3,644,075			3,644,075	
			Wet Cell Gypsum Disposal Stack	20.00 yrs		39,940.32 hrs	1,320,104	144,187	2,179,787		3,644,075			3,644,075	
			Out Run Ditches	114,975.00 cy	375,000	3,053.53 cd	89,733				2,656.93			2,656.93	303,221
			Life Of Gypsum Disposal Stack	20.00 yrs		39,940.32 hrs	1,320,104	144,187	2,179,787		3,644,075			3,644,075	
			Wet Cell Gypsum Disposal Stack	20.00 yrs		39,940.32 hrs	1,320,104	144,187	2,179,787		3,644,075			3,644,075	
			Out Run Ditches	114,975.00 cy	375,000	3,053.53 cd	89,733				2,656.93			2,656.93	303,221
			Life Of Gypsum Disposal Stack	20.00 yrs		39,940.32 hrs	1,320,104	144,187	2,179,787		3,644,075			3,644,075	
20	Ph 2 Initial Constr	O & M	Ph 2 Base Construct	1.00 lb		470,247							470,247		
			Ph 2 Base Construct	1.00 lb		470,247							470,247		
20	Ph 2 Initial Constr	O & M	Dredge Ash	451,295.00 cy		709,588							709,588		
			Dredge Ash	451,295.00 cy		709,588								709,588	

Location	Activity	Outage Seq	Description	Rate/Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		O & M	<b>Initial Disposal Life</b>	<b>0.90 yrs</b>								<b>0.00</b>	<b>0</b>
			Preferred Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	40,229	12,199	-	6,256	-	7.96	56,686
			Gravelite For Underdrain	6,122.00 sv	0.021	128.34 mh	3,604	12,437	-	430	-	2.66	16,471
			#57 Stone For Outlet Pipe Bedding (135 pd)	1,482.00 in	0.150	223.80 mh	6,442	13,542	-	1,487	-	14.67	21,087
			Solid Outlet Pipe ADS Drain, 6" Diameter	1,058.00 lf	0.200	331.90 mh	9,050	2,724	-	1,408	-	7.96	13,202
			#57 Stone For Outlet Pipe Bedding (135 pd)	336.00 in	0.150	60.40 mh	1,451	3,030	-	428	-	14.67	4,928
		O & M	Ph 2 Initial Const			2,206.14 hrs	60,777	43,972	709,588	10,427	-	10.427	824,763
						2,206.14 hrs	60,777	43,972	709,588	10,427	-	10.427	824,763
		O & M	<b>Stage 1 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>
			Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	255,188.00 sv	1,300,000	198.30 cd	475,359	-	2,098,277	386,482	-	3.42	871,821
			Dredge Ash	1,334,496.00 sv								1.57	2,098,277
			<b>Stage 1 Disposal Life (Assume Dike &amp; Dredge Ash)</b>	<b>3.30 yrs</b>								<b>0.00</b>	<b>0</b>
			Preferred Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf	0.200	2,298.00 mh	62,746	19,026	-	9,761	-	7.96	51,503
			Gravelite For Underdrain	8,579.00 sv	0.021	197.04 mh	5,821	19,396	-	670	-	2.66	25,892
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,328.00 in	0.150	349.20 mh	10,082	21,131	-	2,969	-	14.67	34,151
			Solid Outlet Pipe ADS Drain, 6" Diameter	2,566.00 lf	0.200	517.20 mh	14,116	4,280	-	2,198	-	7.96	20,592
			#57 Stone For Outlet Pipe Bedding (135 pd)	524.00 in	0.150	78.60 mh	2,283	4,769	-	668	-	14.67	7,687
		O & M	Ph 2 operation cost			17,574.59 hrs	570,156	68,589	2,098,277	412,726	-	14.67	3,146,748
						17,574.59 hrs	570,156	68,589	2,098,277	412,726	-	14.67	3,146,748
		O & M	<b>Stage 2 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>
			Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	283,403.00 sv	1,300,000	202.82 cd	490,659	-	2,373,715	409,223	-	3.42	869,883
			Dredge Ash	1,509,673.00 sv								1.57	2,373,715
			<b>Stage 2 Disposal Life (Assume Dike &amp; Dredge Ash)</b>	<b>3.70 yrs</b>								<b>0.00</b>	<b>0</b>
			Preferred Pipe ADS Drain Tube, 6" Diameter	11,868.00 lf	0.200	2,373.00 mh	64,785	19,638	-	10,075	-	7.96	64,785
			Gravelite For Underdrain	8,403.00 sv	0.021	203.40 mh	5,892	20,022	-	692	-	2.66	26,512
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,670.00 in	0.150	360.45 mh	10,378	21,811	-	3,064	-	14.67	35,821
			Solid Outlet Pipe ADS Drain, 6" Diameter	2,670.00 lf	0.200	534.00 mh	14,574	4,419	-	2,287	-	7.96	21,098
			#57 Stone For Outlet Pipe Bedding (135 pd)	541.00 in	0.150	81.15 mh	2,338	4,811	-	690	-	14.67	7,499
		O & M	Ph 2 Operation Cost			18,140.47 hrs	588,514	70,801	2,373,715	428,011	-	14.67	3,489,041
						18,140.47 hrs	588,514	70,801	2,373,715	428,011	-	14.67	3,489,041
		O & M	<b>Stage 3 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>
			Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	227,108.00 sv	1,300,000	174.70 cd	423,046	-	2,114,661	352,632	-	3.42	775,619
			Dredge Ash	1,344,915.00 sv								1.57	2,114,661
			<b>Stage 3 Disposal Life (Assume Dike &amp; Dredge Ash)</b>	<b>3.30 yrs</b>								<b>0.00</b>	<b>0</b>
			Preferred Pipe ADS Drain Tube, 6" Diameter	10,230.00 lf	0.200	2,046.00 mh	58,641	18,922	-	8,687	-	7.96	81,460
			Gravelite For Underdrain	8,528.00 sv	0.021	175.36 mh	5,807	17,792	-	597	-	2.66	22,981
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,072.00 in	0.150	310.80 mh	8,607	18,807	-	2,642	-	14.67	30,395
			Solid Outlet Pipe ADS Drain, 6" Diameter	2,302.00 lf	0.200	480.40 mh	12,866	3,810	-	1,955	-	7.96	18,330
			#57 Stone For Outlet Pipe Bedding (135 pd)	488.00 in	0.150	60.00 mh	507,714	4,200	-	584	-	14.67	6,898
		O & M	Ph 2 Operation Cost			15,640.64 hrs	507,414	61,041	2,114,661	387,306	-	14.67	3,050,423
						15,640.64 hrs	507,414	61,041	2,114,661	387,306	-	14.67	3,050,423

Estimate Totals

		391,429,105	hrs		
Labor	13,203,243				
Material	16,580,722				
Subcontract	16,834,222	260,044,520	hrs		
Equipment	10,531,333				
Other	2,347,861				
	46,596,421	46,596,421			
Engineered Materials - Ph.2					
Adjustment - Engr Materials		100,000	%	C	
		(100,000)	%		
Environmental Costs					
Adjustment Environmental		100,000	%	C	
		(100,000)	%		
Environmental Costs	48,596,421				
FPG Civil Engr - Phase 2	30,075	0.183	% @ 42.00	A	716
Non-TVA Engr - Phase 2	564,067	2.001	% @ 72.00	A	7,694
FPG Proj Civil Coal - Phase 2	977	0.006	% @ 42.00	A	23
FPG Proj Civil Sched - Phase 2	2,923	0.018	% @ 42.00	A	70
FPG Cost Estimating - Phase 2	978	0.006	% @ 42.00	A	23
FPG Engr Records - Phase 2	89,999	0.006	% @ 42.00	A	23
Engr Conf/c@15% - Phase 2	609,999	0.547	% @ 42.00	A	2,145
Rounding	580			L	
	580	47,287,000			
<b>Total</b>		<b>47,287,000</b>			

**KINGSTON FOSSIL PLANT**  
**OPTION 6 - DRY ASH IN POND & GYPSUM ON PENINSULA**  
**(WITH BUFFER OPTION)**

KINGSTON FOSSIL PLANT  
 DRY ASH IN POND & GYPSUM ON PENINSULA  
 WITH BUFFER OPTION

Estimate Number 05093O6R1      Option: 6      PCN Number: KIF530  
 Plant: KIF      Revision: 1      Estimate Type: Preliminary  
 Cost Engineer: C. L. Toney      Unit #: N      Estimate Accuracy: +/- 20%  
 Requesting Engr: Dan Smith      Phase: 2      Estimate Issue Date 01/21/2005

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<u>Phase II</u>		
Engineering		\$690,002
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$690,002</u></b>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$2,941,113
Labor ( TL )	935,852.54	\$28,985,967
Labor ( Non-Manual )	19,973.46	\$998,673
Equipment		\$22,144,690
Subcontracts		\$27,569,077
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$4,437,064
Total Construction Cost		\$87,076,584
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$414
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$87,076,998</u></b>
<u>All Phases</u>		
Construction Partner	955,826.00	\$87,076,584
Long Lead Procurement		\$0
Engineering		\$690,002
Other / Other Organizations		\$0
Total Risk Dollars		\$414
<b><u>Total Project Costs</u></b>	<b><u>955,826.00</u></b>	<b><u>\$87,767,000</u></b>
<b><u>For Information only Total Environmental Costs</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

KINGSTON FOSSIL PLANT  
OPTION 6 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)

Project name KIF/0509306R1/R/Y&BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project:	Ash
Plant:	KIF
Estimate #:	0509306R1
PCN #:	KIF30
Requesting Engr:	Dan Smith
Option:	6
Revision:	1
Phase:	2
Estimate Type:	Preliminary
Estimate Accuracy:	+- 20%
Est. Issue Date:	01/21/2005
Funding Type:	Capital
Unit:	N

Notes

Dry ash in pond & gypsum on peninsula (wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed. (Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,350 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity/Outage Set  
Detail summary/



Location	Activity	Change Seq	Description	Takeoff Quantity	Productivity	Labor Quantity	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		Capital	Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 lb	0.120	40.80 mh	1,327	3,085	401	1,650	14.16	4,814
			Riprap For Stormwater Runoff Pond	1,400.00 lb	0.260	368.00 mh	5,464	12,707	1,650	1,650	14.16	19,021
			Riprap For Stormwater Runoff Pond	2,500.00 lb	0.260	650.00 mh	25,565	43,731	18,441	18,441	20.41	81,612
			Ditch For Riprap (24" wide x 2' deep)	3,000.00 lb	0.260	780.00 mh	19,861	238,985	100,781	100,781	20.41	478,657
			Geotextile (If Riprap is Used)	15,000.00 sq	0.015	320.03 mh	10,911	12,904	12,904	3,281	3.28	35,443
			New Fencing (Including Grounding)	201.00 ea		292.50 mh	8,420	28,028	895	895	21.02	29,443
			Personnel Swarming Gate	1.00 ea				4,211			4,211	4,211
			Sliding Gate, 20 Ft. Wide, With Motorized Operator	20.00 ea				370			370	370
			Pipe Bedding	20.00 in	0.500	10.00 mh	289	198	34		289	289
			Perimeter Road Structure - Bottom Ash	2,400.00 sq	1.904	1.28 cd	3,952	198	34		3,952	3,952
			Perimeter Road Structure - Crushed Stone	2,900.00 in	0.120	348.00 mh	11,319	26,323	3,417		14,186	47,826
			Composite (Dry Layer, 6" Lvs (559,000 lbs))	408,800.00 sq	1,200,000	339.00 cd	1,020,246	1,482,276	1,108,239	5,223	5,223	2,128,688
			Gravel Layer (1.5" Thick) For Layer (No. 57 Stone)	189,000.00 lb	0.096	16,128.00 mh	507,984	1,428,000	251,040		13,200	2,217,010
			Geotextile For Underdrain Pipe	5,200.00 sq	0.011	58.85 mh	7,299.00	10,583	203		1,671	8,833
			6 Dia. HOPE SDR17 Perforated Pipe	6,400.00 ft	0.200	1,280.00 mh	34,935	10,583	5,439		7,960	50,897
			Concrete Anchors for Underdrain Piping	50.00 ea	0.200	10.00 mh	407	10,157	2,778		13.10	13,100
			Proximal Sludge Pipe Outlet Structure	65.00 sq	7.000	1,942.50 mh	8,497	10,157	4,090		599.59	47,309
			46 Dia. CUP (For Relief For Outlet Structure)	6.00 ft	1.091	12.00 mh	337	1,851	70		2,571	2,571
			46 Dia. CUP Outlet Pipe (Principle Spine)	7.00 ft	1.091	7.64 mh	214	936	45		1,054	1,054
			Cut Header in Place	150.00 ft	1.000	3.00 mh	74	7,404	15		7,419	7,419
			Seed / Fertilizer Lining Future Bottom Area	20.00 ac		40.00 mh	1,284	823	105		2,212	2,212
			Composite Concrete for Road Base (Assume 7' x 7' x 2')	4.00 sq	10,000	525.00 mh	18,954	5,076	1,372		3,959.50	23,433
			All Steel (Assume Concrete)	7.00 ea	75,000						1,175,868	1,175,868
			Compensatory @ 15%	1.00 lb				608,975	2,320,796	1,175,868	15,405	9,074,891
			Capital					908,975	2,320,796	1,175,868	15,405	9,014,891
			Gypsum On Peninsula					87,665.91 hrs	2,659,631	1,949,718	1,175,868	9,074,991
05	Miscellaneous	Capital	Dry Fly Ash Conversion Capital Cost	1.00 lb	18,873.460	18,873.46 mh	998,573	25,675,000	188,200	0	26,750,200	26,750,200
			Non Manual	1.00 lb	11,182.42	11,182.42 mh	345,700	25,675,000	188,200	2,720,537	2,908,737	29,583,737
			Mobilize, Dmg Incl, Misc Oiler, & Demobilize	1.00 lb					188,200	2,720,537	2,908,737	29,583,737
			Contingency @ 10%	1.00 lb					188,200	2,720,537	2,908,737	29,583,737
			Capital						188,200	2,720,537	2,908,737	29,583,737
			Miscellaneous						188,200	2,720,537	2,908,737	29,583,737
06	Dmg Collp'n Opr Cost	O & M	ENV. \$10 To Env. \$86	1.00 lot	5,475,070.00 cv	4,879.25 cd	10,900,210	25,675,000	7,312,047	15,405	12,700.00	12,700.00
			Wet Dip And Stack Bottom Ash Only		678,844.00 cv	1,810.26 cd	531,955	25,675,000	1,294,903	15,405	15,405	15,405
			Head Distance (Assume Dike & Dredge Ash)									
			Haul Distance (Round Trip)		12.90 yr							
			O & M		0.50 mile							
			Dmg Collp'n Opr Cost									
			Engr/Geotech									
			Additional Geotechnical Investigation		1.00 lb			102,700			102,700	102,700
			Contingency @ 15%		1.00 lb			102,700			102,700	102,700
			Engr/Geotech					102,700			102,700	102,700
14	Gyp On Peninsula Cost	O & M	Cut For Underdrain System	4,407.00 cv	0.200	881.40 mh	29,372	7,482	50,517	7.96	32,864	32,864
			6" Dia. Perforated HOPE Perimeter Underdrains	59,481.00 ft	0.200	11,896.20 mh	52,613	7.96	10,571	14.67	473,718	473,718
			Fill For Underdrain System	3,525.00 cv	0.250	881.25 mh	29,956	10,571	4,172	14,67	35,839	35,839
			1081 Coated Stone, 6" Depth (110 pct)	3,272.00 in	0.190	490.80 mh	14,125	47,989		4,109	4,109	4,109
			Cut For Lateral Outlet Pipes	551.00 cv	0.200	1,102.00 mh	4,095	12,306	6,314	7.96	59,212	59,212
			6" Dia. Non-Perforated HOPE Lateral Outlet Pipes	441.00 cv	0.250	1,102.25 mh	4,095	12,306	1,322	14.67	4,985	4,985
			Fill For Lateral Outlet Pipes	441.00 cv	0.150	61.35 mh	1,065	3,712	581	0.00	14.67	6,000
			1081 Coated Stone, 6" Depth (110 pct)	409.00 in	0.190	61.35 mh	1,065	3,712		0.00	14.67	14,67
			Gypsum Disposal Stack (Wet Sludge)	5,533,853.00 cv		2,896.93 cd	792,065		1,894,452		2,876,517	2,876,517
			Wet Coal Gypsum System Dike	1,011,347.00 cv		305.53 cd	89,733		213,489		303,221	303,221
			Cut Firm Ditches	114,575.00 cv		375.000					0.00	0.00
			Life Of Gypsum Disposal Stack									
			O & M									
			Gyp On Peninsula Cost									
17	Pl 2 Base Construct											

INCL COSTS  
28,247.50  
3,168.31  
31,415.81

Location	Activity	Outage Sig	Description	Event Quantity	Labo Productivity	Labo Quantity	Labo Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
			ONOC For Construction Of Disposal Facility O & M Ph 2 Base Construct	1.00 ls		0.00 hrs 0.00 hrs	- 0	0	470,247 470,247	0		470,246.87	470,247 470,247 470,247
			Ph 2 Initial Constr										
		O & M	Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack) O & M Ph 2 Initial Constr	1.00 lot 1.30 yrs	1,100,000	559.01 cd -	1,224,324 -	-	-	821,071	-	3.33 0.00	2,045,395 0
			Ph 2 Operation Cost										
		O & M	Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 1 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) O & M Ph 2 Operation Cost	1.00 lot 3.30 yrs 0.30 mile	1,100,000	1,445.17 cd -	3,165,166 -	-	-	2,122,663	-	3.33 0.00	5,287,829 0
			Ph 2 Operation Cost										
		O & M	Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 2 Disposal Life (Assume Dry Stack Area) O & M Ph 2 Operation Cost	1.00 lot 3.70 yrs	1,100,000	1,611.89 cd -	3,530,309 -	-	-	2,367,540	-	3.33 0.00	5,897,849 0
			Ph 2 Operation Cost										
		O & M	Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack Area) O & M Ph 2 Operation Cost	1.00 lot 3.30 yrs	1,100,000	1,429.11 cd -	3,129,998 -	-	-	2,099,076	-	3.33 0.00	5,229,076 0



Estimate Totals

Category	Amount	Rate	Unit	Code	Count
Labor	29,984,640	956,028.001	hrs		
Material	2,941,113				
Subcontract	27,959,077	653,174.062	hrs		
Equipment	22,144,690				
Other	5,522,584				
Engineered Materials - Ph. 2	87,076,584	100,000 %		C	
Adjustment - Engr Materials		(100,000) %			
Environmental Costs	87,076,584	100,000 %		C	
Adjustment Environmental		(100,000) %			
FRG Mech Engr - Phase 2	14,998	0.037 % @	42.00 A		357
FRG Elec Engr - Phase 2	14,988	0.037 % @	42.00 A		357
FRG DVA Engr - Phase 2	30,980	0.075 % @	42.00 A		716
FRG PVI Engr - Phase 2	594,038	0.778 % @	72.00 A		7,417
FRG Pool Chem Cost - Phase 2	888	0.002 % @	42.00 A		24
FRG Pool Chem Sched - Phase 2	2,839	0.007 % @	42.00 A		70
FRG Coal Estimating - Phase 2	880	0.002 % @	42.00 A		23
FRG Engr Records - Phase 2	840	0.002 % @	42.00 A		23
Engr Config@15% - Phase 2	90,000	0.224 % @	42.00 A		2,143
Rounding	414				
Total	87,767,000				

**KINGSTON FOSSIL PLANT**  
**OPTION 7 - WET ASH IN POND & GYPSUM IN POND**  
**(WITH BUFFER OPTION)**

KINGSTON FOSSIL PLANT  
 WET ASH IN POND &  
 GYPSUM IN POND  
 OPTION 7  
 WITH BUFFER OPTION

<b>Estimate Number</b>	0509307R1	<b>Option:</b>	7	<b>PCN Number:</b>	KIF530
<b>Plant:</b>	KIF	<b>Revision:</b>	1	<b>Estimate Type:</b>	Preliminary
<b>Cost Engineer:</b>	C. L. Toney	<b>Unit #:</b>	N	<b>Estimate Accuracy:</b>	+/- 20%
<b>Requesting Engr:</b>	Dan Smith	<b>Phase:</b>	2	<b>Estimate Issue Date</b>	01/21/2005

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<u>Phase II</u>		
Engineering		\$348,702
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$348,702</u></b>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$2,058,231
Labor ( TL )	632,057.02	\$19,893,665
Labor ( Non-Manual )	21,885.50	\$1,094,275
Equipment		\$16,702,837
Subcontracts		\$30,783,866
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$3,477,519
Total Construction Cost		\$74,010,393
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$905
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$74,011,298</u></b>
<u>All Phases</u>		
Construction Partner	653,942.52	\$74,010,393
Long Lead Procurement		\$0
Engineering		\$348,702
Other / Other Organizations		\$0
Total Risk Dollars		\$905
<hr/>		
<b><u>Total Project Costs</u></b>	<b><u>653,942.52</u></b>	<b><u>\$74,360,000</u></b>
<b><u>For Information only Total Environmental Costs</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

KINGSTON FOSSIL PLANT  
OPTION 7 - WET ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)

Project name KIF0509307R1VFLV&BOT ASH

Engineer DAN SMITH

Estimator C. L. Torrey

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project	ASH
Plant	KIF
Estimate #	0509307R1
PCN #	KIFCS0
Requesting Engr	Den Smith
Option	1
Revision	2
Estimate Type	Preliminary
Estimate Accuracy	+/-20%
Est. Issue Date	01/21/2005
Funding Type	Capital
Unit	N

Notes  
(Wet ash in dredge call/Phase 1. Wet gypsum in Phase 2. Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl. TVA oversight, subcontracts and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,350 cy annually.
- (5) Single phase power is assumed for pump installed for dredge call seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Seq'  
Detail summary



Location	Activity	Output Seq	Description	Takeoff Quantity	Labor Productivity	Material Productivity	Takeoff Labor Quantity	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		Central	Fill With 1032 Compacted/Quarried Stone	593.00 lb	0.400	37.20 m³	1.107	604	-	599	-	28.99	2,510
			30" Diameter CMP Culvert	1,000.00 ft	0.800	600.00 m	17.487	28,442	-	3,692	-	47.61	47,911
			Bedding For 30" CMP 6" Thick	0.500	0.500	67.50 m³	1.943	1,294	-	230	-	25.61	3,457
			30" Diameter CMP Stand Pipe (4 Pipes @ 6 Slapses w/9" Per Slap)	72.00 ft	0.750	540.00 m	16.623	19,038	-	2,279	-	52.70	37,940
			D50 or Riprap Outlet For Metal Spillway	54.00 ft	0.320	16.96 m³	505	539	-	273	-	24.95	1,317
			Galvanized Corrugated Metal Anti-Sweep Collar	18.00 ft	16.000	286.00 m	7.661	4,982	-	1,571	-	699.59	13,914
			Seal/Match Disturbed Area	28.00 sq	0.120	422.40 m²	13.739	31,550	-	4,147	-	2,465.34	94,619
			1032 Crushed Stone Base 6" Depth	3,326.00 m³	0.120	638.20 m³	25.672	62,483	-	8,112	-	14.16	14,161
			1032 Roller Compacted Quarried Stone Base 6" Depth	6,983.00 m³	0.120	638.20 m³	25.672	62,483	-	8,112	-	14.16	14,161
			<b>Base Layers</b>	<b>1,00 lot</b>								<b>0.00</b>	<b>0</b>
			Cut For Dredge Cull (258,500 bcy)	322,200.00 cy	0.040	12,888.00 m³	425.257	-	-	338,837	-	2.90	789,442
			Compacted Fly Ash Base (FBI)	910,555.00 cy	1,300,000	700.43 m³	1,698,857	-	-	1,414,841	-	3.42	3,110,789
			Proportional Subgrade	281,111.00 cy	26,111,100	10.00 m³	45,136	-	-	4,080	-	0.05	12,577
			2.5" Thick Bottom Ash Layer	242,407.00 cy	1,300,000	196.47 m³	451,616	-	-	378,504	-	3.42	828,153
			0.5" Thick Fly Ash Filter Layer	48,481.00 cy	1,300,000	37.29 m³	90,519	-	-	75,320	-	3.42	185,629
			18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	19,920.00 ft	1,400,000	200.78 m³	117.93	-	-	347,557	-	0.54	347,557
			Bottom Ash Dike Fill	281,111.00 cy	1,300,000	1,296.96 m³	304,475	-	-	32,770	-	3.42	254,191
			1.0" Layer of Bottom Ash	163,614.00 cy	1,300,000	1,296.96 m³	160,620	-	-	150,642	-	3.42	150,642
			Geosynthetic Clay Liner	86,983.00 cy	0.028	7,573.59 m³	215,790	-	-	18,286	-	3.21	933,954
			Trenching For The Drain System (4 Dia Underdrains, 1,533 bcy)	41,400.00 ft	0.070	2,898.00 m	79,094	-	-	12,320	-	3.78	2,495,401
			4" Diameter Perforated PVC Pipe (Underdrain) SDR 17.5	1,640.00 ft	80,200	98.90 m	10,859	-	-	3,128	-	1.27	19,721
			Ship Existing 1' Soil Cover (Phase 1 Expansion), 19,133 bcy	22,989.00 cy	0.200	4,446.00 m³	11,525	-	-	5,285	-	8.31	28,058
			Anchor Trench Cull	2,073.00 cy	0.200	414.60 m³	11,525	-	-	15,607	-	17.13	31,723
			2.0" Thick Bottom Ash Barbed Drain	1,971.00 cy	1,380,000	670.72 m³	72,555	-	-	60,763	-	3.42	133,616
			1.0" Thick Filter Drain Ash Layer	18,958.00 cy	1,380,000	15,944 m³	36,429	-	-	30,882	-	3.78	66,811
			Geomembrane	58,667.00 cy	0.200	2,813.35 m³	83,482	-	-	7,480	-	3.78	222,424
			Perforated Pipe ADS Drain Tube 6" Diameter	7,682.00 ft	0.021	42,669 m	12,999	-	-	6,069	-	7.96	62,506
			Geosynthetic For Underdrain	1,971.00 cy	0.021	13,427 m	13,427	-	-	4,98	-	2.68	17,563
			#57 Stone For Outlet Pipe Bedding (135 ft)	6,542.00 ft	0.021	13,427 m	13,427	-	-	2,027	-	14.67	23,325
			Solid Outlet Pipe ADS Drain 6" Diameter	1,980.00 ft	0.200	238.50 m	6,665	-	-	1,697	-	7.96	15,631
			#57 Stone For Outlet Pipe Bedding (135 ft)	1,980.00 ft	0.150	69.55 m	1,714	-	-	506	-	14.67	5,924
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL 750)	46.00 ft	0.200	98.00 m	2,420	-	-	408	-	7.96	3,022
			6" Dia Perforated HDPE Drain (EL 750)	2,400.00 ft	0.200	480.00 m	13,100	-	-	2,038	-	25.61	19,111
			1081 Quarried Stone, Bedding 6" Depth	454.00 m	0.021	38.40 m	8,534	-	-	131	-	7.96	11,652
			1081 Quarried Stone, Bedding 6" Depth	2,400.00 ft	0.021	198.40 m	1,096	-	-	605	-	7.96	2,095
			Geosynthetic Women Morpholiment	1,987.00 cy	0.200	71.20 m	2,050	-	-	801	-	8.31	50,000
			Cull For Underdrain System	267.00 cy	0.250	66.75 m	1,921	-	-	12,041	-	0.51	108,313
			Certification	1,000.00	1,200,000	5.82 m	10,981	-	-	43,111	-	3.99	5,484
			Cull For Ditch (5,815 bcy)	6,378.00 cy	0.320	53.74 m	2,399	-	-	5,484	-	22.324	23,838
			D50 7" Riprap	4,239.00 cy	0.320	750.00 m	8,757	-	-	1,015	-	7.480	12,015
			Sheet Piling	6,878.00 cy	0.012	63.74 m	2,399	-	-	427	-	1.18	8,266
			Riprap D50 Size 6"	6,878.00 cy	0.320	750.00 m	8,757	-	-	1,015	-	7.480	12,015
			Cull For Basin (1,582 bcy)	2,344.00 ft	1,200,000	3.58 m	9,757	-	-	3,593	-	3.30	14,106
			Contingency @ 10%	4,300.00 ft	1,200,000	3.58 m	9,757	-	-	3,593	-	3.30	14,106
			Capral	1.00 lb	-	-	-	-	-	-	-	-	-
			Ash/ Gypsum In Pond	1.00 lb	-	-	-	-	-	-	-	-	-
05	Miscellaneous	Capital	Dry Fly Ash Conversion Capital Cost	1.00 lb	21,885,500	21,885.50 m³	1,094,275	-	-	21,977,800	-	21,977,800.00	21,977,800
		Non Material	Mobilize, Dredge Test, Misc Other, & Demobilize	1.00 lb	11,824,964	11,824.86 m³	370,000	-	-	12,194,964	-	11,824,964.00	12,194,964
		Capital	Contingency @ 10%	1.00 lb	-	-	1,664,275	-	-	200,000	-	2,384,208	2,384,208
		Capital	Miscellaneous	1.00 lb	-	-	1,664,275	-	-	200,000	-	2,384,208	2,384,208
06	Dredge Cull/Dpr Cost	O & M	EW, 810 To EW, 844	1.00 lot	1,300,000	478.78 m³	1,156,419	-	-	988,986	-	0.00	2,156,405
			Bottom Ash Dike Fill	4,053,654.00 cy	235,000	2,888.71 m³	846,392	-	-	2,018,663	-	4.22	7,631,560
			Dredge	678,948.00 cy	-	-	-	-	-	-	-	0.00	2,966,555
			Water Dip And Stack	12.90 yr	-	-	-	-	-	-	-	-	-
			Disposal Life (Assume Dike & Dredge Ash)	67,581.99 hrs	-	-	2,007,811	-	-	2,985,448	-	-	12,634,840
			O & M	57,581.99 hrs	-	-	2,007,811	-	-	2,985,448	-	-	12,634,840
			Dredge Cull/Dpr Cost	57,581.99 hrs	-	-	2,007,811	-	-	2,985,448	-	-	12,634,840
07	PH 2&PH 3 Base Const	O & M	QA/QC For Construction Of Disposal Facility	1.00 lb	-	-	-	-	-	-	-	-	-
			PH 2&PH 3 Base Const	1.00 lb	-	-	-	-	-	-	-	-	-

529,005  
52,991  
582,456

831,485  
831,485

914,633  
914,633

24,175.58  
24,175.58  
1,930,702

2,384,208  
2,384,208  
2,384,208  
26,006,283  
26,006,283  
26,006,283

Location	Activity	Usage reqd	Description	Factor Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost Link	Total Amount
10	Ph 2 Initial Constr	O & M	<b>Wet Sluice Sedimented Gypsum Quantities</b>	<b>451,295.00 cy</b>		<b>0.00 hrs</b>	<b>0</b>	<b>0</b>	<b>746,424</b>	<b>0</b>		<b>0.00</b>	<b>746,424</b>
			<b>Initial Disposal Life</b>	<b>1.40 yrs</b>								<b>0.00</b>	<b>0</b>
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,212.00 ft	0.200	1,424.00 hrs	40,228	12,199	-	6,259	-	7.96	58,096
			Genetrieve For Underdrain	6,142.00 ft	0.021	126.34 hrs	3,604	12,437	-	430	-	2.96	16,571
			#57 Stone For Outlet Pipe Bedding (135 pd)	1,592.00 ft	0.150	238.80 hrs	6,442	13,542	-	1,408	-	14.87	21,691
			Solid Outlet Pipe ADS Drain 6" Diameter	358.00 ft	0.200	71.60 hrs	9,950	2,744	-	428	-	7.96	13,022
			#57 Stone For Outlet Pipe Bedding (135 pd)	358.00 ft	0.150	53.70 hrs	1,651	3,650	-	428	-	14.87	4,929
			O & M			2,206.14 hrs	60,777	43,872	-	10,427	-		119,175
			Ph 2 Initial Constr			2,206.14 hrs	60,777	43,872	-	10,427	-		119,175
						<b>2,206.14 hrs</b>	<b>60,777</b>	<b>43,972</b>		<b>10,427</b>			<b>115,175</b>
11	Rim Ditches	O & M	Cut (111,869 cc)			571.40 cd	167,816	-	-	399,280	-	4.32	587,076
			O & M			4,571.20 hrs	167,816	-	-	399,280	-		587,076
			Rim Ditches			4,571.20 hrs	167,816	-	-	399,280	-		587,076
						<b>4,571.20 hrs</b>	<b>167,816</b>	<b>0</b>		<b>399,280</b>		<b>0.00</b>	<b>587,076</b>
12	Ph 2 Operational Cost	O & M	<b>Stage 1 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>		<b>0.00</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>0</b>		<b>0.00</b>	<b>0</b>
			Wet Sluice Gypsum Quantities	255,189.00 cy	235,000	1,085.91 cd	319,923	-	-	758,170	-	4.22	1,077,693
			Wet Sluice Disposal Life (Assumes Dikes & Sluice Gypsum)	4.50 yrs								<b>0.00</b>	<b>0</b>
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,485.00 ft	0.200	2,296.00 hrs	62,746	19,028	-	9,761	-	7.96	81,533
			Genetrieve For Underdrain	6,579.00 ft	0.021	137.04 hrs	5,621	19,396	-	670	-	2.68	25,687
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,328.00 ft	0.150	348.20 hrs	10,652	21,131	-	2,908	-	14.67	34,151
			Solid Outlet Pipe ADS Drain 6" Diameter	574.00 ft	0.200	114.80 hrs	14,116	4,280	-	2,186	-	7.96	20,582
			#57 Stone For Outlet Pipe Bedding (135 pd)	574.00 ft	0.150	86.10 hrs	2,693	4,756	-	668	-	14.67	7,667
			O & M			12,128.33 hrs	413,721	68,589	-	775,034	-		1,257,343
			Ph 2 Operational Cost			12,128.33 hrs	413,721	68,589	-	775,034	-		1,257,343
						<b>12,128.33 hrs</b>	<b>413,721</b>	<b>68,589</b>		<b>775,034</b>		<b>0.00</b>	<b>1,257,343</b>
13	Ph 2 Operational Cost	O & M	<b>Stage 2 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>		<b>0.00</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>0</b>		<b>0.00</b>	<b>0</b>
			Wet Sluice Gypsum Quantities	255,403.00 cy	235,000	1,120.86 cd	329,189	-	-	783,183	-	4.22	1,112,382
			Wet Sluice Disposal Life (Assume Dike & Sluice Gypsum)	5.40 yrs								<b>0.00</b>	<b>0</b>
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,895.00 ft	0.200	2,373.00 hrs	64,785	19,636	-	10,075	-	7.96	84,478
			Genetrieve For Underdrain	6,888.00 ft	0.021	143.75 hrs	5,572	20,022	-	692	-	2.68	26,512
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,403.00 ft	0.150	360.45 hrs	11,370	21,811	-	3,064	-	14.67	35,251
			Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 ft	0.200	534.00 hrs	14,170	4,818	-	2,297	-	7.96	21,291
			#57 Stone For Outlet Pipe Bedding (135 pd)	641.00 ft	0.150	96.15 hrs	2,708	4,911	-	690	-	14.67	7,936
			O & M			12,518.91 hrs	427,043	70,801	-	799,981	-		1,297,825
			Ph 2 Operational Cost			12,518.91 hrs	427,043	70,801	-	799,981	-		1,297,825
						<b>12,518.91 hrs</b>	<b>427,043</b>	<b>70,801</b>		<b>799,981</b>		<b>0.00</b>	<b>1,297,825</b>
14	Ph 3 Initial Constr	O & M	<b>Disposal Life (Assumes Dry Stack Ash)</b>	<b>1.20 yrs</b>		<b>0.00</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>0</b>		<b>0.00</b>	<b>0</b>
			Dry Ash Stack	559,783.00 cy	1,100,000	617.98 cd	1,134,475	-	-	760,816	-	3.33	1,895,291
			Disposal Life (Assumes Dry Stack Ash)	1.20 yrs								<b>0.00</b>	<b>0</b>
			Ph 3 Initial Constr			617.98 cd	1,134,475	-	-	760,816	-		1,895,291
						<b>617.98 cd</b>	<b>1,134,475</b>	<b>0</b>		<b>760,816</b>		<b>0.00</b>	<b>1,895,291</b>
15	Ph 3 Operational Cost	O & M	<b>Stage 1 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>		<b>0.00</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>0</b>		<b>0.00</b>	<b>0</b>
			Dry Stack Ash Quantities	1,346,160.00 cy	1,100,000	1,225.53 cd	2,886,305	-	-	1,901,523	-	3.33	4,487,828
			Stage 1 Disposal Life (Assume Dike Stack)	2.80 yrs								<b>0.00</b>	<b>0</b>
			Ph 3 Operational Cost			1,225.53 cd	2,886,305	-	-	1,901,523	-		4,487,828
						<b>1,225.53 cd</b>	<b>2,886,305</b>	<b>0</b>		<b>1,901,523</b>		<b>0.00</b>	<b>4,487,828</b>
16	Ph 3 Operational Cost	O & M	<b>Stage 2 (3 To 1 Side Slopes)</b>	<b>1.00 lot</b>		<b>0.00</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>0</b>		<b>0.00</b>	<b>0</b>
			Dry Stack Ash Quantities	1,504,625.00 cy	1,100,000	1,369.02 cd	2,998,254	-	-	2,009,352	-	3.33	5,026,556
			Stage 2 (3 To 1 Side Slopes)	1.00 lot								<b>0.00</b>	<b>0</b>
			Ph 3 Operational Cost			1,369.02 cd	2,998,254	-	-	2,009,352	-		5,026,556
						<b>1,369.02 cd</b>	<b>2,998,254</b>	<b>0</b>		<b>2,009,352</b>		<b>0.00</b>	<b>5,026,556</b>

Location	Activity	Outside Seq	Description	Takeoff Quantity	Unit	Productivity	Labor Quantity	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
			<b>Stage 2 Disposal Life (Assume Dry Stack)</b>	<b>3.20 yrs</b>								<b>0.00</b>	<b>0</b>
		O & M	O & M	98,497.64 hrs	hrs	1,000,000	2,996,204	2,009,352	-	-	-	3.33	5,006,556
			Ph 3 Operation Cost	98,497.64 hrs	hrs		2,996,204	2,009,352	-	-	-	0.00	5,006,556
			<b>16</b>	<b>98,497.64 hrs</b>	<b>hrs</b>		<b>2,996,204</b>	<b>2,009,352</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.00</b>	<b>5,006,556</b>
			Dry Stack Ash Quantities	1,334,189.00 cy	cy	1,000,000	2,996,457	1,781,506	-	-	-	3.33	4,437,963
		O & M	O & M	87,328.74 hrs	hrs		2,656,457	1,781,506	-	-	-	0.00	4,437,963
			Ph 3 Operation Cost	87,328.74 hrs	hrs		2,656,457	1,781,506	-	-	-	0.00	4,437,963
			<b>17</b>	<b>87,328.74 hrs</b>	<b>hrs</b>		<b>2,656,457</b>	<b>1,781,506</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.00</b>	<b>4,437,963</b>
			Ph 2 Operation Cost	1,00 lot	lot	235,000	283,826	61,041	-	-	-	4.22	959,096
		O & M	O & M	227,156.00 cy	cy		283,826	61,041	-	-	-	0.00	959,096
			Ph 2 Operation Cost	227,156.00 cy	cy		283,826	61,041	-	-	-	0.00	959,096
			<b>18</b>	<b>227,156.00 cy</b>	<b>cy</b>		<b>283,826</b>	<b>61,041</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.00</b>	<b>959,096</b>
			Stage 3 (3 To 1 Side Slopes)	1,344,916.00 cy	cy		-	-	-	-	-	0.00	0
			Wet Cast Gypsum Dike Fill	10,230.00 ft	ft	0.200	2,046.00	18,932	-	-	-	7.96	81,460
			Wet Sluice Gypsum Quantities	8,525.00 sq	sq	0.021	176.36	1,262	-	-	-	2.68	22,961
			Geotextile For Underlain	2,072.00 in	in	0.150	310.80	19,897	-	-	-	14.67	30,395
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,302.00 ft	ft	0.200	460.40	3,610	-	-	-	7.96	18,330
			Solid Outlet Pipe ADS Drain 6" Diameter	486.00 in	in	0.150	69.90	4,230	-	-	-	14.67	5,836
			#57 Stone For Outlet Pipe Bedding (135 pd)	10,793.73 hrs	hrs		308,194	61,041	-	-	-	1.18	1,118,978
			O & M	10,793.73 hrs	hrs		308,194	61,041	-	-	-	0.00	1,118,978
			Ph 2 Operation Cost	10,793.73 hrs	hrs		308,194	61,041	-	-	-	0.00	1,118,978
			<b>18</b>	<b>10,793.73 hrs</b>	<b>hrs</b>		<b>308,194</b>	<b>61,041</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.00</b>	<b>1,118,978</b>
			Stage 4 (3 To 1 Side Slopes)	1,00 lot	lot	235,000	210,987	501,996	-	-	-	4.22	715,983
			Wet Cast Gypsum Dike Fill	168,631.00 cy	cy		210,987	501,996	-	-	-	0.00	715,983
			Wet Sluice Gypsum & Ash Quantities	2,710 yrs	yrs		-	-	-	-	-	0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	1,695.00 ft	ft	0.200	339.00	12,566	-	-	-	7.96	61,557
			Geotextile For Underlain	6,839.00 sq	sq	0.037	160.32	443	-	-	-	2.68	16,996
			#57 Stone For Outlet Pipe Bedding (135 pd)	1,540.00 in	in	0.150	231.00	13,078	-	-	-	14.67	22,591
			Solid Outlet Pipe ADS Drain 6" Diameter	1,711.00 ft	ft	0.200	342.20	2,632	-	-	-	7.96	13,624
			#57 Stone For Outlet Pipe Bedding (135 pd)	347.00 in	in	0.150	52.65	3,150	-	-	-	14.67	5,090
			O & M	8,024.06 hrs	hrs		273,716	45,381	-	-	-	0.00	831,853
			Ph 2 Operation Cost	8,024.06 hrs	hrs		273,716	45,381	-	-	-	0.00	831,853
			<b>19</b>	<b>8,024.06 hrs</b>	<b>hrs</b>		<b>273,716</b>	<b>45,381</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.00</b>	<b>831,853</b>
			Stage 4 (3 To 1 Side Slopes)	1,00 lot	lot	1,100,000	1,150,285	771,271	-	-	-	3.33	1,921,536
			Dry Stack Ash Quantities	57,813.00 cy	cy		1,150,285	771,271	-	-	-	0.00	1,921,536
			Stage 4 Disposal Life (Dry Stack Ash)	1.20 yrs	yrs		1,150,285	771,271	-	-	-	0.00	1,921,536
			O & M	37,807.40 hrs	hrs		1,150,285	771,271	-	-	-	0.00	1,921,536
			Ph 3 Operation Cost	37,807.40 hrs	hrs		1,150,285	771,271	-	-	-	0.00	1,921,536
			<b>20</b>	<b>37,807.40 hrs</b>	<b>hrs</b>		<b>1,150,285</b>	<b>771,271</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.00</b>	<b>1,921,536</b>

10,11,12,13,18+19 (45,188,250)  
14,15,16,17+20 (417,748,174)

Estimate Totals

Description	Amount	Rate	Units	Code	Count
Labor	20,987,940	653.942517	hrs		187
Material	2,058,231				187
Subcontract	30,783,866				381
Equipment	16,702,837	477.656501	hrs		3,633
Other	3,477,519				7
	74,010,393				24
Engineered Materials - Ph-2		100.000 %		C	
Adjustment - Engr Materials		(100.000) %		C	
	74,010,393				
Environmental Costs		100.000 %		C	
Adjustment Environmental		(100.000) %		C	
	74,010,393				
FPG Mech Engr - Phase 2	7,001	0.025 % @	42.00 A		187
FPG Elec Engr - Phase 2	7,001	0.025 % @	42.00 A		187
FPG Civil Engr - Phase 2	15,999	0.058 % @	42.00 A		381
Non-TVA Engr - Phase 2	281,001	0.597 % @	72.00 A		3,633
FPG Prod Cntrl Cost - Phase 2	1,000	0.004 % @	42.00 A		7
FPG Prod Cntrl Sched - Phase 2	2,899	0.011 % @	42.00 A		24
FPG Cost Estimating - Phase 2	1,000	0.004 % @	42.00 A		24
FPG Engr Records - Phase 2	1,000	0.004 % @	42.00 A		24
Engr Contingency(10%-Phase 2	311,102	0.115 % @	42.00 A		755
	314,702				
Rounding	905			L	
	905				
<b>Total</b>	<b>74,360,000</b>				



**KINGSTON FOSSIL PLANT  
OPTION 8 - DRY ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)**

Estimate Number 05093O8R1      Option: 8      PCN Number: KIF530  
 Plant: KIF      Revision: 1      Estimate Type: Preliminary  
 Cost Engineer: C. L. Toney      Unit #: N      Estimate Accuracy: +/- 20%  
 Requesting Engr: Dan Smith      Phase: 2      Estimate Issue Date 01/21/2005

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<u>Phase II</u>		
Engineering		\$348,700
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$348,700</u></b>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$1,563,026
Labor ( T&L )	911,195.89	\$28,302,982
Labor ( Non-Manual )	16,385.78	\$819,289
Equipment		\$22,531,416
Subcontracts		\$26,837,162
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$3,548,110
Total Construction Cost		\$83,601,985
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$315
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$83,602,300</u></b>
<u>All Phases</u>		
Construction Partner	927,581.67	\$83,601,985
Long Lead Procurement		\$0
Engineering		\$348,700
Other / Other Organizations		\$0
Total Risk Dollars		\$315
<b><u>Total Project Costs</u></b>	<b><u>927,581.67</u></b>	<b><u>\$83,951,000</u></b>
<b><u>For Information only Total Environmental</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

**KINGSTON FOSSIL PLANT  
OPTION 3 - DRY ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)**

Project name	KIF0509308R1FLY&BOT ASH
Engineer	DAN SMITH
Estimator	C. L. Toney
Labor rate table	KRF 40 2004
Equipment rate table	TVA Equipment
Project	Ash
Plant	K/F
Estimate #	0509308R1
PCN #	KRF50
Requesting Engr	Dan Smith
Revision	9
Phase	1
Estimate Type	2
Estimate Accuracy	Preliminary
Est. Issue Date	4/ 20%
Funding Type	01/21/2005
Unit	Capital
	N

Notes

- All cost are based in 2005 dollars. Additional notes are as follow:
- (1) Closure costs not included.
  - (2) Bottom ash columns are subject to change with final design.
  - (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
  - (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,350 cy annually.
  - (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by Location/Activity/Outage Set  
Detail summary





Location	Activity	Outage Seq	Description	Material Quantity	Labors Productivity	Labors Quantity	Labors Amount	Material Amount	Sub-Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
			<b>Ph 3 Operational Cost</b>										
			<b>15</b>										
		O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot	1,100,000	1,368.02 cd	2,996,204	-	-	2,008,392	-	0.00	5,005,596
		O & M	Dry Stack Ash Quantities	1,504,825.00 cy								3.33	5,005,596
		O & M	Stage 2 Disposal Life (Assume Dry Stack)	3.20 yrs								0.00	0
		O & M	Haul Distance (Round Trip)	0.50 mile								0.00	0
		O & M	Ph 3 Operational Cost										5,005,596
			<b>16</b>										
		O & M	Wet Sluice Gypsum Dike Fill	227,106.00 cy	235,000	998.41 cd	283,828	-	-	676,269	-	4.22	995,095
		O & M	Wet Sluice Gypsum Quantities	1,344,916.00 cy								0.00	0
		O & M	Stage 3 Disposal Life (Assume Dike & Sluice Gypsum)	4.80 yrs								0.00	0
		O & M	Perforated Pipe ADS Drain Tube, 6" Diameter	10,230.00 ft	0.200	2,048.00 th	55,914	18,992	-	8,887	-	7.96	81,460
		O & M	Geotextile For Underdrain	6,525.00 sq	0.241	1,719.36 th	5,009	17,882	-	597	-	2.68	22,861
		O & M	#57 Stone For Outlet Pipe Bedding (135 pd)	2,072.00 in	0.150	310.60 th	8,847	16,897	-	1,942	-	14.67	30,395
		O & M	Solid Outlet Pipe ADS Drain 6" Diameter	488.00 in	0.200	488.00 th	12,895	3,150	-	594	-	7.96	18,330
		O & M	#57 Stone For Outlet Pipe Bedding (135 pd)	488.00 in	0.150	69.90 th	2,895	4,230	-	668,743	-	14.67	6,956
		O & M	Ph 2 Operational Cost										1,118,978
			<b>17</b>										
		O & M	Stage 3 (3 To 1 Side Slopes)	1.00 lot	1,100,000	1,217.90 cd	2,658,457	-	-	1,781,506	-	3.33	4,437,963
		O & M	Dry Stack Ash Quantities	1,334,188.00 cy								0.00	0
		O & M	Stage 3 Disposal Life (Assume Dry Stack Area)	2.80 yrs								0.00	0
		O & M	Haul Distance (Round Trip)	0.50 mile								0.00	0
		O & M	Ph 3 Operational Cost										4,437,963
			<b>18</b>										
		O & M	Stage 4 (3 To 1 Side Slopes)	1.00 lot	235,000	716.43 cd	2,109,897	-	-	501,986	-	4.22	712,883
		O & M	Wet Sluice Gypsum Dike Fill	186,531.00 cy								0.00	0
		O & M	Wet Sluice Gypsum Quantities	702,654.00 cy								0.00	0
		O & M	Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum)	2.70 yrs								0.00	0
		O & M	Perforated Pipe ADS Drain Tube, 6" Diameter	7,056.00 ft	0.200	1,411.20 th	41,512	12,588	-	6,458	-	7.96	60,557
		O & M	Geotextile For Underdrain	6,338.00 sq	0.241	1,303.20 th	3,719	12,533	-	443	-	2.68	16,995
		O & M	#57 Stone For Outlet Pipe Bedding (135 pd)	1,711.00 in	0.150	231.00 th	6,560	13,976	-	1,964	-	14.67	22,951
		O & M	Solid Outlet Pipe ADS Drain 6" Diameter	547.00 in	0.200	542.20 th	6,340	2,892	-	1,453	-	7.96	13,624
		O & M	#57 Stone For Outlet Pipe Bedding (135 pd)	547.00 in	0.150	52.05 th	1,488	3,150	-	442	-	14.67	6,500
		O & M	Ph 2 Operational Cost										631,653
			<b>19</b>										
		O & M	Stage 4 (3 To 1 Side Slopes)	1.00 lot	1,100,000	525.10 cd	1,156,085	-	-	771,271	-	3.33	1,921,336
		O & M	Dry Stack Ash Quantities	571,613.00 cy								0.00	0
		O & M	Stage 4 Disposal Life (Assume Dike & Dry Stack Ash)	1.20 yrs								0.00	0
		O & M	Ph 3 Operational Cost										1,921,336
			<b>20</b>										

10,11,12,13,17,19 (5,186,250)  
14,15,16,18,20 (18,105,984)

Estimate Totals

Category	Amount	Rate	Unit	Code	Count
Labor	29,422,271	627,581,672	hrs		405
Material	14,648,402				381
Subcontract	24,837,162				3,625
Equipment	22,531,416	665,592,660	hrs		24
Other	3,548,110				21
Engineered Materials - Ph-2	83,601,985	100,000 %		C	24
Adjustment - Engr Materials	(100,000)	(100,000) %		C	24
Environmental Costs	83,601,985	100,000 %		C	24
Adjustment Environmental	(100,000)	(100,000) %		C	24
Demolition Costs	83,601,985	100,000 %		C	24
Adjustment Demolition	(100,000)	(100,000) %		C	24
FPG Mech Engr - Phase 2	17,001	0.044 % @	42.00 A		405
FPG Elec Engr - Phase 2	17,001	0.041 % @	42.00 A		381
FPG Civil Engr - Phase 2	15,986	0.381 % @	72.00 A		3,625
Non-TVA Engr - Phase 2	200,986	0.003 % @	42.00 A		24
FPG Proj Cmtl Cost - Phase 2	1,001	0.008 % @	42.00 A		21
FPG Proj Cmtl Sched - Phase 2	3,000	0.003 % @	42.00 A		24
FPG Cost Estimating - Phase 2	1,001	0.003 % @	42.00 A		24
FPG Engr Records - Phase 2	1,001	0.001 % @	42.00 A		24
Engr Conf/Co/0% - Phase 2	348,700	0.081 % @	42.00 A		755
Rounding	315			L	
	83,951,000				
<b>Total</b>	<b>83,951,000</b>				

SPREAD SHEET  
LINE ITEM

1116 Hanger  
x 2 1/2 x 3

NOV  
1, 2, 5, 6

Nov 3, 4, 7, 8

1. Admin 50 R -
2. Ad in Panel -
3. Exp in Panel -
4. Ad 1/5 yr in Panel
5. Misc.
6. Exp / ~~Panel~~

Contingency  
15% reserve  
10% fund

GYRON TRANSLA

More DC/DA to DM

90K

CONTRACT

Bank

COMPUTED \_\_\_\_\_ DATE \_\_\_\_\_

CHECKED \_\_\_\_\_ DATE \_\_\_\_\_

option 1 & option 3

~~opt 25~~      ~~RATHER~~      ~~K~~  
~~opt 265~~  
 WEI CAST ~~symm~~ dikes + RIM DITCHING

157 on P

opt 3, 4, 7 & 8

QA + QC More TDAM

START  
05/21

copy

275 205



KINGSTON FOSSIL PLANT OPTION 1 - WET ASH IN POND GYPSUM ON PENINSULA

(WITHOUT POND BUFFER)

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars per Cycle	PRESENT WORTH																	
						2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Escalation Factor Contingency on the Peninsula		1.15			1.00	1.04	1.08	1.13	1.17	1.21	1.26	1.31	1.36	1.42	1.48	1.54	1.60	1.66	1.73	1.80	1.87	1.94
	Contingency on the Pond		1.1																				
	<b>CAPITAL COSTS</b>																						
1	Erosion Control / Sediment Pond	Lump Sum	\$350,426	1	\$350,426																		
2	Seed / Mulch	Lump Sum	\$71,081	1	\$71,081																		
3	South Access Road	Lump Sum	\$54,820	1	\$54,820																		
4	Perimeter Road	Lump Sum	\$107,226	1	\$107,226																		
5	Install Drains For Swan Pond Road	Lump Sum	\$1,967,628	1	\$1,967,628																		
6	Gypsum Stack Peninsula	Lump Sum	\$593,796	1	\$593,796																		
7	Erosion Controls Peninsula	Lump Sum	\$231,402	1	\$231,402																		
8	Roads	Lump Sum	\$59,848	1	\$59,848																		
9	Fencing	Lump Sum	\$25,345	1	\$25,345																		
10	Seed / Mulch	Lump Sum	\$71,454	1	\$71,454																		
11	Borrow Area Development	Lump Sum	\$58,144	1	\$58,144																		
12	Gypsum Disposal Facility	Lump Sum	\$6,814,500	1	\$6,814,500																		
13	Gypsum On Peninsula Disposal Cost	Lump Sum	\$708,630	1	\$708,630																		
14	Construction Parking	Lump Sum	\$26,465	1	\$26,465																		
15	Phase 2 Base Construction (Base Layers) (Once For Construction Of Disposal Facility)	Lump Sum	\$5,430,874	2	\$2,715,437																		
16	Temporary Slope Protection	Lump Sum	\$154,490	1	\$154,490																		
17	Riprap Stilling Basin	Lump Sum	\$79,666	1	\$79,666																		
18	Construction Facility	Lump Sum	\$833,060	11	\$75,733																		
19	Non Manual	Lump Sum	\$1,618,576	11	\$147,143																		
20	Engineering	Lump Sum	\$690,000	1	\$690,000																		
	<b>Total Capital Costs</b>		<b>\$ 20,489,204</b>		<b>\$ 3,720,745</b>	<b>\$ 255,961</b>	<b>\$ 265,984</b>	<b>\$ 9,947,664</b>	<b>\$ 286,815</b>	<b>\$ 298,001</b>	<b>\$ 309,623</b>	<b>\$ 322,008</b>	<b>\$ 334,889</b>	<b>\$ 348,284</b>	<b>\$ 4,370,116</b>	<b>\$ 4,544,921</b>	<b>\$ 35,971</b>	<b>\$ 37,410</b>	<b>\$ 38,907</b>	<b>\$ 40,463</b>	<b>\$ 42,081</b>	<b>\$ 43,765</b>	
	<b>OPERATING COSTS</b>																						
6	Dredge Cell Phase 1	Lump Sum	\$1,554,547	12	\$62,879																		
14	Gypsum On Peninsula Disposal Cost	Lump Sum	\$3,644,075	20	\$182,204																		
20,22,23,24	Phase 2 Wet Ash (Initial Thru Stage 3)	Lump Sum	\$10,483,975	12	\$673,665																		
	<b>Total Operating Costs</b>		<b>\$ 25,682,597</b>		<b>\$ 962,879</b>	<b>\$ 1,004,283</b>	<b>\$ 1,043,450</b>	<b>\$ 1,084,144</b>	<b>\$ 1,125,342</b>	<b>\$ 1,169,230</b>	<b>\$ 1,214,830</b>	<b>\$ 1,263,423</b>	<b>\$ 1,313,960</b>	<b>\$ 1,366,519</b>	<b>\$ 1,421,179</b>	<b>\$ 1,478,027</b>	<b>\$ 1,537,148</b>	<b>\$ 1,598,607</b>	<b>\$ 1,662,506</b>	<b>\$ 1,729,791</b>	<b>\$ 1,798,331</b>	<b>\$ 1,868,336</b>	
	<b>Total Costs</b>		<b>\$ 46,170,801</b>		<b>\$ 4,683,624</b>	<b>\$ 1,260,244</b>	<b>\$ 1,309,393</b>	<b>\$ 11,031,808</b>	<b>\$ 1,625,104</b>	<b>\$ 1,697,487</b>	<b>\$ 1,754,333</b>	<b>\$ 1,824,507</b>	<b>\$ 1,897,487</b>	<b>\$ 1,973,386</b>	<b>\$ 2,058,106</b>	<b>\$ 2,142,948</b>	<b>\$ 2,233,144</b>	<b>\$ 2,328,114</b>	<b>\$ 2,427,213</b>	<b>\$ 2,530,507</b>	<b>\$ 2,638,098</b>	<b>\$ 2,750,131</b>	
	<b>Present Worth of this Option</b>		<b>\$ 24,011,034</b>																				

KINGSTON FOSSIL PLANT OPTION 1 - WET ASH IN POND GYPSUM ON PENINSULA  
(WITHOUT POND BUFFER)

PRESENT WORTH									
2023	2024	2025	2026	2027	2028	2029	Escalated SubTotal	PRESENT WORTH of using Capital Dollars	
2.02	2.10	2.18	2.27	2.36	2.46	2.56			
							\$350,426	\$350,426	
							\$71,081	\$71,081	
							\$54,820	\$54,820	
							\$107,226	\$107,226	
							\$1,967,628	\$1,967,628	
							\$668,568	\$439,594	
							\$260,545	\$171,312	
							\$67,386	\$44,307	
							\$28,537	\$18,763	
							\$80,453	\$52,899	
							\$65,487	\$43,045	
							\$7,672,721	\$5,044,938	
							\$797,875	\$524,616	
							\$29,798	\$19,593	
							\$8,176,117	\$1,886,622	
							\$936,175	\$216,244	
							\$154,490	\$154,490	
							\$79,666	\$79,666	
							\$1,136,312	\$554,490	
							\$2,207,772	\$1,077,335	
							\$690,000	\$690,000	
\$ 45,515	\$ 47,336	\$ 49,229	\$ 51,198	\$ 53,246	\$ 55,276	\$ 57,591	\$ 25,603,061	\$ 13,589,096	
							\$15,984,413	\$7,337,188	
\$368,045	\$382,767	\$398,078	\$414,001	\$430,561	\$447,783	\$465,695	\$6,795,259	\$1,116,949	
\$1,764,772	\$1,835,363	\$1,908,778	\$1,985,129	\$2,064,534	\$2,147,115	\$2,233,000	\$23,189,868	\$1,987,801	
\$ 2,132,817	\$ 2,218,130	\$ 2,306,855	\$ 2,399,130	\$ 2,495,095	\$ 2,594,899	\$ 2,698,695	\$ 45,969,540	\$ 10,441,938	
\$ 2,178,333	\$ 2,265,466	\$ 2,356,085	\$ 2,450,328	\$ 2,548,341	\$ 2,650,275	\$ 2,756,286	\$ 71,572,802	\$ 24,071,034	

KINGSTON FOSSIL PLANT  
OPTION 1 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)

Project name  
KIF/050930R1R1/FLY&BOT ASH

Engineer  
DAN SMITH

Estimator  
C. L. Toney

Labor rate table  
KIF 40 2004

Equipment rate table  
TVA Equipment

Ash  
KIF

Plant  
050930R1R1

Estimate #  
KIF530

PCN #  
Dan Smith

Requesting Engr  
1

Option  
1

Revision  
2

Phase  
Preliminary

Estimate Type  
17-20%

Estimate Accuracy  
01/21/2005

Est. Issue Date  
Capital

Funding Type  
N

Unit  
N

Notes

Wet ash in pond & gypsum on peninsula (Wet ash in dredge call/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report form...  
Sorted by 'Location/Activity/Outage Seq'  
Detail summary

OPT 1, 2, 5+6 (ADD COSTING)

NEED TO REDISTRIBUTE OPT 3, 4, 7+8  
AND ADD COSTING

178,875

Location	Activity	Change Set	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labo Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
01	Instr Dms/Sven Pond	Capital	6" Dia Pipe Bedders	21.00 ea	1.800	36.00 mh	1,056	4,852	-	245	-	257.78	5,152
			PVC Monitoring Wells	6.00 ea	0.200	1.20 mh	257	785	12,324	-	-	2,054.00	12,324
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.200	94.80 mh	2,697	785	-	403	-	7.96	3,774
			Crushed Stone, Bedding 5' Depth	16.00 lf	0.500	8.00 mh	152	152	-	21	-	26.61	410
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 760)	520.00 lf	0.200	104.00 mh	2,838	861	-	442	-	7.96	4,121
			Crushed Stone, Bedding 5' Depth	18.00 lf	0.500	9.00 mh	259	171	-	31	-	26.61	461
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 792)	491.00 lf	0.200	98.20 mh	2,690	813	-	417	-	7.96	3,910
			Crushed Stone, Bedding 5' Depth	17.00 lf	0.500	8.50 mh	245	162	-	29	-	26.61	435
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 810)	1,282.00 lf	0.200	256.40 mh	6,998	2,122	-	1,089	-	7.96	10,209
			Crushed Stone, Bedding 5' Depth	43.00 lf	0.500	21.50 mh	619	409	-	73	-	1.51	1,151
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.200	243.60 mh	6,648	2,016	-	1,034	-	7.96	9,699
			Crushed Stone, Bedding 5' Depth	41.00 lf	0.500	20.50 mh	590	390	-	70	-	1.50	1,050
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 825)	1,180.00 lf	0.200	236.00 mh	6,441	1,953	-	1,002	-	7.96	9,395
			Crushed Stone, Bedding 5' Depth	40.00 lf	0.500	20.00 mh	576	380	-	69	-	1.52	1,024
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 832)	1,160.00 lf	0.200	232.00 mh	6,332	1,920	-	985	-	7.96	9,257
			Crushed Stone, Bedding 5' Depth	39.00 lf	0.500	19.50 mh	561	371	-	66	-	1.51	969
			Cut For 6" Dia Non-Perforated HDPE (17,659 bcy)	21,159.00 cy	0.200	4,231.80 mh	106,746	4,231.80	-	38,926	-	7.46	189,920
			Backfill For 6" Dia Non-Perforated HDPE (12,381 bcy)	14,833.00 cy	0.250	3,708.25 mh	44,481	16,746	-	10,210	-	7.46	51,727
			Cut For 6" Dia Perforated HDPE (18,186 bcy)	21,824.00 cy	0.200	4,364.80 mh	28,656	37,103	-	37,103	-	7.46	65,759
			Backfill For 6" Dia Perforated HDPE (12,730 bcy)	15,276.00 cy	0.250	3,819.00 mh	109,934	15,276	-	49,910	-	7.46	153,744
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 765)	2,000.00 lf	0.200	400.00 mh	10,917	3,310	-	1,698	-	7.96	15,526
			1081 Crushed Stone	378.00 lf	0.150	56.70 mh	1,632	3,451	-	482	-	14.67	5,545
			Geotextile Woven Monofilament	1,556.00 sy	0.021	32.60 mh	913	3,151	-	109	-	2.69	4,173
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,790.00 lf	0.200	758.00 mh	20,688	6,273	-	3,218	-	7.96	30,179
			1081 Crushed Stone	716.00 lf	0.150	107.40 mh	3,092	6,489	-	913	-	14.67	19,553
			Geotextile Woven Monofilament	2,948.00 sy	0.021	60.64 mh	1,730	5,969	-	206	-	2.69	7,995
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 760)	4,185.00 lf	0.200	837.00 mh	22,707	6,986	-	3,532	-	7.96	33,125
			1081 Crushed Stone	785.00 lf	0.150	117.75 mh	3,394	7,134	-	1,002	-	14.67	11,530
			Geotextile Woven Monofilament	3,236.00 sy	0.021	68.56 mh	1,899	5,552	-	226	-	2.69	8,278
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	3,925.00 lf	0.200	785.00 mh	21,425	6,437	-	3,333	-	7.96	31,254
			1081 Crushed Stone	742.00 lf	0.150	111.30 mh	3,204	6,735	-	946	-	14.67	10,865
			Geotextile Woven Monofilament	3,053.00 sy	0.021	65.80 mh	1,792	5,443	-	214	-	2.69	8,167
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 815)	5,410.00 lf	0.200	1,082.00 mh	34,989	10,810	-	5,443	-	7.96	41,952
			1081 Crushed Stone	1,211.00 lf	0.150	181.65 mh	4,229	10,892	-	1,844	-	13.67	17,952
			Geotextile Woven Monofilament	4,866.00 sy	0.021	102.56 mh	33,242	10,080	-	5,171	-	7.96	48,344
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	5,090.00 lf	0.200	1,018.00 mh	33,242	10,080	-	5,171	-	14.35	48,484
			1081 Crushed Stone	1,161.00 lf	0.150	174.69 mh	4,970	11,689	-	1,589	-	2.69	15,755
			Geotextile Woven Monofilament	4,737.00 sy	0.021	97.44 mh	4,730	8,592	-	501	-	2.69	12,821
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	5,900.00 lf	0.200	1,180.00 mh	32,205	10,110	-	5,010	-	14.67	47,325
			1081 Crushed Stone	1,113.00 lf	0.150	167.25 mh	4,614	10,261	-	1,521	-	14.67	16,367
			Geotextile Woven Monofilament	4,591.00 sy	0.021	94.40 mh	4,591	8,262	-	1,921	-	2.69	12,306
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200	1,160.00 mh	31,653	9,656	-	4,955	-	7.96	46,586
			1081 Crushed Stone	1,096.00 lf	0.150	164.40 mh	4,529	9,948	-	1,987	-	14.67	16,078
			Geotextile Woven Monofilament	5,211.00 sy	0.021	107.76 mh	5,211	9,316	-	316	-	2.69	13,007
			12 Dia Forc Main HDPE Perimeter Underdrain (EL. 763)	2,590.00 lf	0.150	388.50 mh	17,804	13,097	-	2,741	-	12.96	33,422
			1081 Crushed Stone	973.00 lf	0.150	145.95 mh	2,483	5,219	-	734	-	14.67	8,435
			Summerside Pumping Station Equipment Package	1.00 ea	56.000	56.00 mh	2,283	5,055	-	209	-	7,560.57	7,561
			60 Diameter Catch Basin (Precast)	2,293.00 sy	60.000	60.00 mh	1,810	3,051	-	478	-	5,338.36	5,338
			Grout Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	1,000	2,000 mh	1,346	4,643	-	160	-	2.69	6,149
			Grout Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	1,000	2,000 mh	1,515	2,856	-	469	-	2.69	4,870
			Grout Storm Drain - 24" Diameter (Pump & Plug)	51.00 sy	4,000	51.00 mh	304	102	-	80	-	243.02	486
			Grout Storm Drain - 24" Diameter (Pump & Plug)	21.00 sy	1,000	21.00 mh	1,487	2,803	-	480	-	90.19	4,780
			Grout Storm Drain - 24" Diameter (Pump & Plug)	21.00 sy	1,000	21.00 mh	645	1,216	-	212	-	243.02	486
			24" CMP Storm Drain	38.00 lf	0.480	18.24 mh	498	773	-	68	-	35.24	1,339
			Excavation For 24" Dia Pipe (25 bcy)	30.00 cy	0.200	6.00 mh	173	773	-	71	-	17.13	360
			Bedfill For 24" Diameter CMP (17 bcy)	21.00 sy	0.250	5.25 mh	193	38	-	166	-	25.61	102
			26" CMP Storm Drain	4.00 lf	0.800	3.20 mh	58	98	-	285	-	68.80	4,233
			Excavation For 36" Dia Pipe (67 bcy)	72.00 lf	0.800	43.20 mh	1,259	2,708	-	207	-	8.31	6,733
			Backfill For 36" Diameter CMP (47 bcy)	57.00 sy	0.320	18.24 mh	925	451	-	451	-	17.13	276
			Anchor Trench - Excavate Into Borrow Area (9,650 bcy)	5.00 lf	0.800	4.00 mh	80	80	-	26	-	26.61	86,290
			Upper & Lower LHDPE Geomembrane	1,010,969.00 sy	0.040	53,798.66 hrs	5,807	247,653	-	4,592	-	3.79	419,667
			Sediment Trap (3,530 bcy)	4,356.00 cy	0.040	174.24 mh	1,016,066	495,205	-	265,156	-	10,800.64	1,788,753
			Capital				1,016,066	495,205	12,324			1,788,753	
			Instr Dms/Sven Pond				35,789.66 hrs	495,205	12,324			1,788,753	
			01				1,016,066	495,205	12,324			1,788,753	
			Ash In Pond										
			Capital										
			Erect Silt Fence	1,000.00 lf	0.689	68.90 mh	1,994	507	-	317	-	2.81	2,813
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.015	64.50 mh	1,683	5,771	-	175	-	1.84	7,911
			Use 9" R Pipe	5,210.00 lf	0.320	1,667.20 mh	49,632	13,031	-	26,966	-	24.86	139,569
			3" Stone, 1" Thick To Prevent Erosion (Assump 105 pcf)	2,004.00 lf	0.095	190.38 mh	8,956	18,190	-	3,056	-	13.63	21,312
			Slip 4-8 CMP MM Spillway (1/2 or 4/8" Dia Riser Stand Pipe @ 128 FVEs)	4.00 ea	188.084	684.33 mh	20,450	20,190	-	2,750	-	10,800.64	48,443
			Cut (Excavation For Placement Of 48" Dia Half Round Pipe) 43 bcy	52.00 cy	0.600	26.80 mh	559	599	-	177	-	14.91	776
			Fill With 1032 Compacted Crushed Stone	93.00 lf	0.400	37.20 mh	1,107	904	-	599	-	26.99	2,510

Estimate Company  
Spreadsheet Report  
KIF/0509301R1/FLY&BOT ASH

Page 2  
3:23 PM  
(15) 546,766

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
Capital	30" Diameter CMP Culvert	1,000.00 lf		0.600	600.00 mh	17,487	26,442			3,682		47.61	47,611		
	Bedding For 30" CMP, 6" Thick	135.00 tn		0.500	67.50 mh	1,943	1,284			230		25.61	3,457		
	30" Diameter CMP Stand Pipe (4 Pipes @ 5 Stages w/30" Per Stage)	720.00 lf		0.250	540.00 mh	16,853	19,038			2,773		52.70	37,940		
	D50 9" Riprap, Outlet For Main Spillway	53.00 tn		0.320	16.96 mh	505	539			1,371		24.85	3,137		
	Galvanized Corrugated Metal Anti-Sweep Collar	16.00 ac		16.000	295.00 mh	7,461	4,862			1,571		899.39	13,914		
	Seed/Mulch Disturbed Areas	26.00 ac						64,619				2,485.34	64,919		
	1032 Crushed Stone Base, 6" Depth	3,520.00 tn			0.120	422.40 mh	13,739	31,950			4,147		14.16	49,836	
	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,865.00 tn			0.120	823.80 mh	26,872	62,493			8,112		14.16	97,478	
	<b>Base Layers</b>												0.00	0	
	Cut For Dredge Cell (263,500 bcy)	322,200.00 cy			0.040	12,888.00 mh	428,505	338,937			893,223		3.42	796,442	
	Compacted Fly Ash Base (Fill)	673,650.00 cy			1.300,000	441.27 cd	1,068,578	851,223			2,570		0.05	1,959,852	
	Prefloat Subgrade	177,100.00 sy			28.111,100	6.30 cd	5,353	7,923			3,442		0.05	521,738	
	2.5" Thick Bottom Ash Layer	159,717.00 cy			1,300,000	117.47 cd	284,477	237,261			47,452		3.42	104,346	
	0.5" Thick Fly Ash Filter Layer	30,543.00 cy			1,300,000	23.49 cd	56,895			347,537			20.54	347,537	
	18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	16,920.00 lf			1,400,000	126.50 cd	74,304	20,645			254,181		0.54	94,949	
	Bottom Ash Dike Fill	163,614.00 cy			1,300,000	128.86 cd	304,776	254,181			1,972		3.78	96,533	
	4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	26,082.00 lf			0.070	1,825.74 mh	49,829	40,842			1,276		7.46	6,650	
	Trenching For The Drain System (4" Dia Underdrains), 998 bcy	1,160.00 cy			800,000	6.78 mh	14,128	14,930			3,330		8.31	28,956	
	Strip Existing 1" Soil Cover (Phase 1 Expansion), 19,133 bcy	22,960.00 cy			0.200	28.70 mh	7,519	9,835			38,281		3.42	84,178	
	Anchor Trench Cut	1,305.00 cy			1,300,000	397.44 mh	11,441	45,889			19,140		3.42	42,990	
	2.0" Thick Bottom Ash Blanket Drain	24,640.00 cy			1,300,000	9.48 cd	52,720	52,694			4,200		7.96	140,126	
	1.0" Thick Filter Drain Ash Layer	12,320.00 cy			0.650	1,648.00 mh	26,989	9,196			4,200		7.96	39,384	
	Geomembrane	36,960.00 sy			0.200	989.20 mh	2,418	8,344			286		2.66	11,051	
	Perforated Pips ADS Drain Tube, 6" Diameter	4,121.00 sy			0.021	150.15 mh	4,322	9,085			1,050		7.96	14,677	
	Geotextile For Underdrain	1,001.00 lf			0.150	37.50 mh	1,078	2,269			286		7.96	2,455	
	#57 Stone For Outlet Pipe Bedding (135 pcf)	1,236.00 lf			0.150	37.50 mh	1,078	2,269			286		7.96	2,455	
	#57 Stone For Outlet Pipe Bedding (135 pcf)	250.00 lf			0.150	37.50 mh	1,078	2,269			286		7.96	2,455	
	6" Dia Non-Perf HDPE Corrugated Tubing (Lateral Outlet Phases (EL. 760))	302.00 lf			0.500	60.40 mh	1,648	905			1,284		7.96	19,040	
	1081 Crushed Stone, Bedding 6" Depth	10.00 tn			0.200	302.40 mh	8,253	2,503			92		2.66	3,154	
	6" Dia Perforated HDPE Drain (EL. 760)	1,512.00 lf			0.021	143.00 mh	4,116	4,500			81		7.46	1,670	
	1081 Crushed Stone	286.00 lf			0.200	44.80 mh	690	2,381			381		7.46	1,670	
	Geotextile Woven Monofilament	1,176.00 lf			0.021	24.19 mh	690	2,381			381		7.46	1,670	
	Cut For Underdrain System	224.00 cy			0.200	44.80 mh	690	2,381			381		7.46	1,670	
	Backfill For Underdrain System	168.00 cy			0.250	42.00 mh	1,209	504			504		10.20	1,713	
	Certification	1.00 ls				80.697,22 hrs	2,660,430	406,897			31,500		31,500	5,467,657	
	Capital	Ash In Pond				80.697,22 hrs	2,660,430	406,897			31,500		31,500	5,467,657	
	02					80.697,22 hrs	2,660,430	406,897			31,500		31,500	5,467,657	
	Ogysium On Peninsula	Clear And Grub	1.00 lot										0.00	0	
		Clear And Grub	90.00 ac		72.000	6,480.00 mh	193,775	160,944			160,944		3.84132	354,719	
		Dice Future Borrow Areas (Assumed For Compacted Clay Material)	2.00 ac		6.000	3.33 cd	958	884			884		2.842	2,842	
		Strip 1 ft Vegetation And Topsoil - Spoil At Stockpile	120,000.00 cy		0.020	2,400.00 mh	78,380	82,238			1,251		3.33	151,618	
		Cut For Ditch (6.815 bcy)	6,978.00 cy		1,200,000	5.82 cd	10,981	5,822			21,897		24.85	196,316	
		D50 9" Riprap	4,239.00 tn		0.320	1,355.48 mh	40,371	43,111			3,583		0.51	3,583	
		Seed Ditch	6,978.00 sy			0.072	63.74 mh	2,389	5,464			427		1.19	6,890
		Jute Matting	6,978.00 sy			0.320	750.00 mh	22,324	23,835			15,075		24.85	58,237
Riprap D50 Size 9"		2,344.00 tn			1,200,000	3.58 cd	6,767	7,420			1,554		3.30	14,186	
Cut For Basin (3,592 bcy)		4,300.00 cy			0.059	335.99 mh	9,769	2,462			65,134		2.81	13,784	
Erect Silt Fence (Trench Bottom Of Fence, 10% Hay Bales)		4,900.00 lf											2,485.34	52,134	
Seed/Mulch Disturbed Areas		25.00 ac											0.95	848	
Silt Fence		1,000.00 lf			0.020	20.00 mh	528	390					0.00	0	
<b>Disposal Facility Construction</b>													0.00	0	
Allowance For Hard Geologic Features		1.00 ls											513,500.00	513,500.00	
Cut For Stormwater Runoff Pond (2,000 bcy)		2,400.00 cy			800,000	3.00 cd	3,199	5,724			2,525		2.24	6,189	
Cleanup Stormwater Runoff Pond (2,300 bcy)		2,760.00 cy			383,333	7.20 cd	3,839	3,350			26,725		3.30	47,482	
Fill For Stormwater Runoff Pond (12,000 bcy)		14,400.00 sy			1,904,000	7.56 cd	22,757	3,052			701		2.24	6,170	
Bottom Ash (South Access Road)		2,400.00 sy			2,800,000	0.21 cd	645	1,345			542		2.50	1,001	
Cut And Fill Balance (600 bcy)		600.00 sy			1,904,000	0.21 cd	458	1,001			542		2.50	1,001	
Cut & Splat Additional Material		400.00 sy			2,800,000	81.31 cd	244,655	185,808			185,808		2.50	510,463	
Cut And Fill Balance (189,719 bcy)		227,663.00 sy			1,904,000	76.16 cd	166,178	347,117			166,178		2.50	382,707	
Cut & Splat Select Cut For Future 1 ft Layer In Final Cover		145,001.00 sy			0.120	1,740.00 mh	11,319	26,323			4,017		14.16	41,058	
Crushed Stone Base (South Access Road)		2,900.00 tn			0.120	40.80 mh	1,327	3,086			341		14.16	4,814	
Crushed Stone Base (Permanent Parking Lot Paved Stone)		340.00 tn			0.120	40.80 mh	1,327	3,086			341		14.16	4,814	
Crushed Stone Base (Permanent Parking Lot Paved Stone)		1,400.00 tn			0.120	168.00 mh	5,464	12,707			1,641		14.16	19,821	
Riprap For Stormwater Runoff Pond		4,300.00 tn			0.300	890.00 mh	25,985	43,731			10,781		20.41	47,767	
Riprap For Ditch (24" wide x 2 deep)		2,300.00 lf			0.644	320.03 mh	10,811	238,985			12,904		3.26	23,816	
Geotextile (1 ft Min. to be Used)		19,500.00 sy			0.015	292.50 mh	8,420	26,023			995		1.82	35,443	
New Fencing (Including Countertop)		200.00 lf											4.211	842	
Personal Swinging Gate		1.00 ea											369.72	370	
Sliding Gate, 20 FT Wide, With Motorized Operator		20.00 ea			0.500	10.00 mh	288	189			34		17,459.00	17,459	
Pipe Bedding		2,400.00 sy			1,904,000	1.26 cd	3,052	3,118			3,417		2.57	6,170	
Perimeter Road Surfacing - Crushed Stone		2,900.00 tn			0.120	348.00 mh	11,319	26,323			4,017		14.16	41,058	
Drainage Layer (1 FT Thick) For Liner (No. 57 Stone)		168,000.00 tn			0.095	16,128.00 mh	507,694	1,542,276			257,040		13.20	2,217,010	



Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Coef/Unit	Total Amount
22	Ph 2 Operational Cost					2,206.14 hrs	60,777	43,972	709,588	10,427			824,763
			20			2,206.14 hrs	60,777	43,972	709,588	10,427			824,763
	O & M												
	Ph 2 Operational Cost		Stage 1 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	255,189.00 cy	1,300.000	198.30 cd	475,359					3.42	871,821
			Dredge Ash	1,334,496.00 cy					2,098,277			1.57	2,098,277
			Stage 1 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,455.00 lf	0.200	2,298.00 mh	62,746	19,026		9,761		7.96	91,533
			Geotextile For Underdrain	9,578.00 sy	0.021	197.04 mh	5,621	19,396		670		2.68	25,897
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,328.00 tn	0.150	349.20 mh	10,052	21,131		2,668		14.67	34,151
			Solid Outlet Pipe ADS Drain 6" Diameter	2,596.00 lf	0.200	517.20 mh	14,116	4,786		2,196		7.96	20,552
			#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 tn	0.150	78.60 mh	2,263	78,600		668		14.67	7,637
			O & M						2,098,277				3,149,748
			Ph 2 Operational Cost			17,574.59 hrs	570,156	68,589	2,098,277	412,725			3,149,748
			22			17,574.59 hrs	570,156	68,589	2,098,277	412,725			3,149,748
23	Ph 2 Operational Cost												
			Stage 2 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	263,403.00 cy	1,300.000	202.62 cd	480,659					3.42	889,883
			Dredge Ash	1,569,673.00 cy					2,373,715			1.57	2,373,715
			Stage 2 Disposal Life (Assume Dike & Dredge Ash)	3.70 yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,865.00 lf	0.200	2,373.00 mh	64,765	19,639		10,075		7.96	94,479
			Geotextile For Underdrain	9,888.00 sy	0.021	203.40 mh	5,802	20,022		692		2.68	26,516
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,003.00 tn	0.150	300.45 mh	10,376	21,811		3,064		14.67	35,251
			Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200	534.00 mh	14,574	4,418		2,287		7.96	21,281
			#57 Stone For Outlet Pipe Bedding (135 pcf)	544.00 tn	0.150	81.15 mh	2,336	4,911		680		14.67	7,938
			O & M						2,373,715				3,459,041
			Ph 2 Operational Cost			18,140.47 hrs	588,514	70,801	2,373,715	426,011			3,459,041
			23			18,140.47 hrs	588,514	70,801	2,373,715	426,011			3,459,041
24	Ph 2 Operational Cost												
			Stage 3 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	227,108.00 cy	1,300.000	174.70 cd	423,046					3.42	715,879
			Dredge Ash	1,344,919.00 cy					2,114,661			1.57	2,114,661
			Stage 3 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	10,930.00 lf	0.200	2,046.00 mh	59,841	16,932		8,881		7.96	81,460
			Geotextile For Underdrain	8,535.00 sy	0.021	175.36 mh	5,003	17,262		597		2.68	22,961
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,072.00 tn	0.150	310.80 mh	8,947	18,807		2,842		14.67	30,985
			Solid Outlet Pipe ADS Drain 6" Diameter	2,302.00 lf	0.200	460.40 mh	12,595	3,810		1,953		7.96	18,330
			#57 Stone For Outlet Pipe Bedding (135 pcf)	468.00 tn	0.150	69.90 mh	2,012	4,230		584		14.67	6,986
			O & M						2,114,661				3,050,423
			Ph 2 Operational Cost			15,640.64 hrs	507,414	61,041	2,114,661	367,306			3,050,423
			24			15,640.64 hrs	507,414	61,041	2,114,661	367,306			3,050,423

Spreadsheet Report  
KIF/0509301R1/FLY&BOT ASH

Estimate Totals

Labor	12,595,595						
Material	3,249,410						
Subcontract	16,574,222						
Equipment	10,375,019						
Other	31,500						
	<u>42,807,846</u>						
Engineered Materials - Ph. 2				100,000 %			C
Adjustment - Engr Materials				(100,000) %			C
Environmental Costs				100,000 %			C
Adjustment Environmental				(100,000) %			C
FPG Civil Engr - Phase 2	30,077			0.191 %	42.00 A		A
Non-TVA Engr - Phase 2	554,069			2.066 %	72.00 A		A
FPG Proj Cost - Phase 2	977			0.006 %	42.00 A		A
FPG Proj Civil Sched - Phase 2	2,923			0.018 %	42.00 A		A
FPG Estimating - Phase 2	977			0.006 %	42.00 A		A
FPG Engr Records - Phase 2	977			0.006 %	42.00 A		A
<u>90,082</u>	<u>800,000</u>			0.006 %	42.00 A		A
(15A)							
Rounding							L
	43,407,846						
<b>Total</b>	<b>43,407,846</b>						



KIF0509302R1/FLY&BOT ASH

**KINGSTON FOSSIL PLANT  
OPTION 2 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)**

Project name KIF0509302R1/FLY&BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
 Plant KIF  
 Estimate # 0509302R1  
 PCN # KIF530  
 Requesting Engr Dan Smith  
 Option 2  
 Revision 1  
 Phase 2  
 Estimate Type Preliminary  
 Estimate Accuracy +/- 20%  
 Est. Issue Date 01/21/2005  
 Funding Type Capital  
 Unit N

Dry ash in pond & gypsum on peninsula (W/4 ash in dredge cell/Phase 1, and Phase2. Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by "Location/Activity/Outage Seq  
Detail" summary

Notes

Spreadsheet Report  
KIP050920R1/FLY&BOT ASH

Location	Activity	Outage Slot	Description	Tasks/Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
2	Ash In Pond	Capital	Erect Sill Fence	1,000.00 lf	0.059	66.57 mh	1,954	562	-	317	-	2.81	2,513
			Geotextile (Nonwoven Erosion Protection Channel)	4,300.00 sy	0.016	66.80 mh	1,963	572	-	175	-	1.84	2,513
			D50 9" Riprap	52,150.00 ln	0.320	1,686.89 mh	49,667	53,037	-	29,868	-	24.85	129,668
			3" Stone, 1" Thick To Prevent Erosion (Assume 1.05 pc)	2,004.00 ln	0.096	192.38 mh	6,056	18,190	-	3,068	-	15.53	27,312
			Sig 1-4 CMP Mtl Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 FIEs)	166.04 ea	166.04	864.33 mh	20,450	20,198	-	2,795	-	10,880.84	43,443
			Cut Excavation For Placement Of 48" Dia Fall-Found Pipe @ 43 box	42.00 cy	0.400	20.99 mh	599	804	-	177	-	14.91	776
			Fill With 1032 Compacted Crushed Stone	93.00 ln	0.400	37.20 mh	1,107	804	-	599	-	26.99	2,510
			30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	17,487	26,442	-	3,662	-	47.61	47,611
			Bedding For 30" CMP, 6" Thick	1,000.00 lf	0.500	67.50 mh	1,943	1,284	-	230	-	3.45	3,457
			30" Diameter CMP Stand Pipe (4 Pipes @ 6 Stages w/30" Per Stage)	720.00 lf	0.750	540.00 mh	16,623	19,038	-	2,779	-	52.70	37,940
			D50 9" Riprap Outlet For Metal Spillway	16.96 mh	0.320	16.96 mh	505	539	-	273	-	24.85	1,317
			Galvanized Compacted Metal Anti-Seep Collar	16.00 ea	16.000	256.00 mh	7,461	4,682	-	1,571	-	899.59	13,974
			Seed/Mulch Disturbed Areas	26.00 ac					64,619	-	-	2,485.34	64,619
			1032 Crushed Stone Base, 6" Depth	3,520.00 ln	0.120	422.40 mh	13,739	31,950	-	4,147	-	14.16	49,638
			1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 ln	0.120	826.20 mh	26,872	62,463	-	8,112	-	14.16	97,478
			<b>Base Layers</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>
			Compacted Fly Ash Base (Fill)	573,650.00 cy	1,300.000	441.27 cd	1,088,579	40,942	-	891,223	-	3.42	1,959,802
			Frontfill Subgrade	172,100.00 sy	26,111.000	1,657.74 mh	49,829	232.00	-	1,872	-	7.49	8,650
			2.5" Thick Bottom Ash Layer	152,117.00 cy	1,300.000	117.47 cd	284,477	-	-	237,261	-	3.42	521,738
			0.5" Thick Fly Ash Filter Layer	30,643.00 cy	1,300.000	23.49 cd	56,865	-	-	47,452	-	3.42	104,346
			18" Dia Coarse Bottom Ash Drain Columns (head 2, mites, 1,100 box)	18,820.00 lf	1,400.000	126.50 cd	74,304	-	-	347,537	-	20.54	347,537
			Roof Till Fly Ash Layer	177,100.00 sy	1,400.000	126.50 cd	74,304	-	-	20,645	-	0.54	94,949
			<b>Bottom Ash Dike Fill</b>	<b>0.00 cy</b>	<b>1,300.000</b>	<b>0.00 cd</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>0</b>
			4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	26,082.00 lf	0.070	1,825.74 mh	49,829	40,942	-	7,782	-	3.78	58,533
			Trenching For The Drain System (4" Dia Underdrain), 962 box	1,180.00 sy	0.020	23.20 mh	6,178	-	-	14,820	-	1.27	29,658
			Stone Existing 1" Soil Cover (Phase 1 Expansion), 19,133 box	22,950.00 sy	800.000	26.70 cd	14,128	-	-	3,330	-	10.949	20,459
			Anchor Trench Coll	1,398.00 sy	0.320	397.44 mh	11,441	-	-	9,845	-	17.13	21,275
			Anchor Trench Fill & Compact	2,242.00 sy	1,300.000	18.95 cd	45,899	-	-	39,281	-	3.42	84,179
			2.0" Thick Bottom Ash Blanket Drain	35,950.00 lf	0.650	232.00 mh	66,898	-	-	19,140	-	3.42	140,220
			1.0" Thick Filter Drain Ash Layer	1,051.00 lf	0.200	207.20 mh	6,248	-	-	4,200	-	7.99	39,384
			Perforated Pipe ADS Drain Tubes, 6" Diameter	4,121.00 lf	0.150	618.15 mh	17,829	8,344	-	288	-	2.68	11,051
			6x7 Stone For Outlet Pipe Bedding (135 pc)	1,051.00 lf	0.150	150.15 mh	4,121	6,344	-	1,276	-	14.67	14,684
			Solid Outlet Pipe ADS Drain 6" Diameter	1,238.00 lf	0.200	247.20 mh	6,747	2,046	-	1,050	-	7.99	9,842
			6" Dia Non-Fat HDPE Composite Joining Lateral Outlet Pipes (EL 769)	302.00 lf	0.150	37.50 mh	1,079	2,289	-	319	-	14.67	3,687
			100 Crushed Stone, Bedding C (Depth)	10.00 ln	0.200	60.40 mh	1,648	500	-	256	-	7.96	2,005
			9" Dia Perforated HDPE Drain (EL 769)	1,512.00 lf	0.200	302.40 mh	8,253	2,503	-	1,284	-	7.96	12,040
			Compacted Stone	266.00 ln	0.600	143.00 mh	4,116	2,720	-	487	-	28.01	7,323
			Open Grade Stone	1,176.00 sy	0.021	24.18 mh	690	2,381	-	82	-	2.68	3,154
			Concrete Vision Manhole	224.00 sy	0.200	44.80 mh	1,290	3,811	-	381	-	7.46	1,970
			Outlet For Underdrain System	168.00 sy	0.250	42.00 mh	1,209	-	-	504	-	10.20	1,713
			Capitol	1.00 lb									31,500
			Ash In Pond	58,747.52 hrs	1,926.150	58,747.52 hrs	1,926,150	406,897	-	412,158	-	31,500	4,140,248
			<b>02</b>	<b>58,747.52 hrs</b>	<b>1,926.150</b>	<b>58,747.52 hrs</b>	<b>1,926,150</b>	<b>406,897</b>	<b>412,158</b>	<b>1,363,548</b>	<b>31,500</b>	<b>4,140,248</b>	<b>4,140,248</b>
3	Cypress On Peninsula	Capital	<b>Clear And Grub</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>
			Clear And Grub	90.00 ac	72.000	5,480.00 mh	193,775	-	-	160,844	-	3,941.32	354,719
			Disc Future Borrow Area (Assumed For Compacted Clay Material)	20.00 ac	6.000	1,433.33 cd	1,958	-	-	894	-	142.10	2,842
			Strip 1 ft Vegetation And Topsoil - Spoil At Stockpile	129,000.00 sy	0.030	2,900.00 mh	70,380	-	-	82,248	-	1.25	161,618
			Cut For Ditch (6,975 box)	9,975.00 sy	1,200.000	832.50 mh	10,981	-	-	12,041	-	3.30	23,022
			D50 6" Riprap	4,435.00 ln	0.350	1,556.46 mh	40,371	-	-	21,837	-	24.85	105,319
			Seed Ditch	6,975.00 sy	0.012	83.74 mh	2,389	5,484	-	3,583	-	1.19	8,280
			Julie Mailing	2,944.00 ln	0.320	759.08 mh	23,324	29,838	-	12,075	-	24.85	58,237
			Riprap D50 Size 9"	4,300.00 sy	1,200.000	335.89 mh	6,787	-	-	7,420	-	3.30	14,186
			Outlet For Basin (3,582 box)	26.00 ac	0.069	335.89 mh	9,789	2,482	-	1,854	-	2.81	13,784
			Erect Sill Fence Trench Bottom Of Pans, 10% Hay Bales)	1,000.00 lf	0.020	20.00 mh	528	320	-	-	-	0.65	62,134
			Seed/Mulch Disturbed Areas	1.00 lot								<b>0.00</b>	<b>0</b>
			<b>Disposal Facility Construction</b>	<b>1.00 lot</b>								<b>0.00</b>	<b>0</b>
			Allowance For Karst Geologic Features	1.00 ls				246,480	-	-	-	2,464,800	246,480
			Cut For Stormwater Runoff Pond (2,000 box)	2,000.00 sy	800.000	3.00 cd	3,199	-	-	2,825	-	2.99	6,724
			Cleanout Stormwater Runoff Pond (2,300 box)	14,400.00 sy	383.333	7.20 cd	3,839	-	-	2,950	-	4.44	9,189
			Fill For Stormwater Runoff Pond (12,000 box)	1,800.00 sy	1,800.000	1.28 cd	3,052	-	-	24,725	-	3.90	47,452
			Bottom Ash (South Access Road)	900.00 sy	2,900.000	0.21 cd	645	-	-	701	-	2.97	6,170
			Cut & Fill Balance (500 box)	400.00 sy	1,904.000	0.21 cd	458	-	-	285,048	-	2.50	1,001
			Cut & Fill Balance (189,719 box)	227,863.00 sy	2,800.000	61.31 cd	244,595	-	-	196,528	-	2.24	510,953
			Cut & Spoil Sealed Cut For Future 1 Ft Clay Layer In Final Cover	145,001.00 sy	1,904.000	76.16 cd	166,178	-	-	3,417	-	2.50	362,207
			Crushed Stone Base (South Access Road)	2,900.00 ln	0.120	348.00 mh	11,319	26,323	-	401	-	14.16	41,650
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 ln	0.120	40.80 mh	1,327	3,086	-	1,850	-	14.16	19,821
			Crushed Stone Base	4,300.00 ln	0.200	860.00 mh	26,595	43,731	-	18,441	-	14.16	97,267
			Riprap For Stormwater Runoff Pond	23,300.00 ln	0.200	4,700.00 mh	138,891	236,995	-	100,781	-	20.41	479,657

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Spreadsheet Report  
KIF0509302R/FLY&BOT ASH

Location	Activity	Outage Set	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
5	Miscellaneous	Capital	Ditch For Pipes (24" wide x 2' deep)	7,300.00 lf	0.44	320.03 mh	10,911	-	-	-	-	3.26	23,816		
			Geotextile (1' Thick) To Underdrains	16,500.00 sq	0.015	292.50 mh	6,420	26,029	-	-	-	-	1.82	36,443	
			New Fencing (Including Grounding)	200.00 lf	-	-	-	-	4,211	-	-	-	21.06	4,211	
			Personnel Sweeping Gate	1.00 ea	-	-	-	-	-	-	4,211	-	399.72	370	
			Slaking Gate, 20' Fl Wide, With Motorized Operator	1.00 ea	-	-	-	-	-	-	17,459	-	26.03	17,459	
			Pipe Bedding	20.00 in	0.500	10.00 mh	288	199	-	-	-	-	2.57	521	
			Perimeter Road Surfacing - Bottom Ash	2,400.00 cy	1,904.000	3,052	3,118	-	-	-	-	-	6.170	6,170	
			Perimeter Road Surfacing - Crushed Stone	2,900.00 in	0.120	348.00 mh	26,323	-	-	-	-	-	14.16	41,056	
			Crusher Layer (1' Fl Thick) For Liner (No. 5) Stone	100,000.00 in	0.090	16,120.00 mh	507,694	1,462,710	-	-	-	-	13.20	2,217,010	
			Geotextile For Underdrain Pipe	5,700.00 sq	0.011	59.85 mh	1,723	7,008	-	-	-	-	1.27	9,535	
			8" Dia. HDPE, SDR-17 Perforated Pipe	6,400.00 lf	0.200	1,280.00 mh	34,935	10,583	-	-	-	-	7.96	50,957	
			Compacted Clay Liner, 6" J-lits (339,000 box)	400,800.00 cy	1,200.000	339.00 mh	1,020,049	-	-	-	-	-	5.23	2,128,295	
			8" Dia. HDPE Standard Filings	50.00 ea	0.200	10.00 mh	246	407	-	-	-	-	13.10	655	
			Concrete Anchors For Underdrain Piping	95.00 ea	12.500	1,625.00 mh	34,373	10,157	-	-	-	-	59.58	47,309	
			Prototal Subgrade	70.00 ac	7.000	49.00 mh	8,977	10,000	-	-	-	-	179.67	12,977	
			72" Dia. CMP For Outlet Structure	6.00 lf	2.000	12.00 mh	337	1,951	-	-	-	-	70	2,257	
			48" Dia. CMP For Riser For Outlet Structure	7.00 lf	1.991	14.00 mh	214	936	-	-	-	-	170.64	1,195	
			48" Dia. CMP Outlet Pipe (Principle Spillway)	150.00 lf	0.920	93.00 mh	2,610	7,404	-	-	-	-	70.37	10,586	
			Cut Holes in Riser	3.00 ea	1.000	3.00 mh	74	15	-	-	-	-	29.92	90	
			Seed/Fertilize / Lime Future Borrow Area	4.00 ac	10.000	40.00 mh	1,294	923	-	-	-	-	2,885.93	4,779	
Anti-Sweep Collars (Assume Concrete)	7.00 ea	75.000	525.00 mh	16,984	5,076	-	-	-	-	595.30	2,221				
6	Miscellaneous	Capital	Dry Fly Ash Conversion Capital Cost	1.00 ls	14,650.120	14,650.12 mh	742,506	-	-	-	-	25,675,000.00	25,675,000		
			Non Manual	1.00 ls	-	-	-	-	-	-	-	-	742,506.00	742,506	
			Mobilize, Drug Test, Misc Other, & Demobilize	1.00 ls	-	-	-	-	-	-	-	-	0	382,000.00	
			Capital	-	-	-	-	-	-	-	-	-	-	382,000	
			Miscellaneous	-	-	-	-	-	-	-	-	-	-	26,809,506	
			05	-	-	-	-	-	-	-	-	-	-	26,809,506	
			03	-	-	-	-	-	-	-	-	-	-	26,809,506	
			04	-	-	-	-	-	-	-	-	-	-	26,809,506	
			06	-	-	-	-	-	-	-	-	-	-	26,809,506	
			07	-	-	-	-	-	-	-	-	-	-	26,809,506	
7	Ph 2 Base Construct	O & M	Dry Fly Ash To Elev. 866	1.00 lot	-	-	-	-	-	-	-	0.00	0		
			Dry Ash Stack	5,475,070.00 cy	1,100.000	4,978.25 cd	10,903,210	-	-	-	-	-	3.33	18,215,257	
			Wet Dry Ash Stack Bottom Ash Only	676,848.00 cy	375.000	1,810.26 cd	531,859	-	-	-	-	-	2.55	1,796,593	
			Disposal Life (Assume Dike & Dredge Ash)	12.90 yr	-	-	-	-	-	-	-	-	-	0.00	0
			Haul Distance (Round Trip)	0.50 mile	-	-	-	-	-	-	-	-	-	0.00	0
			O & M	-	-	-	-	-	-	-	-	-	-	0.00	0
			Drg Call#1 Opr Cost	-	-	-	-	-	-	-	-	-	-	0.00	0
			Engr/Geotech	-	-	-	-	-	-	-	-	-	-	8,576,950	8,576,950
			Engr/Geotech	-	-	-	-	-	-	-	-	-	-	8,576,950	8,576,950
			Engr/Geotech	-	-	-	-	-	-	-	-	-	-	8,576,950	8,576,950
8	Gyp On Peninsula Cst	Capital	Addition Geotechnical Investigation	1.00 ls	-	-	-	-	-	-	-	-	102,700.00		
			Capital	-	-	-	-	-	-	-	-	-	102,700		
			Engr/Geotech	-	-	-	-	-	-	-	-	-	-	102,700	
			06	-	-	-	-	-	-	-	-	-	-	102,700	
			07	-	-	-	-	-	-	-	-	-	-	102,700	
			08	-	-	-	-	-	-	-	-	-	-	102,700	
			09	-	-	-	-	-	-	-	-	-	-	102,700	
			10	-	-	-	-	-	-	-	-	-	-	102,700	
			11	-	-	-	-	-	-	-	-	-	-	102,700	
			12	-	-	-	-	-	-	-	-	-	-	102,700	
9	Ph 2 Base Construct	O & M	Life Of Gypsum Disposal Stack	20.00 yrs	-	-	-	-	-	-	-	0.00	0		
			O & M	-	-	-	-	-	-	-	-	-	-	0	
			Gyp On Peninsula Cst	-	-	-	-	-	-	-	-	-	-	0	
			14	-	-	-	-	-	-	-	-	-	-	0	
			15	-	-	-	-	-	-	-	-	-	-	0	
			16	-	-	-	-	-	-	-	-	-	-	0	
			17	-	-	-	-	-	-	-	-	-	-	0	
			18	-	-	-	-	-	-	-	-	-	-	0	
			19	-	-	-	-	-	-	-	-	-	-	0	
			20	-	-	-	-	-	-	-	-	-	-	0	

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Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub-Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Dry Stack Ash Quantities	O & M	Initial Construction Disposal Life (Assume Dry Ash Stack)	514,909.00 cy	1,100,000	559.01 cd	1,224,324			821,071		3.33	2,045,395
	O & M			1.30 yrs								0.00	0
	Ph 2 Initial Constr	20		40,246.59 hrs			1,224,324			821,071			2,045,395
				40,246.59 hrs			1,224,324			821,071			2,045,395
2	Ph 2 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Dry Stack Ash Quantities	1,569,665.00 cy	1,100,000	1,445.17 cd	3,195,166			2,122,663		3.33	5,287,829
			Stage 1 Disposal Life (Assume Dry Stack Area)	3.30 yrs								0.00	0
			Haul Distance (Round Trip)	0.50 mile								0.00	0
	O & M			104,052.11 hrs			3,165,166			2,122,663			5,287,829
	Ph 2 Operational Cost	22		104,052.11 hrs			3,165,166			2,122,663			5,287,829
3	Ph 2 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Dry Stack Ash Quantities	1,775,976.00 cy	1,100,000	1,611.89 cd	3,530,309			2,367,540		3.33	5,897,849
			Stage 2 Disposal Life (Assume Dry Stack Area)	3.70 yrs								0.00	0
	O & M			116,055.88 hrs			3,530,309			2,367,540			5,897,849
	Ph 2 Operational Cost	23		116,055.88 hrs			3,530,309			2,367,540			5,897,849
4	Ph 2 Operational Cost	O & M	Stage 3 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Dry Stack Ash Quantities	1,572,022.00 cy	1,100,000	1,428.11 cd	3,129,998			2,099,078		3.33	5,229,076
			Stage 3 Disposal Life (Assume Dry Stack Area)	3.30 yrs								0.00	0
	O & M			102,895.09 hrs			3,129,998			2,099,078			5,229,076
	Ph 2 Operational Cost	24		102,895.09 hrs			3,129,998			2,099,078			5,229,076



KIF/0509303R1/FLY&BOT ASH  
KINGSTON FOSSIL PLANT  
OPTION 3 - WET ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)

Project name KIF/0509303R1/FLY&BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Ash

KIF

0509303R1

KIF530

PCN # Dan Smith

Requesting Engr Dan Smith

Option 3

Revision 1

Phase 2

Preliminary

Estimate Type +/- 20%

Estimate Accuracy +/- 20%

Est. Issue Date 01/21/2005

Funding Type Capita

Unit N

(Wet ash in dredge cell/Phase 1. Wet gypsum in Phase 2. Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3 phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Seq'  
Detail summary

Location	Activity	Duties Set	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Instl Dms/Swan Pond	Capitol											
			6" Dia Pipe Bolards	24.00 ea	1.500	36.00 mh	1,098	4,882	12,324			265.78	6,183
			PVC Monitoring Wells	6.00 ea	0.600	3.60 mh	2,957	785				2,654.00	12,324
			6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.000	94.80 mh	403					7.96	3,774
			Crushed Stone, Bedding 6" Depth	16.00 in	0.900	14.40 mh	230	152				25.81	411
			6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 780)	520.00 lf	0.000	104.00 mh	2,958	81				25.81	411
			Crushed Stone, Bedding 6" Depth	18.00 in	0.900	16.20 mh	289	171				25.81	461
			6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 792)	491.00 lf	0.000	98.20 mh	2,959	93				25.81	310
			Crushed Stone, Bedding 6" Depth	17.00 in	0.900	15.30 mh	245	152				25.81	435
			6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 810)	1,282.00 lf	0.000	256.40 mh	9,988	2,122				25.81	10,208
			Crushed Stone, Bedding 6" Depth	43.00 in	0.900	38.70 mh	618	498				25.81	1,101
			6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.000	243.60 mh	9,948	359				25.81	9,999
			Crushed Stone, Bedding 6" Depth	41.00 in	0.900	36.90 mh	641	502				25.81	1,060
			6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 825)	1,180.00 lf	0.000	236.00 mh	1,953	1,553				25.81	9,996
			Crushed Stone, Bedding 6" Depth	40.00 in	0.900	36.00 mh	576	456				25.81	1,024
			6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 832)	1,160.00 lf	0.000	232.00 mh	1,953	1,553				25.81	9,996
			Crushed Stone, Bedding 6" Depth	39.00 in	0.900	35.10 mh	565	445				25.81	999
			6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 839)	21,190.00 lf	0.000	4,238.00 mh	121,995	36,025				7.46	159,020
			Backfill For 6" Dia Non-Perforated HDPE (17,655 bcy)	14,633.00 cy	0.250	3,658.25 mh	44,481	44,481				10.20	151,227
			6" Dia Non-Perforated HDPE (12,351.35y)	21,424.00 lf	0.250	5,356.00 mh	126,746	126,746				7.46	182,748
			Cut For 6" Dia Perforated HDPE (18,106 bcy)	19,278.00 lf	0.250	4,819.50 mh	125,646	125,646				10.20	155,744
			6" Dia Perforated HDPE (12,730 bcy)	2,000.00 lf	0.250	500.00 mh	109,934	109,934				7.06	19,928
			10ft Crushed Stone	378.00 in	0.031	11.72 mh	1,632	3,431				14.67	5,545
			Geoswirl Woven Monofilament	1,950.00 lf	0.060	117.00 mh	3,201	109				2.96	4,173
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,790.00 lf	0.060	227.40 mh	20,698	6,273				7.96	30,179
			10ft Crushed Stone	2,468.00 lf	0.060	75.54 mh	3,052	9,113				14.67	10,503
			Geoswirl Woven Monofilament	4,160.00 lf	0.060	249.60 mh	6,964	206				2.96	7,905
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	3,235.00 lf	0.060	194.10 mh	22,707	6,986				7.96	33,125
			10ft Crushed Stone	3,742.00 lf	0.060	112.26 mh	3,364	9,552				14.67	11,530
			Geoswirl Woven Monofilament	3,053.00 lf	0.060	183.18 mh	2,425	6,552				2.96	8,978
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	3,640.00 lf	0.060	218.40 mh	21,425	6,487				7.96	31,254
			10ft Crushed Stone	4,988.00 lf	0.060	149.64 mh	3,204	6,735				14.67	10,885
			Geoswirl Woven Monofilament	4,121.00 lf	0.060	247.26 mh	1,792	5,144				2.96	8,187
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	6,410.00 lf	0.060	384.60 mh	34,968	10,810				14.67	51,042
			10ft Crushed Stone	1,211.00 lf	0.150	181.65 mh	5,229	10,992				7.96	17,685
			Geoswirl Woven Monofilament	6,900.00 lf	0.060	414.00 mh	33,242	10,050				14.67	13,371
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	1,161.00 lf	0.150	174.15 mh	4,970	10,447				7.96	48,484
			10ft Crushed Stone	5,900.00 lf	0.150	885.00 mh	32,260	9,765				14.67	18,885
			Geoswirl Woven Monofilament	4,589.00 lf	0.060	275.34 mh	3,220	8,311				2.96	12,703
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	5,800.00 lf	0.150	870.00 mh	4,814	10,121				14.67	16,357
			10ft Crushed Stone	4,611.00 lf	0.150	691.65 mh	2,683	9,292				2.96	12,306
			Geoswirl Woven Monofilament	4,160.00 lf	0.060	249.60 mh	3,165	8,900				7.96	46,185
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	4,611.00 lf	0.150	691.65 mh	4,732	9,948				14.67	16,078
			10ft Crushed Stone	2,580.00 lf	0.060	154.80 mh	1,764	4,934				2.96	12,097
			Geoswirl Woven Monofilament	2,580.00 lf	0.060	154.80 mh	1,764	4,934				12.96	33,432
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 793)	575.00 lf	0.150	86.25 mh	2,483	5,219				14.67	8,435
			10ft Crushed Stone	1,000.00 lf	0.150	150.00 mh	60,000	3,051				7,650.57	7,581
			Geoswirl Woven Monofilament	1,000.00 lf	0.021	15.00 mh	1,346	3,643				5,338.36	5,338
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 793)	2,283.00 lf	0.021	47.74 mh	469	1,600				2.96	6,149
			10ft Crushed Stone	54.00 lf	1.000	54.00 mh	1,515	2,856				90.19	4,870
			Geoswirl Woven Monofilament	2.00 ea	4.000	8.00 mh	304	102				243.02	486
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	53.00 lf	1.000	53.00 mh	1,487	2,803				90.19	4,780
			10ft Crushed Stone	23.00 lf	4.000	92.00 mh	304	102				243.02	486
			Geoswirl Woven Monofilament	23.00 lf	4.000	92.00 mh	645	1,216				243.02	2,074
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	38.00 lf	4.000	152.00 mh	498	773				35.24	1,339
			10ft Crushed Stone	30.00 lf	0.200	6.00 mh	173	68				35.24	1,339
			Geoswirl Woven Monofilament	21.00 lf	0.320	6.72 mh	38	166				17.13	360
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	4.00 lf	0.500	2.00 mh	58	38				26.91	102
			10ft Crushed Stone	72.00 lf	0.000	43.20 mh	1,289	2,709				56.90	4,233
			Geoswirl Woven Monofilament	57.00 lf	0.320	18.24 mh	466	207				17.13	976
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	110,980.00 lf	0.050	5,549.00 mh	56,700	247,653				26.91	86,229
			10ft Crushed Stone	4,356.00 lf	0.040	174.24 mh	5,807	14,113				8.31	10,989
			Geoswirl Woven Monofilament	1,016,006 bcy	0.060	61,560.36 mh	1,016,066	495,205				1,788.753	1,788,753
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	35,789.66 lf	0.060	2,147.38 mh	265,158	12,324				1,788.753	1,788,753
			10ft Crushed Stone	3,166.66 lf	0.040	126.66 mh	4,356	12,324				265.158	12,324
			Geoswirl Woven Monofilament	3,166.66 lf	0.040	126.66 mh	4,356	12,324				265.158	12,324
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	52.00 lf	0.400	20.80 mh	589	177				14.91	776
			10ft Crushed Stone	93.00 lf	0.400	37.20 mh	1,107	804				26.99	2,510
			Geoswirl Woven Monofilament	1,000.00 lf	0.069	66.67 mh	1,984	502				2.81	2,613
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	4,300.00 lf	0.015	64.50 mh	1,963	5,772				1.84	7,611
			10ft Crushed Stone	2,045.00 lf	0.320	654.00 mh	49,667	63,037				24.85	129,566
			Geoswirl Woven Monofilament	2,045.00 lf	0.096	196.26 mh	6,056	18,190				13.63	27,312
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	4.00 lf	0.040	1.60 mh	177	117				10.80	43.43
			10ft Crushed Stone	52.00 lf	0.400	20.80 mh	589	177				14.91	776
			Geoswirl Woven Monofilament	93.00 lf	0.400	37.20 mh	1,107	804				26.99	2,510

Capitol

Ash / Gypsum in Pond

178,877

Spreadsheet Report  
KIF/0509303R1/FL Y&BOT ASH

Location	Activity	Outage Seq	Description	Taskoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
5	Miscellaneous	Capital	30" Diameter CMP Culvert Bedding For 30" CMP, 6" Thick	1,000.00 lf	0.600	600.00 mh	17,487	26,442	-	-	-	3,682	47,611	
			30" Diameter CMP Stand Pipe (4" Pipes @ 6" Splices w/30" Per Stage)	135.00 in	0.500	67.50 mh	1,943	1,284	230	2,661	-	-	-	2,661
			D50 9" Riprap Outlet For Metal Sillway	720.00 lf	0.750	540.00 mh	16,923	19,038	2,879	37,490	-	-	-	37,490
			Galvanized Compacted Metal Anti-Seep Collar	53.00 ea	0.320	16.96 mh	505	539	273	1,317	-	-	-	1,317
			See/Match Disturbed Area, 6" Depth	28.00 ac	0.120	3.36 mh	7,481	4,882	1,571	13,934	-	-	-	13,934
			1032 Roller Compacted Crushed Stone Base, 6" Depth	3,200.00 in	0.120	422.40 mh	13,739	31,950	4,147	48,036	-	-	-	48,036
			<b>Base Layers</b>	6,885.00 in	0.120	826.20 mh	26,872	62,493	8,112	97,478	-	-	-	97,478
			1.00 ft	1,000.00	0.040	40.00 mh	429,505	338,937	239	769,442	-	-	-	769,442
			322,200.00 cy	1,300,000	0.040	1,300.00 mh	1,698,157	700,432	342	3,110,786	-	-	-	3,110,786
			810,558.00 cy	1,300,000	0.040	1,300.00 mh	4,897	4,897	0.005	12,577	-	-	-	12,577
			281,111.00 cy	1,300,000	0.040	1,300.00 mh	461,549	376,004	342	828,153	-	-	-	828,153
			242,407.00 cy	1,300,000	0.040	1,300.00 mh	90,309	75,220	342	165,029	-	-	-	165,029
			48,461.00 cy	1,300,000	0.040	1,300.00 mh	117,043	32,770	20.54	347,537	-	-	-	347,537
			281,111.00 cy	1,300,000	0.040	1,300.00 mh	126,868	32,770	20.54	150,712	-	-	-	150,712
			163,614.00 cy	1,300,000	0.040	1,300.00 mh	304,775	126,868	342	589,866	-	-	-	589,866
			41,400.00 lf	0.700	0.070	41.40 mh	79,084	12,320	3.78	198,401	-	-	-	198,401
			1,840.00 cy	0.200	0.200	1,840.00 mh	10,583	3,128	7.46	13,121	-	-	-	13,121
			22,860.00 cy	800,000	0.200	22,860.00 mh	14,128	14,330	1.27	29,058	-	-	-	29,058
			2,073.00 cy	0.200	0.200	2,073.00 mh	11,935	5,986	8.31	17,221	-	-	-	17,221
			1,971.00 cy	0.320	0.320	1,971.00 mh	18,156	15,607	17.13	33,793	-	-	-	33,793
			39,111.00 cy	1,300,000	0.320	39,111.00 mh	72,855	60,863	3.42	133,618	-	-	-	133,618
			19,556.00 cy	1,300,000	0.320	19,556.00 mh	30,382	30,862	3.42	66,811	-	-	-	66,811
			59,997.00 cy	0.950	0.950	59,997.00 mh	83,862	131,282	3.79	222,424	-	-	-	222,424
			7,850.00 lf	0.200	0.200	7,850.00 mh	4,249	6,688	7.95	62,508	-	-	-	62,508
			6,942.00 lf	0.200	0.200	6,942.00 mh	13,247	12,953	2.69	17,519	-	-	-	17,519
			1,983.00 lf	0.150	0.150	1,983.00 mh	3,539	4,459	14.67	23,325	-	-	-	23,325
			397.00 lf	0.200	0.200	397.00 mh	10,715	3,249	7.65	15,631	-	-	-	15,631
			480.00 lf	0.200	0.200	480.00 mh	1,714	3,603	14.67	5,824	-	-	-	5,824
			16.00 in	0.500	0.500	16.00 mh	2,520	784	7.95	3,822	-	-	-	3,822
			2,400.00 lf	0.200	0.200	2,400.00 mh	13,100	152	410	26,911	-	-	-	26,911
			454.00 in	0.500	0.500	454.00 mh	6,534	3,972	7.96	18,111	-	-	-	18,111
			1,887.00 lf	0.021	0.021	1,887.00 mh	1,086	4,317	26.61	11,925	-	-	-	11,925
			358.00 cy	0.200	0.200	358.00 mh	605	3,780	2.69	5,007	-	-	-	5,007
			287.00 lf	0.250	0.250	287.00 mh	1,921	801	7.46	2,885	-	-	-	2,885
			1.00 ls	1,200,000	0.012	1.00 mh	10,981	5.62	10.20	50,000	-	-	-	50,000
			6,978.00 lf	0.320	0.320	6,978.00 mh	40,371	43,111	3.30	21,977,800	-	-	-	21,977,800
			4,238.00 in	0.320	0.320	4,238.00 mh	2,389	5,484	24.85	105,219	-	-	-	105,219
			6,978.00 lf	0.320	0.320	6,978.00 mh	25,324	23,899	0.91	3,993	-	-	-	3,993
			2,444.00 in	0.320	0.320	2,444.00 mh	2,389	5,484	1.19	2,890	-	-	-	2,890
			4,300.00 cy	1,200,000	0.330	4,300.00 mh	6,767	7,920	3.30	56,437	-	-	-	56,437
			1.00 ls	20,148,780	0.012	1.00 mh	10,981	5.62	10.20	50,000	-	-	-	50,000
			1.00 ls	10,928,518	0.012	1.00 mh	20,148.78 mh	1,356.48 mh	3.30	21,977,800	-	-	-	21,977,800
			1.00 ls	10,928,518	0.012	1.00 mh	10,928.52 mh	1,356.48 mh	3.30	21,977,800	-	-	-	21,977,800
			31,076.30 hrs	1,349,489	1,349,489	31,076.30 hrs	3,768,438	574,334	415,739	7,670,143	-	-	-	7,670,143
			31,076.30 hrs	1,349,489	1,349,489	31,076.30 hrs	3,768,438	574,334	415,739	7,670,143	-	-	-	7,670,143
			<b>114,446.15 hrs</b>	<b>3,768,438</b>	<b>574,334</b>	<b>114,446.15 hrs</b>	<b>3,768,438</b>	<b>574,334</b>	<b>415,739</b>	<b>7,670,143</b>	-	-	-	<b>7,670,143</b>
			<b>31,076.30 hrs</b>	<b>1,349,489</b>	<b>184,000</b>	<b>31,076.30 hrs</b>	<b>1,349,489</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>21,977,800</b>	<b>21,977,800</b>	<b>184,000</b>	<b>21,977,800</b>	<b>21,977,800</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>21,977,800</b>	<b>21,977,800</b>	<b>184,000</b>	<b>21,977,800</b>	<b>21,977,800</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>21,977,800</b>	<b>21,977,800</b>	<b>184,000</b>	<b>21,977,800</b>	<b>21,977,800</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>2,770,633</b>	<b>2,770,633</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>574,334</b>	<b>574,334</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>415,739</b>	<b>415,739</b>	<b>184,000</b>	<b>184,000</b>	<b>23,511,289</b>	-	-	-	<b>23,511,289</b>
			<b>2,770,633</b>	<b>2,770,633</b>										



Spreadsheet Report  
KIF0509303R1/FLY&BOTASH

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labors Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
1	O & M		<b>Initial Disposal Life</b> Perforated Pipe ADS Drain Tube, 8" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 8" Diameter #57 Stone For Outlet Pipe Bedding (135 pct) O & M Ph 2 Initial Constr 10	1.40 Yrs 7,370.00 lf 6,152.00 sy 1,492.00 ln 1,898.00 lf 338.00 ln	0.200 0.021 0.150 0.200 0.150	4,174.00 mh 12,437 28,34 mh 23,80 mh 331.60 mh 30.40 mh 2,206.14 hrs 2,206.14 hrs	40,826 3,430 5,842 9,650 2,744 4,050 60,777 60,777	12,199 15,437 13,542 2,744 4,050 43,972 43,972	-	-	-	0.00 7.96 2.68 14.87 7.96 14.87 10.427 10.427	0 58,686 16,471 21,887 13,202 4,928 115,176 115,176
2	O & M		<b>Stage 1 (3 To 1 Side Slopes)</b> Wet Cast Gypsum Dike Fill <b>Stage 1 Disposal Life (Assumes Dikes &amp; Stuiice Gypsum)</b> Perforated Pipe ADS Drain Tube, 8" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 8" Dia #57 Stone For Outlet Pipe Bedding (135 pct) O & M Ph 2 Operational Cost 12	1.00 lot 355,159.00 cy 1,334,496.00 cy 4.90 Yrs 11,495.00 lf 9,579.00 sy 2,328.00 ln 2,598.00 lf 524.00 ln	0.200 0.021 0.150 0.200 0.150	571.40 cd 4,571.20 hrs 4,571.20 hrs 4,571.20 hrs 76.00 mh 12,128.33 hrs 12,128.33 hrs	167,816 167,816 167,816 167,816	-	-	395,250 395,250 395,250 395,250	-	4.22 4.22 0.00 0.00 7.96 14.87 14.87	567,076 567,076 567,076 567,076 91,533 25,987 34,151 20,592 7,887 1,257,343 1,257,343
3	O & M		<b>Stage 2 (3 To 1 Side Slopes)</b> Wet Cast Gypsum Dike Fill <b>Stage 2 Disposal Life (Assume Dike &amp; Stuiice Gypsum)</b> Perforated Pipe ADS Drain Tube, 8" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 8" Diameter #57 Stone For Outlet Pipe Bedding (135 pct) O & M Ph 2 Operational Cost 13	1.00 lot 293,403.00 cy 1,509,873.00 cy 5.40 Yrs 11,865.00 lf 9,999.00 sy 2,403.00 ln 2,670.00 lf 541.00 ln	0.200 0.021 0.150 0.200 0.150	517.98 cd 37,294.89 hrs 37,294.89 hrs 37,294.89 hrs 81.15 mh 12,518.91 hrs 12,518.91 hrs	760,816 760,816 760,816 760,816	-	-	760,816 760,816 760,816 760,816	-	3.33 0.00 0.00 7.96 2.68 14.87 14.87	1,895,291 1,895,291 1,895,291 1,895,291 94,470 25,916 34,151 20,592 7,887 1,257,343 1,257,343
4	O & M		<b>Stage 3 (3 To 1 Side Slopes)</b> Wet Cast Gypsum Dike Fill <b>Stage 3 Disposal Life (Assumes Dry Stack Ash)</b> Dry Ash Stack O & M Ph 3 Initial Constr 14	1.20 Yrs 568,763.00 cy 1,349,800.00 cy 2.80 Yrs 1,349,800.00 cy	1,100.000 1,100.000	517.98 cd 37,294.89 hrs 37,294.89 hrs 37,294.89 hrs	1,134,475 1,134,475 1,134,475	-	-	1,895,291 1,895,291 1,895,291	-	3.33 0.00 0.00	1,895,291 1,895,291 1,895,291
5	O & M		<b>Stage 1 (3 To 1 Side Slopes)</b> Wet Cast Gypsum Dike Fill <b>Stage 1 Disposal Life (Assume Dike Stack)</b> Dry Stack Ash Quantities O & M Ph 3 Operational Cost 15	1.00 lot 1,504,825.00 cy 3.20 Yrs 1,504,825.00 cy	1,100.000 1,100.000	1,996.02 cd 98,407.64 hrs 98,407.64 hrs	2,996,204 2,996,204 2,996,204	-	-	2,009,352 2,009,352 2,009,352	-	3.33 0.00 0.00	5,005,556 5,005,556 5,005,556
6	O & M		<b>Stage 2 (3 To 1 Side Slopes)</b> Wet Cast Gypsum Dike Fill <b>Stage 2 Disposal Life (Assume Dry Stack)</b> Dry Stack Ash Quantities O & M Ph 3 Operational Cost	1.00 lot 1,504,825.00 cy 3.20 Yrs 1,504,825.00 cy	1,100.000 1,100.000	1,996.02 cd 98,407.64 hrs 98,407.64 hrs	2,996,204 2,996,204 2,996,204	-	-	2,009,352 2,009,352 2,009,352	-	3.33 0.00 0.00	5,005,556 5,005,556 5,005,556

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
7	Ph 3 Operational Cost	O & M	16 Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack) O & M Ph 3 Operational Cost	1,334,983.00 cy 2.80 yrs	1,100,000	99,497.64 hrs	2,909,204			2,009,352			5,005,556	
8	Ph 2 Operational Cost	O & M	17 Wet Sluice Gypsum Dike Fill Stage 3 (3 To 1 Side Slopes) Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tubes, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost	227,106.00 cy 1,344,916.00 cy 4.80 yrs 10,230.00 lf 8,525.00 sy 2,072.00 lf 2,302.00 lf 486.00 lf	235,000	966.41 cd	293,856							959,996
9	Ph 2 Operational Cost	O & M	18 Stage 4 (3 To 1 Side Slopes) Wet Sluice Gypsum Dike Fill Stage 4 Disposal Life (Assume Dike & Sluice Ash) Perforated Pipe ADS Drain Tubes, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost	169,831.00 cy 702,654.00 cy 2.70 yrs 7,959.00 lf 6,236.00 sy 1,711.00 lf 347.00 lf	235,000	718.43 cd	210,997							712,993
0	Ph 3 Operational Cost	O & M	19 Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Dry Stack Ash) O & M Ph 3 Operational Cost	577,913.00 cy 1.20 yrs	1,100,000	37,807.40 hrs	1,150,265						1,921,536	
													1,921,536	
													1,921,536	
													1,921,536	

Estimate Totals

Labor	20,478,775	638,375,076	hrs
Material	1,358,322		
Subcontract	30,783,688		
Equipment	19,516,999	471,708,879	hrs
Other	50,000		
	<u>89,186,872</u>		

Engineered Materials - Ph 2		100,000	%	C
Adjustment - Engr Materials	89,186,872	(100,000)	%	C
Environmental Costs		100,000	%	C
Adjustment Environmental	89,186,872	(100,000)	%	C

PPG Mech Engr - Phase 2	7,001	0,026	% @	42,00	A	167
PPG Elec Engr - Phase 2	7,001	0,026	% @	42,00	A	167
PPG Civl Engr - Phase 2	16,001	0,080	% @	42,00	A	381
Non-TVA Engr - Phase 2	281,004	0,611	% @	72,00	A	3,903
PPG Proj Cold Cost - Phase 2	995	0,004	% @	42,00	A	24
PPG Proj Cold Sched - Phase 2	3,000	0,011	% @	42,00	A	71
PPG Cost Estimating - Phase 2	1,000	0,004	% @	42,00	A	24
PPG Engr Records - Phase 2	1,000	0,004	% @	42,00	A	24

**\$ 31,700**  
Rounding

89,503,874

89,503,874

**69,503,874**

Total

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KINGSTON FOSSIL PLANT  
OPTION 4 - DRY ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)

Project name KIF/05093O4R1/FLY&BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 05093O4R1  
PCN # KIF550  
Requesting Engr Dan Smith  
Option 4  
Revision 1  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 01/21/2005  
Funding Type Capital  
Unit N

Notes All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,380 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3 phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Seq'  
Detail summary



Location	Activity	Collage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Unit	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount			
1	Ph 2 Initial Constr	O & M	QA/QC For Construction Of Disposal Facility	1.00 ls							746,424		746,423.50	746,424			
			O & M								746,424			746,424			
			Ph 2 Base Construct									0			0		
			07									746,424			746,424		
2	Ph 2 Operational Cost	O & M	Wet Sludge Sedimented Gypsum Quantities	451,295.00 cy										0.00	0		
			Initial Cons. Disposal Life	1.40 yrs											0.00	0	
			Perforated Pipe ADS Drain Tubes, 6" Diameter	3,370.00 lf	0.200	674.00	1,348.00						6,258		6,258	58,686	
			Geosettle For Underdrain	8,142.00 sy	0.021	171.00	3,694						430		430	16,471	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	1,422.00 lf	0.150	213.30	23,800						1,902		1,902	21,887	
			Solid Outlet Pipe ADS Drain 6" Diameter	1,352.00 lf	0.200	270.40	331.60						1,408		1,408	13,202	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	336.00 lf	0.150	50.40	600						429		429	4,929	
			O & M													115,175	
			Ph 2 Initial Constr										10,427		10,427	115,175	
			10										10,427		10,427	115,175	
3	Ph 2 Operational Cost	O & M	Rim Ditches	134,270.00 cy	235.000	571.40	cd	167,816						4.22	597,076		
			Cut (111,999 boy)													567,076	
			O & M													567,076	
			Rim Ditches													567,076	
			11													567,076	
4	Ph 2 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot										0.00	0		
			Wet Coal Gypsum Dike Fill	255,199.00 cy	235.000	1,095.91	cd	318,923							4.22	1,077,693	
			Wet Sludge Gypsum Quantities	1,334,496.00 cy												0.00	0
			Stage 1 Disposal Life (3 To 1 Side Slopes)	4.90 yrs												0.00	0
			Perforated Pipe ADS Drain Tubes, 6" Diameter	11,495.00 lf	0.200	2,299.00	mh	62,746					9,161		9,161	91,533	
			Geosettle For Underdrain	9,578.00 sy	0.021	197.04	mh	5,970					970		970	26,687	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,328.00 lf	0.150	349.20	mh	2,662					2,131		2,131	34,151	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,995.00 lf	0.200	599.00	mh	14,116					2,196		2,196	20,982	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 lf	0.150	78.60	mh	2,263					478		478	7,887	
			O & M										775,034		775,034	1,257,343	
Ph 2 Operational Cost										775,034		775,034	1,257,343				
12										775,034		775,034	1,257,343				
5	Ph 2 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot										0.00	0		
			Wet Coal Gypsum Dike Fill	263,403.00 cy	235.000	1,120.95	cd	329,189							4.22	1,112,952	
			Wet Sludge Gypsum Quantities	1,509,673.00 cy												0.00	0
			Stage 2 Disposal Life (Assume Dike & Sluice Gypsum)	5.40 yrs												0.00	0
			Perforated Pipe ADS Drain Tubes, 6" Diameter	11,959.00 lf	0.200	2,373.00	mh	64,785					10,075		10,075	94,478	
			Geosettle For Underdrain	9,698.00 sy	0.021	203.40	mh	5,802					682		682	26,516	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,403.00 lf	0.150	360.45	mh	10,376					3,684		3,684	44,667	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,973.00 lf	0.200	594.60	mh	14,574					2,287		2,287	35,251	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	341.00 lf	0.150	51.15	mh	2,338					690		690	7,936	
			O & M										799,987		799,987	1,297,825	
Ph 2 Operational Cost										799,987		799,987	1,297,825				
13										799,987		799,987	1,297,825				
6	Ph 3 Initial Constr	O & M	Dry Stack Ash Quantities	977,412.00 cy	1,100.000	916.63	cd	1,348,771						3.33	2,253,301		
			Initial Construction Disposal Life (Assume Dry Ash Stack)	1.40 yrs												0.00	0
			O & M													2,253,301	
			Ph 3 Initial Constr													2,253,301	
			14													2,253,301	
7	Ph 3 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot										0.00	0		
			Dry Stack Ash Quantities	1,348,800.00 cy	1,100.000	1,226.53	cd	2,886,305							3.33	4,487,826	
			Stage 1 Disposal Life (Assume Dry Stack Area)	2.80 yrs												0.00	0
			Haul Distance (Round Trip)	0.50 mile												0.00	0
			O & M													4,487,826	
			Ph 3 Operational Cost													4,487,826	
			15													4,487,826	

Location	Activity	Outage Sys	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
6	Ph. 3 Operational Cost	O & M	15 Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 2 Disposal Life (Assume Dry Stack) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1.00 lot 1,504,825.00 cy 3.20 yrs 0.50 mile	1,100,000	68,309.98 hrs	2,686,305			1,801,523		4,487,828	
7	Ph. 2 Operational Cost	O & M	16 Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Gypsum) Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 8" Diameter #57 Stone For Outlet Pipe Bedding (135 pct) O & M Ph 2 Operational Cost	227,106.00 cy 1,344,916.00 cy 4.80 yrs 10,230.00 lf 6,625.00 sy 2,072.00 lf 2,392.00 lf 486.00 ln	235,000 0.200 0.021 0.150 0.200 0.150	866.41 cd 2,048.00 mh 175.36 mh 310.80 mh 480.40 mh 88.90 mh 10,793.73 hrs 388,194 61,041	283,829 55,941 5,003 8,947 12,556 2,012 388,194 388,194 61,041		6,175,299 6,697 597 2,642 1,955 584 689,743 689,743	4.22 0.00 7.96 2.68 14.67 7.96 14.67	850,006 0 81,450 22,961 30,385 16,330 6,336 1,118,978 1,118,978		
8	Ph. 3 Operational Cost	O & M	17 Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1.00 lot 1,334,199.00 cy 2.80 yrs 0.50 mile	1,100,000	1,212.90 cd	2,656,457			1,781,506		4,437,963	
9	Ph. 2 Operational Cost	O & M	18 Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 8" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pct) O & M Ph 2 Operational Cost	166,531.00 cy 702,654.00 cy 2.70 yrs 7,605.00 lf 6,338.00 sy 1,640.00 ln 1,711.00 lf 347.00 ln	235,000	719.43 cd	210,997			501,496		719,393	
0	Ph. 3 Operational Cost	O & M	19 Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Assume Dike & Dry Stack Ash) O & M Ph 3 Operational Cost	1.00 lot 57,613.00 cy 1.20 yrs	1,100,000	525.10 cd	1,150,065			771,271		1,921,336	

Estimate Totals

Labor	23,661,509								
Material	854,118		911,010,112	hrs					
Subcontract	23,037,162								
Equipment	22,346,088		662,622,905	hrs					
Other	56,000								
	<u>78,658,877</u>								
Engineered Materials - Ph 2									
Adjustment - Engr Materials			100,000 %						C
			(100,000) %						C
Environmental Costs									
Adjustment Environmental			100,000 %						C
			(100,000) %						C
FPG Mech Engr - Phase 2	17,000		0.044 % @	42.00 A					405
FPG Elec Engr - Phase 2	17,000		0.044 % @	42.00 A					405
FPG Civil Engr - Phase 2	16,001		0.046 % @	42.00 A					365
NokTVA Engr - Phase 2	280,383		0.066 % @	75.00 A					3,625
FPG Proj Civil Cost - Phase 2	3,000		0.003 % @	42.00 A					24
FPG Proj Civil Supt - Phase 2	3,000		0.003 % @	42.00 A					24
FPG Cost Estimating - Phase 2	1,002		0.003 % @	42.00 A					24
FPG Engr Records - Phase 2	1,002		0.003 % @	42.00 A					24
	<u>317,800</u>								
Rounding									L
<b>Total</b>	<b>78,975,877</b>								



KINGSTON FOSSIL PLANT  
OPTION 5 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)

Project name KIF/0509309R1/FLY&BOT ASH

Engineer DAN SMITH

Estimator C. L. Torrey

Labor rate table KIF 40 2004

Equipment rate table T/V& Equipment

Project Ash  
Plant KIF  
Estimate # 0509309R1  
PCN # KIF530  
Requesting Engr Dan Smith  
Option 5  
Revision 1  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 01/21/2005  
Funding Type Capital  
Unit N

Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format: Sorted by 'Location/Activity/Outage Seq'  
Detail summary

Location	Activity	Change Sta	Description	Takeoff Quantity	Labour Productivity	Labour Quantity	Labour Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
Inlet Drms/Swan Pond	Capital		6" Dia Pipe Belards	24.00 ea	1.900	36.00 mh	1,036	4,882			245	258.78	6.63		
			PVC Monitoring Wells	5.00 lf	0.000	0.00				12,324				2,054.00	12,324
			6" Dia Non-Pert HDPE Compurgated Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.000	0.00				785		403		7.96	3,774
			Crushed Stone, Bedding 6" Depth	16.00 lf	0.000	0.00				152		27		7.96	410
			6" Dia Non-Pert HDPE Compurgated Tubing Lateral Outlet Pipes (EL. 786)	502.00 lf	0.000	0.00				96		442		7.96	4,141
			Crushed Stone, Bedding 6" Depth	16.00 lf	0.000	0.00				171		31		7.96	461
			6" Dia Non-Pert HDPE Compurgated Tubing Lateral Outlet Pipes (EL. 792)	491.00 lf	0.000	0.00				113		417		7.96	3,910
			Crushed Stone, Bedding 6" Depth	17.00 lf	0.000	0.00				162		26		7.96	435
			6" Dia Non-Pert HDPE Compurgated Tubing Lateral Outlet Pipes (EL. 810)	1,282.00 lf	0.000	0.00				1,088		1,088		7.96	10,208
			Crushed Stone, Bedding 6" Depth	43.00 lf	0.000	0.00				73		3		7.96	1,101
			6" Dia Non-Pert HDPE Compurgated Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.000	0.00				2,038		1,034		7.96	9,689
			Crushed Stone, Bedding 6" Depth	41.00 lf	0.000	0.00				58		702		7.96	1,850
			6" Dia Non-Pert HDPE Compurgated Tubing Lateral Outlet Pipes (EL. 825)	1,180.00 lf	0.000	0.00				1,653		1,002		7.96	9,366
			Crushed Stone, Bedding 6" Depth	40.00 lf	0.000	0.00				360		66		7.96	1,024
			6" Dia Non-Pert HDPE Compurgated Tubing Lateral Outlet Pipes (EL. 832)	1,139.00 lf	0.000	0.00				1,820		985		7.96	9,237
			Crushed Stone, Bedding 6" Depth	40.00 lf	0.000	0.00				371		66		7.96	1,024
			6" Dia Non-Pert HDPE Compurgated Tubing Lateral Outlet Pipes (EL. 839)	1,150.00 lf	0.000	0.00				1,551		36		7.96	9,969
			Crushed Stone, Bedding 6" Depth	21.00 lf	0.000	0.00				121		36		7.96	1,580
			6" Dia Non-Pert HDPE Compurgated Tubing Lateral Outlet Pipes (EL. 859)	14,833.00 lf	0.000	0.00				106,746		44,481		10.20	151,227
			Backfill For 6" Dia Non-Perforated HDPE (12.381 bcy)	21,824.00 lf	0.000	0.00				125,646		37,103		7.46	162,748
			Cul For 6" Dia Non-Perforated HDPE (18.148 bcy)	16,276.00 lf	0.250	0.250				109,934		45,810		10.20	155,744
			Backfill For 6" Dia Perforated HDPE (12.730 bcy)	2,000.00 lf	0.200	0.200				10,917		1,698		7.96	15,926
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 763)	378.00 lf	0.150	0.150				1,632		3,351		14.87	5,545
			Geotextile Woven Mottifament	1,559.00 lf	0.021	0.021				913		109		2.86	4,173
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,790.00 lf	0.200	0.200				20,868		6,273		7.96	30,178
			1081 Crushed Stone	716.00 lf	0.150	0.150				3,062		913		14.87	10,503
			Geotextile Woven Mottifament	2,948.00 lf	0.021	0.021				1,730		206		2.86	7,906
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,180.00 lf	0.200	0.200				22,707		6,866		7.96	33,225
			1081 Crushed Stone	786.00 lf	0.150	0.150				3,354		1,002		14.87	11,530
			Geotextile Woven Mottifament	3,238.00 lf	0.021	0.021				1,859		226		2.86	6,878
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 782)	3,825.00 lf	0.200	0.200				21,425		6,457		7.96	31,254
			1081 Crushed Stone	742.00 lf	0.150	0.150				3,204		946		14.87	10,895
			Geotextile Woven Mottifament	3,053.00 lf	0.021	0.021				1,762		214		2.86	6,187
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	6,410.00 lf	0.200	0.200				34,969		10,610		7.96	51,042
			1081 Crushed Stone	1,211.00 lf	0.150	0.150				5,229		1,544		14.87	17,655
			Geotextile Woven Mottifament	4,889.00 lf	0.021	0.021				2,926		10,992		2.86	13,371
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	6,090.00 lf	0.200	0.200				33,242		10,080		7.96	48,494
			1081 Crushed Stone	1,151.00 lf	0.150	0.150				4,970		1,447		14.87	16,895
			Geotextile Woven Mottifament	4,737.00 lf	0.021	0.021				2,760		9,592		2.86	12,703
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	5,920.00 lf	0.200	0.200				32,205		9,765		7.96	46,981
			1081 Crushed Stone	1,115.00 lf	0.150	0.150				4,814		1,422		14.87	16,357
			Geotextile Woven Mottifament	4,599.00 lf	0.021	0.021				2,893		9,292		2.86	12,300
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200	0.200				31,659		9,600		7.96	46,185
			1081 Crushed Stone	1,096.00 lf	0.150	0.150				4,732		1,387		14.87	16,078
			Geotextile Woven Mottifament	4,511.00 lf	0.021	0.021				2,647		9,134		2.86	12,097
			12" Dia Forca Main HDPE Perimeter Underdrain (EL. 783)	2,580.00 lf	0.250	0.250				17,604		13,087		12.96	33,432
			1091 Crushed Stone	675.00 lf	0.150	0.150				2,483		733		14.87	8,436
			Submersible Pumping Station Equipment Package	1.00 ea	56.000	56.000				2,266		5,085		7,650.57	7,561
			60" Diameter Catch Basin (Precast)	1.00 ea	60.000	60.000				1,810		5,338.36		5,338.36	5,338
			Geotextile Woven Mottifament	2,283.00 lf	0.021	0.021				1,346		4,643		2.86	6,149
Groat Seal Storm Drain - 24" Diameter (Pump & Plug)	64.00 ea	1,000	54.00 mh				489		2,956		96.19	4,870			
Seat Weld 1/4" Thick A-36 Steel Plate	2.00 ea	4,000	8.00 mh				304		80		243.02	486			
Groat Seal Storm Drain - 24" Diameter (Pump & Plug)	53.00 ea	1,000	53.00 mh				480		480		96.19	4,780			
Seat Weld 1/4" Thick A-36 Steel Plate	23.00 ea	4,000	46.00 mh				212		212		243.02	486			
Groat Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4,000	8.00 mh				645		102		96.19	2,074			
24" CMP Storm Drain	38.00 lf	0.480	18.24 mh				498		102		35.24	1,339			
Excavation For 24" Dia Pipe (28 bcy)	30.00 cy	0.200	6.00 mh				173		77		17.13	360			
Bedding For 24" Culvert	21.00 cy	0.320	6.72 mh				68		166		17.13	102			
38" CMP Storm Drain	72.00 lf	0.600	43.20 mh				2,709		7		56.80	4,233			
Excavation For 38" Dia Pipe (67 bcy)	81.00 cy	0.200	16.20 mh				265		207		56.80	4,233			
Backfill For 38" Diameter CMP (47 bcy)	57.00 cy	0.320	18.24 mh				451		451		17.13	976			
Bedding For 38" Culvert	9.00 lf	0.500	4.50 mh				15		15		17.13	230			
Upper & Lower LDPE Geomembrane	10,380.00 cy	0.050	513.60 mh				58,760		2,076.00		8.31	96,229			
Sediment Trap (3,630 bcy)	110,688.00 lf	0.040	4,356.00 cy				157,885		247,653		8.31	418,651			
Inlet Drms/Swan Pond			35,789.66 hrs				1,016,066		495,205		4.92	10,389			
Capital							1,016,066		495,205		265.58	1,768,533			
01							35,789.66 hrs		495,205		265.58	1,768,533			
Ash In Pond	Capital		Erect Silt Fence	1,000.00 lf	0.069	66.57 mh	1,984	502		317		2.81	2,613		
			Geotextile (Nonwoven Erosion Protection Channel)	4,300.00 lf	0.018	66.80 mh	1,963	5772		175		1.94		2,911	
			D50 6" Riprap	5,215.00 lf	0.320	1,668.80 mh	49,667	53,077		28,865		24.85		129,566	
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pc)	2,004.00 lf	0.066	182.35 mh	6,056	16,190		3,066		13.63		23,742	
			Slg 1-3 CMP Mtl Spillway (1/2 of 48" Dia Rise Stand Pipe @ 128 F/EA)	4.00 ea	166.084	664.33 mh	20,459	20,459		2,795		10,800.64		43,443	
			Cul (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 bcy	52.00 cy	0.400	20.80 mh	589			177		14.91		776	
			Fill With 1032 Compacted/Coursed Stone	83.00 lf	0.400	33.20 mh	1,107			589		28.99		2,510	

178875



Spreadsheet Report  
KIF05093BR/FLY&BOT ASH

Location	Activity	Outage Set	Description	Thruout Quantity	Labor Productivity	Loss Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
		Capital	Perimeter Road Surfacing - Bottom Ash Perimeter Road Surfacing - Crushed Stone Compacted Clay Liner, 6" Lifts (300,000 bcy) Craneage Layer (1" Lifts) For Liner (No. 5) Stone Geotextile For Underdrain Pipes 6" Dia. HDPE SDR 17 Perforated Pipe 6" Dia. HDPE SDR 17 Perforated Pipe Concrete Anchors For Underdrain Piping 6" Dia. CIP For Outlet Structure 72" Dia. CIP For Rear Exc. Outlet Structure 48" Dia. CIP For Rear Exc. Outlet Structure 48" Dia. CIP Outlet Pipe (Principle Stillwall) Cut. Holes In River Seed / Fertilize / Lime Future Borrow Area Composite Concrete For River Base (Assume 7 x 7 x 2) Anti-Sleep Collars (Assume Concrete) Gypsum On Peninsula 03	2,400.00 cy 2,400.00 lf 168,000.00 cy 168,000.00 lf 6,400.00 lf 6,400.00 lf 85.00 ea 70.00 ea 6.00 lf 7.00 lf 150.00 lf 20.00 ac 4.00 cy 7.00 ea	1,904,900 0.120 1,200,600 0.968 0.011 0.200 12.600 7.000 2.000 1.081 0.920 1.000 10.000 75.000	1.26 cd 348.00 mh 330.00 cd 16,128.00 mh 58.86 mh 1,280.00 mh 10.00 mh 1,682.50 mh 10.00 cd 10.00 cd 7.84 mh 2.610 3.00 mh 1.294 16.984 5.076 2,650.637 81,685.91 hrs 2,659.637 81,685.91 hrs	3,652 11,319 1,020,046 507,694 1,723 34,935 248 34,373 6,497 337 214 7,404 74 923 1,373 1,949,718 808,975 2,320,799 2,320,799 2,320,799 2,320,799	26,323 1,452,276 7,608 10,993 407 10,157 1,951 936 7,040 15 105 1,373 1,949,718 808,975 2,320,799 2,320,799 2,320,799 2,320,799	0	0	0	0	0	6,170 41,050 2,128,285 2,217,010 9,635 50,987 47,309 1,957 376,24 170,64 10,556 47,719 2,955.93 555.30 3,347.80 7,839.123 7,839.123 7,839.123 7,839.123
5	Miscellaneous	Capital	Non Manual Mobilize, Dng Test, Misc Other, & Demobilize Capital Miscellaneous 05	1.00 ls 1.00 ls	26,149.140 14,502.318	28,148.14 mh 14,502.82 mh	1,407,457 470,900	0	0	253,500 253,500 253,500 253,500	0	1,407,457.00 724,400.00	1,407,457 724,400 2,131,857 2,131,857 2,131,857 2,131,857	
5	Drg Call/P1 Opr Cost	O & M	Elv. 810 To Elv. 866 Bottom Ash Dike Fill Dredge Wet Dip. And Slack Disposal Life (Assume Dike & Dredge Ash) O & M Drg Call/P1 Opr Cost	1.00 lot 627,419.00 cy 4,659,854.00 cy 676,668.00 cy 12.90 yr	1,300,000 375,000	978.79 cd 1,810.28 cd	1,159,419 531,659	0	7,631,580 7,631,580	0	0	0 0 0 0 0 0 0	0 0 0 0 0 0 0	
6	Engr/Geotech	Capital	Addition Geotechnical Investigation Capital Engr/Geotech 06	1.00 ls	375,000	0	1,691,078 1,691,078	0	7,734,280 7,734,280	2,231,890 2,231,890	0	102,700.00 102,700.00 11,657,247	102,700 102,700 11,657,247	
6	Gyp On Peninsula Cst	O & M	Cul For Underdrain System 6" Dia Perforated HDPE Perimeter Underdrains Fill For Underdrain System 1081 Crushed Stone, 6" Depth (110 pct) Cul For Lateral Outlet Pipes 6" Dia Non-Perforated HDPE Lateral Outlet Pipes Fill For Lateral Outlet Pipes 1081 Crushed Stone, 6" Depth (110 pct) Gypsum Disposal Stack (Wet Sludge) Wet Cast Gypsum, Gypsum Dike Cut Rim Ditches Life Of Gypsum Disposal Stack O & M Gyp On Peninsula Cst 14	4,407.00 cy 59,491.00 lf 3,525.00 cy 3,272.00 lf 561.00 cy 7,436.00 lf 441.00 cy 409.00 lf 5,535,853.00 cy 1,011,347.00 cy 114,576.00 cy 20.00 yrs	0.200 0.200 0.250 0.150 0.200 0.200 0.250 0.150 375,000 375,000	891.40 mh 11,698.20 mh 881.25 mh 496.60 mh 119.20 mh 1,487.20 mh 110.25 mh 91.35 mh 39,940.32 hrs 39,940.32 hrs 39,940.32 hrs	25,372 24,793 24,793 29,699 837 13,306 1,322 521 792,065 69,793 1,320,101 1,320,101 1,320,101	98,488 10,171 29,699 837 13,306 1,322 521	0	0	0	0	0	32,884 473,718 35,938 47,999 4,109 59,212 4,498 6,000 0 2,676,517 303,821 0 3,644,075 3,644,075 3,644,075
7	Ph 2 Base Construct	O & M	DAVCC For Construction Of Disposal Facility O & M Ph 2 Base Construct 17	1.00 ls	375,000	0	0	0	0	0	0	470,247.87 470,247.87 470,247.87	470,247 470,247 470,247	
8	Ph 2 Initial Const	O & M	Dredge Ash Initial Disposal Life Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain 857 Stone For Outlet Pipe Bedding (135 pct)	461,956.00 cy 7,170.00 lf 9,142.00 lf 1,892.00 lf	0.200 0.200 0.200 0.150	14,744.00 mh 138.34 mh 223.80 mh	40,229 3,604 6,442	12,189 12,437 13,542	0	6,256 430 1,902	0	0.00 7.96 2.66 14.67	0 58,686 16,471 21,887	

(152) 1,175,868

(153) 319,775

(152) 15405

(117) 5868

(117) 751

(117) 5

Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
2	O & M		#67 Slope For Outlet Pipe Bedding (135 pcf) Ph 2 Initial Constr 20	1,658.00 lf	0.200	331.60 mh	9,050	2,744	-	1,408	-	7.96	13,202
				358.00 ln	0.150	50.40 mh	1,451	3,950	-	4,929	-	14.57	-
						2,206.14 hrs	80,777	43,972	709,588	10,427	-	7.96	824,783
						2,206.14 hrs	80,777	43,972	709,588	10,427	-	7.96	824,783
3	O & M		Ph 2 Operational Cost	1.00 lot	1,300.000	196.30 cd	475,359	-	-	396,452	-	0.00	871,821
				255,189.00 cy	1,300.000	-	-	-	-	2,098,277	-	1.57	-
						3.20 yrs	32,745	19,026	6,781	-	-	7.96	91,533
						Perforated Pipe ADS Drain Tube, 6" Diameter	6,781	19,026	6,781	-	-	7.96	91,533
						Geotextile For Underdrain	1,451	3,950	1,451	-	-	2.59	25,687
						#67 Stone For Outlet Pipe Bedding (135 pcf)	1,451	3,950	1,451	-	-	14.67	34,151
						Solid Outlet Pipe ADS Drain 6" Diameter	10,952	21,131	10,952	-	-	7.96	20,592
						#67 Stone For Outlet Pipe Bedding (135 pcf)	10,952	21,131	10,952	-	-	14.67	34,151
						Ph 2 Operational Cost	570,156	66,509	2,098,277	-	-	14.67	3,149,748
						17,574.59 hrs	570,156	66,509	2,098,277	-	-	14.67	3,149,748
						17,574.59 hrs	570,156	66,509	2,098,277	-	-	14.67	3,149,748
4	O & M		Ph 2 Operational Cost	1.00 lot	1,300.000	202.62 cd	430,859	-	-	408,223	-	0.00	839,083
				293,493.00 cy	1,300.000	-	-	-	-	2,373,715	-	3.42	-
						3.70 yrs	34,765	19,839	-	-	-	7.96	94,478
						Perforated Pipe ADS Drain Tube, 6" Diameter	34,765	19,839	34,765	-	-	7.96	94,478
						Geotextile For Underdrain	5,802	20,022	5,802	-	-	2.59	25,687
						#67 Stone For Outlet Pipe Bedding (135 pcf)	5,802	20,022	5,802	-	-	14.67	34,151
						Solid Outlet Pipe ADS Drain 6" Diameter	10,376	21,811	10,376	-	-	7.96	20,592
						#67 Stone For Outlet Pipe Bedding (135 pcf)	10,376	21,811	10,376	-	-	14.67	34,151
						Ph 2 Operational Cost	588,514	70,801	2,373,715	-	-	14.67	3,459,041
						18,140.47 hrs	588,514	70,801	2,373,715	-	-	14.67	3,459,041
						18,140.47 hrs	588,514	70,801	2,373,715	-	-	14.67	3,459,041
4	O & M		Ph 2 Operational Cost	1.00 lot	1,300.000	174.70 cd	423,046	-	-	352,832	-	0.00	775,878
				227,106.00 cy	1,300.000	-	-	-	-	2,114,661	-	1.57	-
						3.30 yrs	35,841	19,932	-	-	-	7.96	61,460
						Perforated Pipe ADS Drain Tube, 6" Diameter	35,841	19,932	35,841	-	-	7.96	61,460
						Geotextile For Underdrain	5,003	17,282	5,003	-	-	2.59	25,687
						#67 Stone For Outlet Pipe Bedding (135 pcf)	5,003	17,282	5,003	-	-	14.67	34,151
						Solid Outlet Pipe ADS Drain 6" Diameter	12,500	3,610	12,500	-	-	7.96	18,330
						#67 Stone For Outlet Pipe Bedding (135 pcf)	12,500	3,610	12,500	-	-	14.67	34,151
						Ph 2 Operational Cost	507,414	61,041	2,114,661	-	-	14.67	3,050,423
						15,640.64 hrs	507,414	61,041	2,114,661	-	-	14.67	3,050,423
						15,640.64 hrs	507,414	61,041	2,114,661	-	-	14.67	3,050,423

Estimate Totals

Labor	13,202,243	391,429.105	hrs				
Material	3,660,722						
Subcontract	16,834,222						
Equipment	10,631,333	280,044.520	hrs				
Other	31,500						
	<u>44,280,020</u>	44,280,020					
Engineered Materials - Ph 2				100.000 %		C	
Adjustment - Eng Materials				(100.000) %		C	
Environmental Costs							
Adjustment Environmental		44,280,020					
		44,280,020					
PPG Civil Engr - Phase 2	30,075			0.183 % @	42.00	A	716
Non-TVA Engr - Phase 2	564,097			2.001 % @	72.00	A	7,854
PPG Proj Cntrl Cost - Phase 2	877			0.006 % @	42.00	A	23
PPG Proj Cntrl Sched - Phase 2	2,923			0.016 % @	42.00	A	20
PPG Cost Estimating - Phase 2	976			0.008 % @	42.00	A	20
PPG Engr Records - Phase 2	960			0.008 % @	42.00	A	23
Phase 2 Other/Other Ctg	600,000	44,880,020				L	
<i>70,000 (15%)</i>							
Rounding		44,880,020					
<b>Total</b>		<b>44,880,020</b>					

KINGSTON FOSSIL PLANT  
OPTION 6 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)

Project name KIF/0509306R1/FLY&BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 0509306R1  
PCN # KIF530  
Requesting Engr Dan Smith  
Option 6  
Revision 1  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 01/21/2005  
Funding Type Capital  
Unit N

Notes  
Dry ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2. Phase 3 not constructed. Gypsum on peninsula)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,380 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity/Outage Seq  
Detail summary

Location	Activity	Change Set	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount					
2	Ash In Pond	Capitel	Erect Sill Fence	1,000.00 lf	0.09	96.57 mh	1,864	502	-	-	317	2,613	2,613					
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.016	68.80 mh	1,933	5,372	184	7,911	-	-	-	7,911				
			D50 6" Riprap	5,215.00 ln	0.320	1,668.80 mh	49,937	26,995	24,895	128,969	-	-	-	128,969				
			3" Stone, 1 Thick To Prevent Erosion (Assume 105pcf)	2,004.00 ln	0.098	199.38 mh	6,958	19,150	13,863	27,312	-	-	-	27,312				
			Sig 18 CMP Mill Spillway (1/2 of 48" Dia Rise Stand Pipe @ 128 FIEs)	4.00 ea	188.094	684.33 mh	20,450	2,793	10,860.84	43,443	-	-	-	43,443				
			Cut (Excavation For Placement Of 18" Dia Half Round Pipe) 43 boy	52.00 sy	0.400	20.80 mh	599	177	14,91	776	-	-	-	776				
			Fill With 1032 Compacted/Crushed Stone	93.00 ln	0.400	37.20 mh	1,197	804	26,99	2,510	-	-	-	2,510				
			30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	17,437	3,642	47,611	46,938	-	-	-	46,938				
			Bedding For 30" CMP, 6" Thick	1,350.00 ln	0.500	675.00 mh	1,943	1,284	3,457	3,457	-	-	-	3,457				
			30" Diameter CMP Stand Pipe (4 Pipes @ 6 Slages w/30" Per Stage)	720.00 lf	0.750	540.00 mh	16,623	2,279	52,70	37,940	-	-	-	37,940				
			D50 6" Riprap Outlet For Metal Spillway	53.00 ea	0.320	16.96 mh	595	539	2,73	1,317	-	-	-	1,317				
			Galvanized Corrugated Metal Anti-Sweep Collar	16.00 ea	16.000	256.00 mh	7,481	4,882	9,814	9,814	-	-	-	9,814				
			Seed/Mulch Disturbed Areas	26.00 ac	-	-	-	-	94,819	2,485.34	-	-	-	2,485.34				
			1032 Crushed Stone Base, 6" Depth	3,520.00 ln	0.120	422.40 mh	13,739	31,650	14,16	46,938	-	-	-	46,938				
			1032 Roller, Compacted Crushed Stone Base, 6" Depth	5,885.00 mh	0.120	926.20 mh	26,872	69,493	14,16	97,478	-	-	-	97,478				
			<b>Base Layers</b>															
			Compacted Fly Ash Base (Fill)	1.00 lot	-	-	-	-	-	-	-	-	-	-	0.00	0		
			Profile/Subgrade	573,650.00 sy	1,300,000	441.27 cd	1,096,679	961,423	3,42	1,959,602	-	-	-	-	1,959,602			
			2.5" Thick Bottom Ash Layer	177,100.00 sy	28,111,000	6.30 cd	5,363	2,670	0.05	7,823	-	-	-	-	7,823			
			0.5" Thick Fly Ash Filler Layer	152,117.00 sy	1,300,000	117.47 cd	294,477	237,361	3,42	521,236	-	-	-	-	521,236			
			18" Dia. Coarse Bottom Ash Drain Columns (head 2 miles, 1,100 boy)	30,543.00 sy	1,300,000	23.49 cd	56,895	47,452	3,42	104,946	-	-	-	-	104,946			
			Pole Top Fly Ash Layer	177,100.00 sy	1,400,000	126.50 cd	74,304	347,537	0.54	94,949	-	-	-	-	94,949			
			<b>Bottom Ash Dike Fill</b>															
			1.0" Layer Of Bottom Ash	61,897.00 sy	1,300,000	46.99 cd	113,791	94,905	3,42	208,696	-	-	-	-	208,696			
			Geosynthetic Clay Liner	183,260.00 sy	1,300,000	4,764.76 mh	135,928	440,312	3,21	568,391	-	-	-	-	568,391			
			4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	26,882.00 lf	0.070	1,825.74 mh	49,829	40,942	3,78	98,533	-	-	-	-	98,533			
			Trenching For The Drain System (4" Dia Underdrains) 968 boy	1,160.00 sy	0.200	232.00 mh	6,678	1,972	7,46	8,650	-	-	-	-	8,650			
			Strip Existing 1" Soil Cover (Phase 1 Expansion) 18,133 boy	22,880.00 sy	800,000	28.70 cd	14,128	28,700	1,27	29,058	-	-	-	-	29,058			
			Anchor Trench Cut	1,308.00 sy	0.200	261.20 mh	7,519	3,330	6,31	10,648	-	-	-	-	10,648			
			Anchor Trench Fill & Compact	1,342.00 sy	0.200	397.44 mh	11,441	9,835	17,13	21,275	-	-	-	-	21,275			
			2.0" Thick Bottom Ash Blended Drain	24,840.00 sy	1,300,000	16.95 cd	45,899	38,281	3,42	84,779	-	-	-	-	84,779			
			1.0" Thick Filler Drain Ash Layer	12,320.00 sy	1,300,000	9.48 cd	22,949	19,140	3,42	42,090	-	-	-	-	42,090			
			Geomembrane	36,890.00 sy	0.050	1,843.00 mh	52,720	4,112	2,68	140,128	-	-	-	-	140,128			
			Perforated Pipe ADS Drain Tube, 6" Diameter	4,849.00 lf	0.200	969.20 mh	26,998	8,196	7,96	39,384	-	-	-	-	39,384			
			Geotextile For Underdrain	4,121.00 lf	0.150	150.15 mh	4,322	2,888	2,68	11,051	-	-	-	-	11,051			
			#57 Stone For Outlet Pipe Bedding (135 pcf)	1,001.00 ln	0.150	150.15 mh	2,176	1,467	14,674	14,674	-	-	-	-	14,674			
			#57 Stone For Outlet Pipe Bedding (135 pcf)	250.00 ln	0.150	37.50 mh	319	1,650	7,96	9,942	-	-	-	-	9,942			
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL 760)	302.00 lf	0.200	60.40 mh	1,648	500	7,96	2,005	-	-	-	-	2,005			
			1081 Crushed Stone, Bedding 6" Depth	10,100.00 ln	0.500	5,050.00 mh	144	95	25,61	256	-	-	-	-	256			
			1081 Crushed Stone, Bedding 6" Depth	1,512.00 lf	0.200	302.40 mh	8,253	2,503	7,96	12,040	-	-	-	-	12,040			
			1081 Crushed Stone	268.00 ln	0.500	134.00 mh	4,116	1,270	25,61	25,61	-	-	-	-	25,61			
			Geotextile Woven Monofilament	1,176.00 sy	0.021	24.19 mh	680	2,381	2,68	3,154	-	-	-	-	3,154			
			Cut For Underdrain System	224.00 sy	0.200	44.80 mh	1,290	381	7,48	1,870	-	-	-	-	1,870			
			Backfill For Underdrain System	188.00 sy	0.250	47.00 mh	1,209	504	10,20	1,713	-	-	-	-	1,713			
			Certification	1.00 ls	-	-	-	-	-	31,500	-	-	-	-	31,500			
			Capitel															
			Ash In Pond															
							65,995.56 hrs	1,470,001	412,155	1,470,001	4,937,335	-	-	-	4,937,335	4,937,335		
							66,895.56 hrs	1,470,601	412,155	1,470,601	4,937,335	-	-	-	4,937,335	4,937,335		
			3	Gypsum On Peninsula	Capitel	<b>Clear And Grub</b>												
						Clear And Grub	90.00 ac	72,000	6,480.00 mh	193,775	-	-	-	-	-	-	0	
						Disc Future Borrow Area (Assumed For Compacted Clay Material)	20.00 ac	6,000	3.33 cd	1,668	584	3,941.32	354,719	-	-	-	354,719	
						Strip 1" (1" Vegetation And Topsoil - Spot At Stockpile)	129,000.00 sy	0.020	2,580.00 mh	79,390	92,238	1,25	161,618	-	-	-	-	161,618
						Cut For Ditch (6,815 Boy)	6,878.00 sy	1,200,000	5.82 cd	10,981	12,041	3,30	23,022	-	-	-	-	23,022
						D50 6" Riprap	4,238.00 ln	0.320	1,356.48 mh	40,371	21,837	24,85	105,319	-	-	-	-	105,319
						Seed Ditch	6,878.00 sy	0.612	68.74 mh	3,583	0.51	3,583	-	-	-	-	-	3,583
						Joint Mailing	6,878.00 sy	0.612	68.74 mh	2,369	427	1.19	6,260	-	-	-	-	6,260
						Riprap D50 Size 6"	2,344.00 ln	0.320	750.00 mh	22,324	23,838	24,85	58,237	-	-	-	-	58,237
						Cut For Basin (3,592 Boy)	4,300.00 sy	1,200,000	3.58 cd	6,767	7,420	3,30	14,186	-	-	-	-	14,186
						Erect Sill Fence (Trench Bottom Of Fence, 10% Hay Bales)	4,800.00 lf	0.068	335.99 mh	9,769	1,554	2,81	13,784	-	-	-	-	13,784
						Seed/Mulch Disturbed Areas	25.00 ac	-	-	-	-	82,134	2,485.34	-	-	-	-	2,485.34
						Sill Fence	1,000.00 lf	0.020	20.00 mh	526	320	0.65	848	-	-	-	-	848
						<b>Disposal Facility Construction</b>												
						Allowance For Kant, Geologic Features	1.00 ls	-	-	-	-	-	513,600.00	-	-	-	-	513,600.00
						Vegetation Mitigation Costs	1.00 ls	-	-	-	-	-	280,000.00	-	-	-	-	280,000.00
						Cut For Stormwater Runoff Pond (2,000 boy)	2,400.00 sy	800,000	3.00 cd	3,199	2,865	2,39	6,124	-	-	-	-	6,124
						Cleanout Stormwater Runoff Pond (2,300 boy)	2,300.00 sy	383,333	7.20 cd	3,819	2,950	3,30	47,892	-	-	-	-	47,892
						Fill For Stormwater Runoff Pond (12,000 boy)	14,400.00 sy	1,904,000	7.55 cd	22,757	31,118	2,57	61,710	-	-	-	-	61,710
						Bottom Ash (South Access Road)	2,400.00 sy	2,800,000	0.21 cd	645	701	1,345	1,001	-	-	-	-	1,001
						Cut And Fill Balance (500 boy)	400.00 sy	2,800,000	0.21 cd	468	542	2,50	1,001	-	-	-	-	1,001
						Cut And Fill Balance (189,719 boy)	227,683.00 sy	2,800,000	61.31 cd	244,608	295,908	2,24	510,463	-	-	-	-	510,463
						Cut & Spoil Select Cut For Future 1 Ft Clay Layer In Final Cover	145,901.00 sy	1,904,000	76.16 cd	166,178	196,528	2,50	362,107	-	-	-	-	362,107
						Crushed Stone Base (South Access Road)	2,900.00 ln	1,300,000	0.120	3,417	41,058	14,16	41,058	-	-	-	-	41,058
						Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 ln	0.120	40.80 mh	1,327	3,085	14,16	4,814	-	-	-	-	4,814

(10) 493,734



Location	Activity	Usage Req	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/bt	Total Amount		
5	Miscellaneous	Capital	Crushed Stone Base	1,400.00 in	0.120	168.00 mh	5,484	12,707	-	-	1,650	-	14,16	19,821	
			Repair For Stormwater Runoff Pond	4,300.00 in	0.200	860.00 mh	25,595	43,731	18,441	47,957	-	18,441	-	20,41	87,87
			Ditch For Runoff (24' wide x 2' deep)	29,500.00 in	0.500	14,750.00 mh	19,881	238,995	100,781	479,657	-	100,781	-	20,41	719,537
			Geotextile (1.5' Deep, 1.5' Thick)	16,500.00 sq	0.044	726.00 sq	10,911	238,995	12,904	23,816	-	12,904	-	3,25	35,443
			New Fencing (Including Gate)	2,000.00 ft	0.015	30.00 ft	8,420	26,039	995	35,443	-	995	-	1,82	37,263
			Personal Swinging Gate	1.00 ea	-	-	370	4,211	2,005	4,211	-	4,211	-	2,005	6,216
			Sign Chain, 20' PLY, With Motorized Operator	1.00 ea	-	-	370	4,211	2,005	4,211	-	4,211	-	2,005	6,216
			Pipe Repair	2,400.00 in	0.500	1,200.00 in	288	17,459.00	17,459.00	17,459.00	-	17,459.00	-	26.93	17,485.93
			Perimeter Road Surfacing - Bottom Ash	2,800.00 sq	1,904.000	3,412	3,412	6,176	3,412	6,176	-	3,412	-	2,57	8,748
			Crushed Stone	2,800.00 sq	0.120	336.00 mh	11,319	26,323	3,412	29,735	-	3,412	-	14,16	43,895
			Compacted Clay Layer, 6" (339,000 bcy)	408,800.00 in	1,200.000	338.00 mh	1,131.9	26,323	3,412	29,735	-	3,412	-	14,16	43,895
			Drainage Layer (1 Ft Thick) For Liner (No. 57 Stone)	168,000.00 in	0.098	16,416.00 mh	507,694	1,452,276	203	1,655,276	-	203	-	1,67	1,656,953
			Geotextile For Underdrain Pipes	5,700.00 sq	0.011	58.80 sq	1,723	7,608	10,593	18,211	-	10,593	-	7,96	26,174
			6" Dia HDPE SDR 17 Perforated Pipe	6,400.00 lf	0.200	1,280.00 mh	34,935	10,593	13,110	23,703	-	13,110	-	6,55	30,213
			6" Dia HDPE Standard Fittings	50.00 ea	0.200	10.00 mh	248	407	407	407	-	407	-	13.10	420.10
			Concrete Anchors For Underdrain Piping	70.00 ea	12.500	8.75 mh	34,373	10,157	2,776	12,933	-	2,776	-	656.58	13,589.58
			Preolith Subgrade	70.00 ac	7.000	10.00 cd	9,497	10,000	4,980	14,977	-	4,980	-	12,67	19,647
			72" Dia CMP For Outlet Structure	6.00 lf	2.000	12.00 mh	337	1,851	70	1,921	-	70	-	1,95	2,021
			48" Dia CMP For Rise For Outlet Structure	7.00 lf	1.091	7.64 mh	214	936	45	981	-	45	-	70,37	10,056
			48" Dia CMP Outlet Pipe (Principle Spillway)	150.00 lf	0.620	93.00 mh	2,610	7,404	542	7,946	-	542	-	28,92	8,488
			Out. Holes In Rise	3.00 ea	1.000	3.00 mh	74	47,719	15	47,734	-	15	-	2,985.93	47,749
			Seed / Fertiliz / Lime Future Borrow Area	20.00 ac	10.000	40.00 mh	1,284	823	105	928	-	105	-	555.30	1,383.30
			Composite Concrete For Rise Base (Assume 7' x 7' x 2')	4.00 cy	75.000	525.00 mh	16,984	5,078	1,373	6,451	-	1,373	-	23,433	29,884
			Anti-Sweep Collars (Assume Concrete)	7.00 ea	10.000	70.00 mh	2,659,631	1,948,718	908,975	3,608,306	-	908,975	-	7,839.123	3,616,145
			Gypsum On Peninsula	03	81,685.91 hrs	81,685.91 hrs	2,659,631	1,948,718	908,975	3,608,306	-	908,975	-	7,839.123	3,616,145
Dry Fly Ash Conversion Capital Cost	1.00 ls	16,973,460	16,973,460	998,673	-	25,675,000	26,673,673	-	25,675,000	-	-	26,673,673			
Non Manual	1.00 ls	11,182,410	11,182,410	345,700	-	531,900	11,714,310	-	531,900	-	-	12,246,210			
Mobilize, Dng Test, Misc Other, & Demobilize	1.00 ls	578,848.00 cy	578,848.00 cy	1,344,373	1,344,373	186,200	2,030,646	-	186,200	-	-	2,216,846			
Miscellaneous	05	31,135.88 hrs	31,135.88 hrs	1,344,373	1,344,373	186,200	2,030,646	-	186,200	-	-	2,216,846			
Dry Fly Ash Conversion Capital Cost	1.00 lot	5,476,070.00 cy	5,476,070.00 cy	10,903,210	-	25,675,000	36,578,210	-	25,675,000	-	-	62,253,210			
Dry Ash Stack	5,476,070.00 cy	375,000	1,810.26 cd	531,659	-	1,796,593	2,328,252	-	1,796,593	-	-	4,124,845			
Wet Dip And Stack Bottom Ash Only	12.90 yr	0.50 mile	372,915.76 hrs	11,434,869	-	8,576,950	20,011,819	-	8,576,950	-	-	28,588,769			
Disposal Life (Assume Dike & Dredge Ash)	0.50 mile	372,915.76 hrs	372,915.76 hrs	11,434,869	-	8,576,950	20,011,819	-	8,576,950	-	-	28,588,769			
Haul Distance (Round Trip)	1.00 ls	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,117,375	-	102,700	-	-	1,220,075			
O & M	06	11,434,869	11,434,869	375,000	-	102,700	1,117,375	-	102,700	-	-	1,220,075			
Dry CallP1 Opr Cost	1.00 ls	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,117,375	-	102,700	-	-	1,220,075			
Addition Geotechnical Investigation	Capital	Engr/Geotech	06	5,535,853.00 cy	1,014,675.00 cy	1,117,375	6,653,248	-	1,117,375	-	-	7,770,623			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375	-	102,700	-	-	1,230,075			
Gyp On Peninsula Cst	O & M	39,940.32 hrs	39,940.32 hrs	1,320,101	-	3,644,075	3,984,176	-	3,644,075	-	-	7,628,251			
Capital	Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	-	102,700	-	-	1,127,375			
Engr/Geotech	06	1,014,675.00 cy	1,014,675.00 cy	375,000	-	102,700	1,127,375								

Spreadsheet Report  
KIF0509306R1/FLY&BOT ASH

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
0	Ph 2 Initial Constr					0.00 hrs	0	0	470,247	0	0	470,247	470,247
		O & M	Dry Stack Ash Quantities	914,999.00 cy	1,100,000	599.01 cd	1,224,324	821,071		821,071		3.33	2,045,395
			Initial Construction Disposal Life (Assume Dry Ash Stack)	1.30 yrs								0.00	0
			C & M			40,248.59 hrs	1,224,324	821,071		821,071			2,045,395
			Ph 2 Initial Constr			40,248.59 hrs	1,224,324	821,071		821,071			2,045,395
2	Ph 2 Operational Cost												
		O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Dry Stack Ash Quantities	1,598,895.00 cy	1,100,000	1,445.17 cd	3,185,166	2,122,663		2,122,663		3.33	5,287,829
			Stage 1 Disposal Life (Assume Dry Stack Area)	3.30 yrs								0.00	0
			Haul Distance (Round Trip)	0.50 mile								0.00	0
			C & M			104,052.11 hrs	3,185,166	2,122,663		2,122,663			5,287,829
			Ph 2 Operational Cost			104,052.11 hrs	3,185,166	2,122,663		2,122,663			5,287,829
3	Ph 2 Operational Cost												
		O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Dry Stack Ash Quantities	1,773,076.00 cy	1,100,000	1,611.86 cd	3,530,309	2,367,540		2,367,540		3.33	5,897,849
			Stage 2 Disposal Life (Assume Dry Stack Area)	3.70 yrs								0.00	0
			C & M			116,055.66 hrs	3,530,309	2,367,540		2,367,540			5,897,849
			Ph 2 Operational Cost			116,055.66 hrs	3,530,309	2,367,540		2,367,540			5,897,849
4	Ph 2 Operational Cost												
		O & M	Stage 3 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Dry Stack Ash Quantities	1,872,032.00 cy	1,100,000	1,628.11 cd	3,129,998	2,099,078		2,099,078		3.33	5,229,076
			Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs								0.00	0
			C & M			102,895.99 hrs	3,129,998	2,099,078		2,099,078			5,229,076
			Ph 2 Operational Cost			102,895.99 hrs	3,129,998	2,099,078		2,099,078			5,229,076



KINGSTON FOSSIL PLANT  
OPTION 7 - WET ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)

Project name KIF0509307R1/FLYEBOT ASH

Engineer DAN SMITH

Estimator C. L. Torrey

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Plant Estimate # PCN # Requesting Engr Option Revision Phase Estimate Type Estimate Accuracy Est. Issue Date Funding Type Unit

Ash KIF 0509307R1 KIF530 Dan Smith 7 1 2 Preliminary +/- 20% 01/21/2005 Capital N

(Wet ash in dredge call/Phase 1, Wet gypsum in Phase 2, Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge call seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Seq'  
Detail summary





Location	Activity	Coverage Size	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
1	O & M		<b>Wet Sluice Sedimented Gypsum Quantities</b>	<b>451,295.00 cy</b>									0		
			<b>Initial Disposal Life</b>	<b>1.40 yrs</b>										0	
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	40,229	6,158	58,696					7.96	58,696
			Geotextile For Underdrain	6,420.00 sy	0.021	126.34 mh	3,604	12,437	16,471					2.66	16,471
			#57 Stone For Outlet Pipe Bedding (135 pcf)	1,492.00 ln	0.150	223.80 mh	5,482	19,542	21,897					14.67	21,897
			Solid Outlet Pipe ADS Drain 6" Diameter	1,558.00 lf	0.200	311.60 mh	6,050	2,744	13,202					7.96	13,202
			#57 Stone For Outlet Pipe Bedding (135 pcf)	338.00 ln	0.150	50.40 mh	1,451	4,929	14,687					14.67	14,687
			O & M			60,777	43,972	115,175							115,175
			Ph 2 Initial Constr			2,206.14 hrs	60,777	43,972	115,175						115,175
			10			<b>2,206.14 hrs</b>	<b>60,777</b>	<b>43,972</b>	<b>115,175</b>						<b>115,175</b>
			Rim Ditches												
O & M			134,378.00 cy	235.000	571.40 cd	167,816	399,260					4.22	567,076		
O & M			4,571.20 hrs		167,816	399,260							567,076		
Rim Ditches															
11															
Ph 2 Operational Cost															
O & M			1.00 lot	235.000	1,085.91 cd	315,923						0.00	1,077,693		
O & M			1,334,496.00 cy									0.00	1,077,693		
Stage 1 (3 To 1 Side Slopes)												0.00	0		
Wet Sluice Gypsum Quantities			<b>4.90 yrs</b>										0		
<b>Stage 1 Disposal Life (Assumes Dikes &amp; Sluice Gypsum)</b>													0		
Perforated Pipe ADS Drain Tube, 6" Diameter			11,695.00 lf	0.200	2,299.00 mh	62,746	15,028					7.96	91,533		
Geotextile For Underdrain			9,370.00 sy	0.021	197.04 mh	9,671	19,396					2.68	25,897		
#57 Stone For Outlet Pipe Bedding (135 pcf)			2,223.00 ln	0.150	349.20 mh	10,052	34,151					14.67	34,151		
Solid Outlet Pipe ADS Drain 6" Diameter			2,898.00 lf	0.200	579.60 mh	2,196	20,592					7.96	20,592		
#57 Stone For Outlet Pipe Bedding (135 pcf)			524.00 ln	0.150	78.60 mh	2,293	668					14.67	7,887		
O & M													1,257,343		
Ph 2 Operational Cost													1,257,343		
12													1,257,343		
Ph 3 Operational Cost															
O & M			1.00 lot	235.000	1,120.86 cd	329,169						0.00	1,112,392		
O & M			1,509,673.00 cy									0.00	1,112,392		
Stage 2 (3 To 1 Side Slopes)												0.00	0		
Wet Sluice Gypsum Quantities			<b>5.40 yrs</b>										0		
<b>Stage 2 Disposal Life (Assume Dike &amp; Sluice Gypsum)</b>													0		
Perforated Pipe ADS Drain Tube, 6" Diameter			11,895.00 lf	0.200	2,373.00 mh	64,785	19,639					7.96	94,479		
Geotextile For Underdrain			9,890.00 sy	0.021	203.40 mh	9,922	20,022					2.68	26,516		
#57 Stone For Outlet Pipe Bedding (135 pcf)			2,403.00 ln	0.150	360.45 mh	10,376	34,151					14.67	34,151		
Solid Outlet Pipe ADS Drain 6" Diameter			2,670.00 lf	0.200	534.00 mh	14,574	4,419					7.96	21,261		
#57 Stone For Outlet Pipe Bedding (135 pcf)			541.00 ln	0.150	81.15 mh	2,336	690					14.67	7,263		
O & M													1,297,825		
Ph 2 Operational Cost													1,297,825		
13													1,297,825		
Ph 3 Operational Cost															
O & M			1.00 lot	1,100.000	517.99 cd	1,134,475						3.33	1,695,291		
O & M			1,348,800.00 cy									0.00	1,695,291		
Disposal Life (Assumes Dry Stack Ash)													0		
<b>Disposal Life (Assumes Dry Stack Ash)</b>			<b>1.20 yrs</b>										0		
Dry Stack Ash Quantities			1.00 lot	1,100.000	1,226.53 cd	2,696,305						3.33	4,487,828		
O & M			1,504,925.00 cy									0.00	4,487,828		
Stage 1 Disposal Life (Assume Dike Stack)													0		
<b>Stage 1 Disposal Life (Assume Dike Stack)</b>			<b>2.80 yrs</b>										0		
Dry Stack Ash Quantities			1.00 lot	1,100.000	88,309.96 hrs	2,686,305						0.00	4,487,828		
O & M			1,504,925.00 cy									0.00	4,487,828		
Ph 3 Operational Cost													4,487,828		
14													4,487,828		
Ph 3 Operational Cost															
O & M			1.00 lot	1,100.000	1,389.02 cd	2,996,204						0.00	5,005,556		
O & M			1,504,925.00 cy									0.00	5,005,556		
Stage 2 (3 To 1 Side Slopes)													0		
<b>Stage 2 Disposal Life (Assume Dry Stack)</b>			<b>3.20 yrs</b>										0		
Dry Stack Ash Quantities			1.00 lot	1,100.000	98,497.64 hrs	2,996,204						0.00	5,005,556		
O & M			1,504,925.00 cy									0.00	5,005,556		
Ph 3 Operational Cost													5,005,556		
15													5,005,556		
Ph 3 Operational Cost															
O & M			1.00 lot	1,100.000	1,389.02 cd	2,996,204						0.00	5,005,556		
O & M			1,504,925.00 cy									0.00	5,005,556		
Stage 2 (3 To 1 Side Slopes)													0		
<b>Stage 2 Disposal Life (Assume Dry Stack)</b>			<b>3.20 yrs</b>										0		
Dry Stack Ash Quantities			1.00 lot	1,100.000	98,497.64 hrs	2,996,204						0.00	5,005,556		
O & M			1,504,925.00 cy									0.00	5,005,556		
Ph 3 Operational Cost													5,005,556		
16													5,005,556		
Ph 3 Operational Cost															

Location	Activity	Charge Set	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Mileage Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
7	Ph 3 Operational Cost	O & M	Dry Stack Ash Quantities O & M Ph 3 Operational Cost	98,497.64 hrs 2.80 yrs	1,100,000	98,497.64 hrs	2,996,204	2,009,452	2,009,452	2,009,452		5,005,556	5,005,556
8	Ph 2 Operational Cost	O & M	Stage 3 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dry Stack & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) O & M Ph 2 Operational Cost	1.00 lot 227,106.00 cy 1,344,916.00 cy 4.80 yrs	0.200 0.021 0.150 0.200 0.150	2,046.00 mh 175.35 mh 310.80 mh 460.40 mh 69.80 mh 10,793.73 hrs 61,041	56,841 5,003 6,947 12,586 2,012 366,194 61,041 368,194	16,932 17,262 18,607 3,810 4,230 689,743 61,041 689,743	8,687 597 2,842 1,955 694 689,743 689,743 689,743	8,687 597 2,842 1,955 694 689,743 689,743 689,743	7.86 2.99 4.57 7.96 14.07	81,460 32,951 30,395 18,932 16,636 1,116,978 1,116,978 1,116,978	
9	Ph 2 Operational Cost	O & M	Stage 4 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum & Ash Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) O & M Ph 2 Operational Cost	1.00 lot 702,654.00 cy 2.70 yrs	235,000	718.43 cd	210,697			501,896		0.00	712,993
10	Ph 3 Operational Cost	O & M	Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities O & M Ph 3 Operational Cost	1.00 lot 577,613.00 cy 1.20 yrs	1,100,000	565.10 cd	1,150,265	771,271		771,271		0.00	1,921,536
			Stage 4 Disposal Life (Dry Stack Ash)	37,807.40 hrs		37,807.40 hrs	1,150,265	771,271		771,271		0.00	1,921,536
			Ph 3 Operational Cost	37,807.40 hrs		37,807.40 hrs	1,150,265	771,271		771,271		0.00	1,921,536



Estimate Totals

Labor	20,987,940	653,942,517	hrs	
Material	2,058,231			
Subcontract	30,783,866			
Equipment	16,702,837	477,655,501	hrs	
Other	50,000			
	<u>70,582,874</u>			
Engineered Materials - Ph 2		100.000 %		C
Adjustment - Engr Materials		(100.000) %		C
	70,582,874			
Environmental Costs		100.000 %		C
Adjustment Environmental		(100.000) %		C
	70,582,874			
FPG Mech Engr - Phase 2	7,001	0.025 % @ 42.00	A	197
FPG Elec Engr - Phase 2	7,001	0.025 % @ 42.00	A	197
FPG Civil Engr - Phase 2	15,999	0.058 % @ 42.00	A	381
Non-TVA Engr - Phase 2	281,001	0.597 % @ 72.00	A	3,933
FPG Proj Cntrl Cost - Phase 2	1,000	0.004 % @ 42.00	A	24
FPG Proj Cntrl Sched - Phase 2	2,000	0.004 % @ 42.00	A	48
FPG Cost Estimating - Phase 2	1,000	0.004 % @ 42.00	A	24
FPG Engr Records - Phase 2	1,000	0.004 % @ 42.00	A	24
	<u>317,001</u>			
Rounding				
	70,899,875			
<b>Total</b>	<b>70,899,875</b>			

31700 10%

KINGSTON FOSSIL PLANT  
OPTION B - DRY ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)

Project name KIF/0509308R1/FLY&BOT ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 0509308R1  
RCN # KIF530  
Requesting Engr Dan Smith  
Option B  
Revision 1  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 01/21/2005  
Funding Type Capital  
Unit N

Notes All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage recirculation. 3 phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Seq'  
'Detail' summary

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
4	Ash / Gypsum in Pond	Capital	Erect Sill Fence	1,000.00 lf	0.069	68.57 mh	1,964	502		317		2.61	2,813		
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.016	68.80 mh	1,963	6,772	176					1,911	
			D50 # 8 Riprap	5,215.00 ln	0.320	1,688.80 mh	49,697	28,856	24,856					129,568	
			3" Stone, 1" Thick To Prevent Erosion (Assume 106 pcf)	2,004.00 ln	0.086	192.38 mh	6,056	18,190	20,996					27,312	
			Sig 1-6 CMP Mill Sillway (1/2 of 48" Dia Riser Stand Pipe @ 128 FUGs)	4.00 ea	166.084	864.33 mh	20,458	2,795	10,860.64					10,860.64	
			Cell (Excavation For Placement Of 48" Dia Half Round Pipe) 43 box	52.00 sy	0.400	20.80 mh	569	177	14,911					14,911	
			Fill With 1022 Compacted/Overlaid Stone	69.00 ln	0.400	37.20 mh	1,107	804	28,999					28,999	
			30" Diameter Curb Culvert	1,000.00 ln	0.600	600.00 mh	17,487	26,442	47,611					47,611	
			Grading For 30" Curb, 8" Thick	125.00 ln	1.943	87.50 mh	1,943	1,284	2,279					3,457	
			30" Diameter Curb Stand Pipe (4 Pipes @ 6 Stages w/30" Per Stage)	720.00 lf	0.750	540.00 mh	16,623	15,038	29,700					29,700	
			D50 # 8 Riprap Collar For Metal Sillway	53.00 ln	0.330	18.66 mh	505	539	24,856					24,856	
			Sawtooth Compacted Metal Anti-Step Collar	16.00 ea	16.000	256.00 mh	7,481	4,882	1,571					1,571	
			See In-Channel Discharge Assess	28.00 sc					64,619					64,619	
			1022 Crushed Stone Base, 6" Depth	3,520.00 ln	0.120	422.40 mh	13,739	31,950	4,147					4,147	
			1022 Roller Compacted Crushed Stone Base, 6" Depth	5,895.00 ln	0.120	828.20 mh	28,672	69,493	6,112					6,112	
			<b>Base Layers</b>	<b>7.00 lot</b>											<b>0.00</b>
			Compacted Fly Ash Base (Fill)	910,896.00 sy	1,300.000	708.43 cd	1,098,157		1,414,841						3,421
			Preform Subgrade	281,111.00 sy	281,111.000	18.00 cd	4,037		4,090						12,577
			2" Thick Bottom Ash Layer	242,407.00 sy	1,300.000	196.47 cd	451,549		376,604						828,153
			0.5" Thick Fly Ash Filler Layer	48,481.00 sy	1,300.000	37.79 cd	90,369		75,930						195,629
			18" Dia Coarse Bottom Ash Drain Columns (half 2 miles, 1,100 box)	16,920.00 sy	1,400.000	200.79 cd	117,943		32,770						347,537
			Bottom Ash Dike Fill	281,111.00 sy	1,300.000	125.66 cd	304,775		254,191						558,666
			1.0 Layer Of Bottom Ash	63,893.00 sy	1,300.000	74.59 cd	180,620		150,642						342
			Geosynthetic Clay Liner	41,000.00 sy	0.026	7,563.11 mh	215,780	698,808	19,230						931,954
			4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	41,000.00 lf	0.670	2,698.00 mh	79,094	84,987	12,320						156,401
			Manhole For The Drain System (4" Dia Underdrains), 1,650 box	1,650.00 sy	800.000	368.60 mh	14,128		14,930						29,058
			Strip Draining 1" Soil Cover (Phase 1 Expansion), 15,193 box	22,800.00 sy	14.200	28.70 cd	10,595		3,128						17,221
			Anchor Trench Fill & Compact	4,071.00 sy	0.200	414.60 mh	11,905		5,698						8,311
			2.0" Thick Bottom Ash Blanket Drain	38,111.00 sy	1,300.000	630.72 mh	18,156		15,007						17,131
			1.0" Thick Filter Drain Ash Layer	19,556.00 sy	1,300.000	30.69 cd	72,865		30,382						3,421
			Membrane	58,887.00 sy	0.050	82,889.35 mh	81,882	131,282	7,880						66,811
			Perforated ADS Drain Tubes, 6" Diameter	1,560.00 sy	0.021	1,570.00 mh	42,849	12,893	4,589						22,428
			Pre Form For Underdrain	6,542.00 sy	0.150	238.60 mh	3,839	13,437	4,589						22,428
			48" Dia Perforated HDPE Drain (EL. 760)	1,960.00 ln	0.200	392.60 mh	10,715	3,249	2,027						17,543
Solid Outlet PVC (135 pcf) Bedding (135 pcf)	857.00 sy	0.200	59.55 mh	1,714	3,603	606						15,631			
857 Stone Filler (135 pcf) Bedding (135 pcf)	397.00 ln	0.150	96.00 mh	2,620	794	408						3,822			
8" Dia Non-Perf HDPE Bedding (135 pcf)	480.00 lf	0.200	96.00 mh	2,620	794	408						3,822			
1081 Crushed Stone Bedding, 6" Depth	16.00 ln	0.500	8.00 mh	230	152	27						410			
1081 Crushed Stone Bedding, 6" Depth	2,400.00 lf	0.200	480.00 mh	13,100	3,972	2,038						19,111			
1081 Crushed Stone Bedding, 6" Depth	454.00 ln	0.500	227.00 mh	6,534	4,317	1,773						11,625			
Crushed Stone	1,867.00 sy	0.021	38.40 mh	1,066	3,860	131						5,007			
Crushed Stone	356.00 sy	0.200	71.20 mh	2,050	605	605						2,655			
Crushed Stone	287.00 sy	0.250	68.75 mh	1,921	801	801						2,722			
Cell For Ditch (5,815 box)	5,878.00 sy	1,200.000	5.82 cd	10,681		12,041						50,000			
Saw Riprap	4,236.00 ln	0.320	1,356.48 mh	40,371	43,111	12,041						3,301			
Job Man	6,678.00 sy				3,593							24,851			
Riprap D50 Size 8"	2,344.00 ln	0.012	63.74 mh	2,339	5,664	427						3,593			
Cell For Basin (3,582 box)	3,582.00 sy	0.320	750.08 mh	22,324	23,638	12,075						39,280			
Ash / Gypsum in Pond	4,300.00 sy	1,200.000		6,787		7,420						59,237			
15	Miscellaneous	Capital	Dry Fly Ash Conversion Capital Cost	1.00 ls	16,385,780	16,385,780 mh	819,289		25,675,000			25,675,000.00	25,675,000		
			Non Manual	1.00 ls	8,635,188	8,635,188 mh	287,000		143,300				819,289		
			Mobile, Drug Test, Misc Other, & Demobilize				1,086,289		25,675,000					26,905,189	
			Capital				1,086,289		143,300					26,905,189	
			Miscellaneous				1,086,289		143,300					26,905,189	
							25,020.97 hrs		25,675,000						26,905,189
							114,491.53 hrs		415,739						6,075,916
							114,491.53 hrs		1,273,242						8,075,916
							114,491.53 hrs		1,273,242						8,075,916
							114,491.53 hrs		1,273,242						8,075,916
16	Dry Cell/P1 Opr Cost	O & M	Dry Fly Ash Conversion Capital Cost	1.00 lot								0.00	0		
			Dry Ash Stock	5,476,070.99 sy	1,000.000	4,978.25 cd	10,893,710		7,312,647				18,215,257		
			Wet Dip And Stack Bottom Ash Only	678,846.99 sy	235,000	2,889.71 cd	948,392		2,016,463				2,966,855		
17	Dry Cell/P1 Opr Cost	O & M	Disposal Life (Assume Dike & Dredge Asst)	12.90 yr								0.00	0		
			Hard Distance (Round Trip)	0.50 mile										21,082,112	
												21,082,112			
												21,082,112			
												21,082,112			

807592

1003490511

Locator	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
10	Ph 2 Base Construct	O & M	QA/QC For Construction Of Disposal Facility O & M Ph 2 Base Construct 07	1.00 ls		hrs 0.00 hrs 0.00 hrs		746,424 746,424 0 746,424			746,423.90	746,424 746,424 0 746,424
10	Ph 2 Initial Constr	O & M	Wet Sludge Sedimented Gypsum Quantities Initial Cons. Disposal Life 1.40 yrs Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pci) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pci) O & M Ph 2 Initial Constr 10	451,295.00 cy 1.40 yrs 7,370.00 lf 6,142.00 sv 1,492.00 ln 1,656.00 lf 336.00 ln	0.200 0.021 0.150 0.200 0.150	1,474.00 mh 12,199 3,604 223.80 mh 331.80 mh 50.40 mh 2,206.14 hrs 2,206.14 hrs	12,199 3,604 13,542 3,118 3,650 60,777 60,777 43,972 43,972		6,258 430 1,902 1,408 428 10,427 10,427		0.00 0.00 7.96 2.68 14.67 14.67	0 59,686 15,471 21,887 13,202 4,929 115,175 115,175 115,175 115,175
11	Rim Ditches	O & M	Cut (111,889 bcy) O & M Rim Ditches 11	134,270.00 cy	235.000	571.40 cd 4,571.20 hrs 4,571.20 hrs	167,816 167,816 167,816		399,260 399,260 399,260		4.22	567,076 567,076 567,076 567,076
12	Ph 2 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes) Wet Sludge Gypsum Quantities 1.334,496.00 cy Stage 1 Disposal Life (3 To 1 Side Slopes) 4.90 yrs Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pci) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pci) O & M Ph 2 Operational Cost 12	1.00 lot 265,196.00 cy 1,334,496.00 cy 4.90 yrs 11,495.00 lf 9,975.00 sv 2,345.00 ln 2,956.00 lf 524.00 ln	0.200 0.021 0.150 0.200 0.150	2,269.00 mh 167.04 mh 1,945.20 mh 575.20 mh 517.20 mh 18.60 mh 12,128.33 hrs 12,128.33 hrs	18,026 13,365 2,945 2,300 2,755 68,589 68,589 68,589		9,751 670 2,945 2,198 1,687 775,034 775,034 775,034		0.00 0.00 0.00 7.96 2.68 14.67 14.67	0 91,533 25,687 94,151 20,592 1,687 1,257,343 1,257,343 1,257,343
13	Ph 2 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes) Wet Sludge Gypsum Quantities 1.599,673.00 cy Stage 2 Disposal Life (Assume Dike & Sluice Gypsum) 5.40 yrs Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pci) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pci) O & M Ph 2 Operational Cost 13	1.00 lot 263,400.00 cy 1,599,673.00 cy 5.40 yrs 11,665.00 lf 9,886.00 sv 2,403.00 ln 2,870.00 lf 541.00 ln	0.200 0.021 0.150 0.200 0.150	2,373.00 mh 203.40 mh 360.45 mh 534.00 mh 81.15 mh 12,518.91 hrs 12,518.91 hrs	19,639 20,022 21,811 4,411 4,911 799,997 799,997 799,997		10,075 692 3,054 2,267 690 799,997 799,997		0.00 4.22 0.00 0.00 7.96 14.67	0 1,112,382 0 0 94,479 26,516 35,251 21,261 7,896 1,297,625 1,297,625 1,297,625
14	Ph 3 Initial Constr	O & M	Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack) O & M Ph 3 Initial Constr 14	677,412.00 cy 1.40 yrs	1,100,000	615.63 cd	1,348,771		904,630		3.33 0.00	2,253,301 2,253,301 2,253,301 2,253,301
15	Ph 3 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 1 Disposal Life (Assume Dry Stack Area) 0.50 mile O & M	1.00 lot 1,349,180.00 cy 2.80 yrs 0.50 mile	1,100,000	1,226.63 cd	2,686,305		1,601,623		0.00 3.33 0.00 0.00	0 4,487,628 0 4,487,628 0 4,487,628

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
5	Ph 3 Operational Cost	O & M	15 Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 2 Disposal Life (Assume Dry Stack) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1.00 lot 1,504,825.00 cy 3.20 yrs 0.50 mile	1,100,000	88,309.86 hrs 88,309.96 hrs	2,886,305 2,686,305	1,801,523 1,801,523	-	-	-	0.00 3.33 0.00 0.00	4,487,828 4,487,828
7	Ph 2 Operational Cost	O & M	16 Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pct) O & M Ph 2 Operational Cost	227,106.00 cy 1,344,916.00 cy 4.80 yrs	235,000	996.41 cd	283,826	675,289	-	-	-	4.22	869,066
8	Ph 3 Operational Cost	O & M	17 Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1.00 lot 1,334,060.00 cy 2.80 yrs 0.50 mile	1,100,000	1,212.80 cd	2,859,457	1,781,956	-	-	-	0.00 3.33 0.00	4,437,963 4,437,963
9	Ph 3 Operational Cost	O & M	18 Stage 4 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pct) O & M Ph 2 Operational Cost	1.00 lot 1,988,831.00 cy 702,854.00 cy 2.70 yrs	235,000	718.43 cd	210,997	591,898	-	-	-	4.22	712,993
9	Ph 3 Operational Cost	O & M	19 Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Assume Dike & Dry Stack Ash) O & M Ph 3 Operational Cost	1.00 lot 577,433.00 cy 1.20 yrs	1,100,000	565.10 cd	1,150,065	771,271	-	-	-	0.00 3.33 0.00	1,921,336 1,921,336
9	Ph 3 Operational Cost	O & M	20 Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Assume Dike & Dry Stack Ash) O & M Ph 3 Operational Cost	1.00 lot 577,433.00 cy 1.20 yrs	1,100,000	565.10 cd	1,150,065	771,271	-	-	-	0.00 3.33 0.00	1,921,336 1,921,336

Estimate Totals

Labor	29,122,271	927,581,672	hrs					
Material	4,583,026			100.000 %	C			
Subcontract	26,637,192			(100.000) %	C			
Equipment	22,831,416	80,552,860	hrs					
Other	50,000							
	80,103,875							
Engineered Materials - Ph 2		80,103,875		100.000 %	C			
Adjustment - Engr Materials				(100.000) %	C			
Environmental Costs				100.000 %	C			
Adjustment Environmental				(100.000) %	C			
Demolition Costs		80,103,875		100.000 %	C			
Adjustment Demolition				(100.000) %	C			
FPG Mech Engr - Phase 2	17,001			0.044 % @ 42.00	A			405
FPG Elec Engr - Phase 2	17,001			0.044 % @ 42.00	A			405
FPG Civil Engr - Phase 2	15,996			0.041 % @ 42.00	A			381
Non-TVA Engr - Phase 2	260,999			0.351 % @ 72.00	A			3,625
FPG Proj Cntrl Cost - Phase 2	1,001			0.003 % @ 42.00	A			24
FPG Proj Cntrl Sched - Phase 2	3,000			0.008 % @ 42.00	A			71
FPG Cost Estimating - Phase 2	1,001			0.003 % @ 42.00	A			24
FPG Engr Records - Phase 2	1,001			0.003 % @ 42.00	A			24
Phase 2 Other/Other Org	317,000	80,420,375		0.003 % @ 42.00	L			
<b>Total</b>		<b>80,420,375</b>						

37700  
Roundup  
1076

KINGSTON FOSSIL PLANT OPTION 1 - WET ASH IN POND GYPSUM ON PENINSULA

(WITHOUT POND BUFFER)

PRESENT WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars per Cycle	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Escalated Subtotal	PRESENT WORTH of using Capital Dollars																																																																																																																																																																																																																																																																																																																																																																									
	Escalation Factor Contingency on the Peninsula		1.15																																																																																																																																																																																																																																																																																																																																																																																																					
	Contingency on the Peninsula		1.1																																																																																																																																																																																																																																																																																																																																																																																																					
	<b>CAPITAL COSTS</b>																																																																																																																																																																																																																																																																																																																																																																																																							
1	Erosion Control / Sediment Pond	Lump Sum	\$550,426	1	\$550,426																																																																																																																																																																																																																																																																																																																																																																																																			
2	Seed / Mulch	Lump Sum	\$71,081	1	\$71,081																																																																																																																																																																																																																																																																																																																																																																																																			
3	South Access Road	Lump Sum	\$54,820	1	\$54,820																																																																																																																																																																																																																																																																																																																																																																																																			
4	Perimeter Road	Lump Sum	\$107,226	1	\$107,226																																																																																																																																																																																																																																																																																																																																																																																																			
5	Install Drains For Swamp Pond Road	Lump Sum	\$1,987,628	1	\$1,987,628																																																																																																																																																																																																																																																																																																																																																																																																			
6	Gypsum Stack Peninsula	Lump Sum	\$668,868	1	\$668,868																																																																																																																																																																																																																																																																																																																																																																																																			
7	Erosion Control Peninsula	Lump Sum	\$231,402	1	\$231,402																																																																																																																																																																																																																																																																																																																																																																																																			
8	Roads	Lump Sum	\$59,848	1	\$59,848																																																																																																																																																																																																																																																																																																																																																																																																			
9	Fencing	Lump Sum	\$25,345	1	\$25,345																																																																																																																																																																																																																																																																																																																																																																																																			
10	Seed / Mulch	Lump Sum	\$71,454	1	\$71,454																																																																																																																																																																																																																																																																																																																																																																																																			
11	Borrow Area Development	Lump Sum	\$58,144	1	\$58,144																																																																																																																																																																																																																																																																																																																																																																																																			
12	Gypsum Disposal Facility	Lump Sum	\$5,814,500	1	\$5,814,500																																																																																																																																																																																																																																																																																																																																																																																																			
13	Gypsum On Peninsula Disposal Cost	Lump Sum	\$708,830	1	\$708,830																																																																																																																																																																																																																																																																																																																																																																																																			
14	Construction Parking	Lump Sum	\$28,465	1	\$28,465																																																																																																																																																																																																																																																																																																																																																																																																			
15	Phase 2 Base Construction (Base Layers) O&M For Construction Of Disposal Facility	Lump Sum	\$5,430,874	2	\$2,715,437																																																																																																																																																																																																																																																																																																																																																																																																			
16	Temporary Slope Protection	Lump Sum	\$154,460	1	\$154,460																																																																																																																																																																																																																																																																																																																																																																																																			
17	Rijmp Shilling Basin	Lump Sum	\$78,868	1	\$78,868																																																																																																																																																																																																																																																																																																																																																																																																			
18	Construction Facility	Lump Sum	\$833,080	11	\$75,733																																																																																																																																																																																																																																																																																																																																																																																																			
19	Non Manual	Lump Sum	\$1,618,576	11	\$147,143																																																																																																																																																																																																																																																																																																																																																																																																			
20	Engineering	Lump Sum	\$690,000	1	\$690,000																																																																																																																																																																																																																																																																																																																																																																																																			
	<b>Total Capital Costs</b>		\$ 20,482,204		\$ 3,720,745	\$ 255,881	\$ 265,844	\$ 8,947,884	\$ 288,815	\$ 298,001	\$ 309,623	\$ 322,008	\$ 334,889	\$ 348,284	\$ 4,376,116	\$ 4,844,821	\$ 35,971	\$ 37,410	\$ 38,907	\$ 40,463	\$ 42,081	\$ 43,785	\$ 45,515	\$ 47,338	\$ 49,229	\$ 51,188	\$ 53,246	\$ 55,378	\$ 57,591	\$ 25,803,061	\$ 13,868,098																																																																																																																																																																																																																																																																																																																																																																									
	<b>OPERATING COSTS</b>																																																																																																																																																																																																																																																																																																																																																																																																							
6	Dredge Cell Phase 1	Lump Sum	\$11,554,541	12	\$962,878	\$1,043,283	\$1,084,144	\$1,125,342	\$1,166,920	\$1,214,630	\$1,263,423	\$1,313,360	\$1,364,519	\$1,421,179	\$1,478,027	\$1,537,148																																																																																																																																																																																																																																																																																																																																																																																								
14	Gypsum On Peninsula Disposal Cost	Lump Sum	\$3,844,076	20	\$192,204	\$212,946	\$221,251	\$230,860	\$240,827	\$251,197	\$262,024	\$273,354	\$285,142	\$297,433	\$310,181	\$323,441	\$337,166	\$351,414	\$366,141	\$381,314	\$396,991	\$413,130	\$429,704	\$446,785	\$464,336	\$482,330	\$500,742	\$519,539	\$538,698	\$558,198	\$578,020	\$598,146	\$618,560	\$639,247	\$660,195	\$681,391	\$702,817	\$724,464	\$746,321	\$768,379	\$790,630	\$813,067	\$835,683	\$858,459	\$881,380	\$904,440	\$927,631	\$950,947	\$974,383	\$997,935	\$1,021,600	\$1,045,374	\$1,069,253	\$1,093,233	\$1,117,311	\$1,141,485	\$1,165,751	\$1,190,106	\$1,214,558	\$1,239,104	\$1,263,742	\$1,288,471	\$1,313,289	\$1,338,194	\$1,363,184	\$1,388,257	\$1,413,411	\$1,438,645	\$1,463,958	\$1,489,348	\$1,514,814	\$1,540,355	\$1,565,970	\$1,591,658	\$1,617,418	\$1,643,248	\$1,669,138	\$1,695,087	\$1,721,094	\$1,747,158	\$1,773,278	\$1,809,444	\$1,835,655	\$1,861,910	\$1,888,209	\$1,914,551	\$1,940,935	\$1,967,361	\$1,993,828	\$2,020,335	\$2,046,881	\$2,073,466	\$2,100,090	\$2,126,752	\$2,153,452	\$2,180,189	\$2,206,962	\$2,233,771	\$2,260,615	\$2,287,494	\$2,314,407	\$2,341,354	\$2,368,334	\$2,395,346	\$2,422,390	\$2,449,466	\$2,476,573	\$2,503,711	\$2,530,879	\$2,558,077	\$2,585,304	\$2,612,560	\$2,639,845	\$2,667,159	\$2,694,501	\$2,721,871	\$2,749,270	\$2,776,697	\$2,804,152	\$2,831,635	\$2,859,146	\$2,886,684	\$2,914,249	\$2,941,841	\$2,969,460	\$2,997,107	\$3,024,781	\$3,052,482	\$3,080,210	\$3,107,964	\$3,135,744	\$3,163,550	\$3,191,382	\$3,219,240	\$3,247,124	\$3,275,034	\$3,302,969	\$3,330,929	\$3,358,914	\$3,386,924	\$3,414,958	\$3,443,016	\$3,471,098	\$3,499,204	\$3,527,334	\$3,555,487	\$3,583,663	\$3,611,862	\$3,640,084	\$3,668,329	\$3,696,596	\$3,724,885	\$3,753,196	\$3,781,529	\$3,809,884	\$3,838,261	\$3,866,660	\$3,895,081	\$3,923,524	\$3,951,989	\$3,980,475	\$4,008,983	\$4,037,513	\$4,066,065	\$4,094,638	\$4,123,233	\$4,151,850	\$4,180,489	\$4,209,150	\$4,237,833	\$4,266,538	\$4,295,264	\$4,324,011	\$4,352,780	\$4,381,570	\$4,410,382	\$4,439,215	\$4,468,069	\$4,496,944	\$4,525,840	\$4,554,757	\$4,583,695	\$4,612,654	\$4,641,634	\$4,670,635	\$4,699,657	\$4,728,699	\$4,757,772	\$4,786,866	\$4,815,981	\$4,845,117	\$4,874,274	\$4,903,452	\$4,932,651	\$4,961,871	\$4,991,112	\$5,020,374	\$5,049,657	\$5,078,961	\$5,108,286	\$5,137,632	\$5,167,000	\$5,196,389	\$5,225,799	\$5,255,230	\$5,284,682	\$5,314,155	\$5,343,649	\$5,373,164	\$5,402,699	\$5,432,255	\$5,461,832	\$5,491,430	\$5,521,049	\$5,550,688	\$5,580,348	\$5,610,028	\$5,639,728	\$5,669,448	\$5,699,188	\$5,728,948	\$5,758,728	\$5,788,528	\$5,818,348	\$5,848,188	\$5,878,048	\$5,907,928	\$5,937,828	\$5,967,748	\$5,997,688	\$6,027,648	\$6,057,628	\$6,087,628	\$6,117,648	\$6,147,688	\$6,177,748	\$6,207,828	\$6,237,928	\$6,268,048	\$6,298,188	\$6,328,348	\$6,358,528	\$6,388,728	\$6,418,948	\$6,449,188	\$6,479,448	\$6,509,728	\$6,539,028	\$6,569,348	\$6,599,688	\$6,629,048	\$6,659,428	\$6,689,828	\$6,720,248	\$6,750,688	\$6,781,148	\$6,811,628	\$6,842,128	\$6,872,648	\$6,903,188	\$6,933,748	\$6,964,328	\$6,994,928	\$7,025,548	\$7,056,188	\$7,086,848	\$7,117,528	\$7,148,228	\$7,178,948	\$7,209,688	\$7,240,448	\$7,271,228	\$7,302,028	\$7,332,848	\$7,363,688	\$7,394,548	\$7,425,428	\$7,456,328	\$7,487,248	\$7,518,188	\$7,549,148	\$7,580,128	\$7,611,128	\$7,642,148	\$7,673,188	\$7,704,248	\$7,735,328	\$7,766,428	\$7,797,548	\$7,828,688	\$7,859,848	\$7,891,028	\$7,922,228	\$7,953,448	\$7,984,688	\$8,015,948	\$8,047,228	\$8,078,528	\$8,109,848	\$8,141,188	\$8,172,548	\$8,203,928	\$8,235,328	\$8,266,748	\$8,298,188	\$8,329,648	\$8,361,128	\$8,392,628	\$8,424,148	\$8,455,688	\$8,487,248	\$8,518,828	\$8,550,428	\$8,582,048	\$8,613,688	\$8,645,348	\$8,677,028	\$8,708,728	\$8,740,448	\$8,772,188	\$8,803,948	\$8,835,728	\$8,867,528	\$8,899,348	\$8,931,188	\$8,963,048	\$8,994,928	\$9,026,828	\$9,058,748	\$9,090,688	\$9,122,648	\$9,154,628	\$9,186,628	\$9,218,648	\$9,250,688	\$9,282,748	\$9,314,828	\$9,346,928	\$9,379,048	\$9,411,188	\$9,443,348	\$9,475,528	\$9,507,728	\$9,539,948	\$9,572,188	\$9,604,448	\$9,636,728	\$9,669,028	\$9,701,348	\$9,733,688	\$9,766,048	\$9,798,428	\$9,830,828	\$9,863,248	\$9,895,688	\$9,928,148	\$9,960,628	\$9,993,128	\$10,025,648	\$10,058,188	\$10,090,748	\$10,123,328	\$10,155,928	\$10,188,548	\$10,221,188	\$10,253,848	\$10,286,528	\$10,319,228	\$10,351,948	\$10,384,688	\$10,417,448	\$10,450,228	\$10,483,028	\$10,515,848	\$10,548,688	\$10,581,548	\$10,614,428	\$10,647,328	\$10,680,248	\$10,713,188	\$10,746,148	\$10,779,128	\$10,812,128	\$10,845,148	\$10,878,188	\$10,911,248	\$10,944,328	\$10,977,428	\$11,010,548	\$11,043,688	\$11,076,848	\$11,110,028</







KINGSTON FOSSIL PLANT OPTION 4 - DRY ASH IN POND GYPSUM IN POND STON POND - OPTION 4 COPY ASH IN POND DRY ASH IN POND

(WITHOUT BUFFER)

PRESENT WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars Per Cycle	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Escalated Subtotal	PRESENT WORTH of using Capital Dollars				
	Contingency on the Pond		1.1																																	
	<b>CAPITAL COSTS</b>																																			
1	Erosion Control / Sediment Pond	Lump Sum	\$350,426	1	\$350,426																												\$350,426	\$350,426		
2	Seed / Mulch	Lump Sum	\$71,081	1	\$71,081																													\$71,081	\$71,081	
3	South Access Road	Lump Sum	\$54,820	1	\$54,820																													\$54,820	\$54,820	
4	Perimeter Road	Lump Sum	\$107,226	1	\$107,226																													\$107,226	\$107,226	
7A	Phase 2 Base Construction	Lump Sum	\$3,970,721	1	\$3,970,721																													\$3,970,721	\$3,970,721	
7B	Phase 3 Base Construction	Lump Sum	\$2,703,508	1	\$2,703,508																													\$2,703,508	\$2,703,508	
	QA/QC For Construction Of Disposal Facility	Lump Sum	\$67,068	24	\$2,810,616																													\$2,810,616	\$2,810,616	
8	Temporary Slope Protection	Lump Sum	\$154,224	1	\$154,224																													\$154,224	\$154,224	
9	Riprap Billing Basin	Lump Sum	\$79,656	1	\$79,656																													\$79,656	\$79,656	
25	Dry Fly Ash Conversion	Lump Sum	\$28,242,500	1	\$28,242,500																													\$28,242,500	\$28,242,500	
x	Construction Facility	Lump Sum	\$404,030	11	\$4,444,330																													\$4,444,330	\$4,444,330	
z	Non-Manual	Lump Sum	\$751,417	11	\$8,265,587																													\$8,265,587	\$8,265,587	
zz	Engineering	Lump Sum	\$348,700	1	\$348,700																													\$348,700	\$348,700	
	<b>Total Capital Costs</b>					\$29,547,895	\$145,240	\$150,904	\$4,627,884	\$16,747	\$69,984	\$175,689	\$182,716	\$180,025	\$197,626	\$205,531	\$4,283,811	\$4,615	\$6,796	\$9,071	\$1,434	\$3,892	\$6,447	\$8,105	\$71,869	\$71,744	\$77,734	\$80,843	\$84,077	\$87,440	\$41,026,934	\$34,337,884				
	<b>OPERATING COSTS</b>																																			
6	Dredge Cell Phase 1	Lump Sum	\$20,011,819	12	\$240,141,828																													\$240,141,828	\$240,141,828	
10,11,12,13,14,15,16,17,18	Phase 2 Wet Gypsum (Initial Thru Stage 4)	Lump Sum	\$3,534,669	20	\$70,693,780																														\$70,693,780	\$70,693,780
14,15,16,18,20	Phase 3 Dry Ash (Initial Thru Stage 4)	Lump Sum	\$18,105,964	12	\$217,271,568																														\$217,271,568	\$217,271,568
	<b>Total Operating Costs</b>					\$41,852,472	\$1,759,351	\$1,807,198	\$1,877,678	\$2,155,581	\$2,298,846	\$2,326,885	\$2,420,075	\$2,418,878	\$2,617,653	\$2,722,655	\$2,831,145	\$5,355,102	\$2,798,484	\$2,910,423	\$3,026,840	\$3,147,914	\$3,275,831	\$3,404,764	\$3,540,975	\$3,682,814	\$3,829,919	\$3,983,116	\$4,142,440	\$4,308,138	\$74,324,899	\$17,229,970				
	<b>Total Costs</b>					\$33,215,648	\$1,854,600	\$1,958,100	\$6,605,260	\$2,318,238	\$2,405,245	\$2,502,884	\$2,602,791	\$2,706,903	\$2,815,179	\$2,927,768	\$7,184,956	\$5,407,717	\$2,855,284	\$2,999,485	\$3,088,273	\$3,211,866	\$3,340,278	\$3,473,889	\$3,612,846	\$3,757,368	\$3,907,653	\$4,063,968	\$4,226,517	\$4,395,876	\$115,351,829	\$51,561,654				

Present Worth of this Option \$ 51,561,654

(WITH BUFFER)

PRESENT WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars per Cycle	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Escalated Subtotal	PRESENT WORTH of using Capital Dollars																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	Escalation Factor Contingency on the Peninsula		1.15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	Contingency on the Peninsula		1.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	<b>CAPITAL COSTS</b>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1	Erosion Control / Sediment Pond	Lump Sum	\$550,426	1	\$550,426																											\$550,426	\$350,426																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
2	Seed / Mulch	Lump Sum	\$71,081	1	\$71,081																												\$71,081	\$71,081																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
3	South Access Road	Lump Sum	\$54,820	1	\$54,820																												\$54,820	\$54,820																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
4	Perimeter Road	Lump Sum	\$107,226	1	\$107,226																												\$107,226	\$107,226																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
5	Install Drains For Swamp Pond Road	Lump Sum	\$1,967,628	1	\$1,967,628																												\$1,967,628	\$1,967,628																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
7	Gypsum Stack Peninsula	Lump Sum	\$563,786	1	\$563,786																												\$563,786	\$439,594																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
8	Erosion Control Peninsula	Lump Sum	\$231,402	1	\$231,402																												\$231,402	\$171,312																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
9	Roads	Lump Sum	\$58,848	1	\$58,848																												\$58,848	\$44,307																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
10	Fencing	Lump Sum	\$25,345	1	\$25,345																												\$25,345	\$19,793																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
11	Seed / Mulch	Lump Sum	\$71,454	1	\$71,454																												\$71,454	\$52,868																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
12	Borrow Area Development	Lump Sum	\$85,144	1	\$85,144																												\$85,144	\$64,898																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
13	Gypsum Disposal Facility	Lump Sum	\$5,614,500	1	\$5,614,500																												\$5,614,500	\$4,248,816																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
14	Gypsum On Peninsula Disposal Cost	Lump Sum	\$708,930	1	\$708,930																												\$708,930	\$524,616																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
15	Construction Parking	Lump Sum	\$26,465	1	\$26,465																												\$26,465	\$19,993																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
17	Phase 2 Base Construction (Base Layers) O&M For Construction Of Disposal Facility	Lump Sum	\$6,307,665	2	\$3,153,833	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533	\$22,533																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
18	Temporary Slope Protection	Lump Sum	\$154,480	1	\$154,480																													\$154,480	\$114,480																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
19	Riprap Stilling Basin	Lump Sum	\$79,666	1	\$79,666																													\$79,666	\$59,666																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
X	Construction Facility	Lump Sum	\$533,000	11	\$75,733	\$78,889	\$82,070	\$85,271	\$88,511	\$91,793	\$95,119	\$98,494	\$101,912	\$105,374	\$108,881	\$112,433	\$116,039	\$119,699	\$123,413	\$127,181	\$130,994	\$134,851	\$138,752	\$142,698	\$146,689	\$150,725	\$154,806	\$158,932	\$163,103	\$167,319	\$171,580	\$175,881	\$180,232	\$184,633	\$189,084	\$193,585	\$198,136	\$202,737	\$207,388	\$212,089	\$216,840	\$221,641	\$226,492	\$231,393	\$236,344	\$241,345	\$246,396	\$251,497	\$256,648	\$261,849	\$267,100	\$272,401	\$277,752	\$283,153	\$288,604	\$294,105	\$299,656	\$305,257	\$310,908	\$316,609	\$322,360	\$328,161	\$334,012	\$339,913	\$345,864	\$351,865	\$357,916	\$364,017	\$370,168	\$376,369	\$382,620	\$388,921	\$395,272	\$401,673	\$408,124	\$414,625	\$421,176	\$427,777	\$434,428	\$441,129	\$447,880	\$454,681	\$461,532	\$468,433	\$475,384	\$482,385	\$489,436	\$496,537	\$503,688	\$510,889	\$518,140	\$525,441	\$532,792	\$540,193	\$547,644	\$555,145	\$562,696	\$570,297	\$577,948	\$585,649	\$593,400	\$601,201	\$609,052	\$616,953	\$624,904	\$632,905	\$640,956	\$649,057	\$657,208	\$665,409	\$673,660	\$681,961	\$690,312	\$698,713	\$707,164	\$715,665	\$724,216	\$732,817	\$741,468	\$750,169	\$758,920	\$767,721	\$776,572	\$785,473	\$794,424	\$803,425	\$812,476	\$821,577	\$830,728	\$839,879	\$849,080	\$858,331	\$867,632	\$876,983	\$886,384	\$895,835	\$905,336	\$914,887	\$924,488	\$934,139	\$943,840	\$953,591	\$963,392	\$973,243	\$983,144	\$993,095	\$1,003,096	\$1,013,147	\$1,023,248	\$1,033,399	\$1,043,550	\$1,053,751	\$1,064,002	\$1,074,303	\$1,084,654	\$1,095,055	\$1,105,506	\$1,116,007	\$1,126,558	\$1,137,159	\$1,147,810	\$1,158,511	\$1,169,262	\$1,180,063	\$1,190,914	\$1,201,815	\$1,212,766	\$1,223,767	\$1,234,818	\$1,245,919	\$1,257,070	\$1,268,271	\$1,279,522	\$1,290,823	\$1,302,174	\$1,313,575	\$1,325,026	\$1,336,527	\$1,348,078	\$1,359,679	\$1,371,330	\$1,383,031	\$1,394,782	\$1,406,583	\$1,418,434	\$1,430,335	\$1,442,286	\$1,454,287	\$1,466,338	\$1,478,439	\$1,490,590	\$1,502,791	\$1,515,042	\$1,527,343	\$1,539,694	\$1,552,095	\$1,564,546	\$1,577,047	\$1,589,598	\$1,602,199	\$1,614,850	\$1,627,551	\$1,640,302	\$1,653,103	\$1,665,954	\$1,678,855	\$1,691,806	\$1,704,807	\$1,717,858	\$1,730,959	\$1,744,110	\$1,757,311	\$1,770,562	\$1,783,863	\$1,797,214	\$1,810,615	\$1,824,066	\$1,837,567	\$1,851,118	\$1,864,719	\$1,878,370	\$1,892,071	\$1,905,822	\$1,919,623	\$1,933,474	\$1,947,375	\$1,961,326	\$1,975,327	\$1,989,378	\$2,003,479	\$2,017,630	\$2,031,831	\$2,046,082	\$2,060,383	\$2,074,734	\$2,089,135	\$2,103,586	\$2,118,087	\$2,132,638	\$2,147,239	\$2,161,890	\$2,176,591	\$2,191,342	\$2,206,143	\$2,221,004	\$2,235,915	\$2,250,876	\$2,265,887	\$2,280,948	\$2,296,059	\$2,311,220	\$2,326,431	\$2,341,692	\$2,357,013	\$2,372,384	\$2,387,805	\$2,403,276	\$2,418,807	\$2,434,388	\$2,449,919	\$2,465,490	\$2,481,111	\$2,496,782	\$2,512,503	\$2,528,274	\$2,544,095	\$2,559,966	\$2,575,887	\$2,591,858	\$2,607,879	\$2,623,950	\$2,640,071	\$2,656,242	\$2,672,463	\$2,688,734	\$2,705,055	\$2,721,426	\$2,737,847	\$2,754,318	\$2,770,839	\$2,787,410	\$2,804,031	\$2,820,702	\$2,837,423	\$2,854,194	\$2,871,015	\$2,887,886	\$2,904,807	\$2,921,778	\$2,938,809	\$2,955,890	\$2,973,021	\$2,990,202	\$3,007,433	\$3,024,714	\$3,042,045	\$3,059,426	\$3,076,857	\$3,094,338	\$3,111,869	\$3,129,450	\$3,147,081	\$3,164,762	\$3,182,493	\$3,200,274	\$3,218,105	\$3,236,006	\$3,253,967	\$3,271,988	\$3,290,069	\$3,308,200	\$3,326,381	\$3,344,612	\$3,362,893	\$3,381,224	\$3,399,605	\$3,418,036	\$3,436,517	\$3,455,048	\$3,473,629	\$3,492,260	\$3,510,941	\$3,529,672	\$3,548,453	\$3,567,284	\$3,586,165	\$3,605,096	\$3,624,077	\$3,643,108	\$3,662,189	\$3,681,320	\$3,700,501	\$3,719,732	\$3,739,013	\$3,758,344	\$3,777,725	\$3,797,156	\$3,816,637	\$3,836,168	\$3,855,749	\$3,875,380	\$3,895,061	\$3,914,792	\$3,934,573	\$3,954,404	\$3,974,285	\$3,994,216	\$4,014,197	\$4,034,228	\$4,054,309	\$4,074,440	\$4,094,621	\$4,114,852	\$4,135,133	\$4,155,464	\$4,175,845	\$4,196,276	\$4,216,757	\$4,237,288	\$4,257,869	\$4,278,500	\$4,299,181	\$4,319,912	\$4,340,693	\$4,361,524	\$4,382,405	\$4,403,336	\$4,424,317	\$4,445,348	\$4,466,429	\$4,487,560	\$4,508,741	\$4,529,972	\$4,551,253	\$4,572,584	\$4,593,965	\$4,615,396	\$4,636,877	\$4,658,408	\$4,679,989	\$4,701,620	\$4,723,301	\$4,745,032	\$4,766,813	\$4,788,644	\$4,810,525	\$4,832,456	\$4,854,437	\$4,876,468	\$4,898,549	\$4,920,680	\$4,942,861	\$4,965,092	\$4,987,373	\$5,009,704	\$5,032,085	\$5,054,516	\$5,077,007	\$5,099,548	\$5,122,139	\$5,144,780	\$5,167,471	\$5,190,212	\$5,213,003	\$5,235,844	\$5,258,735	\$5,281,676	\$5,304,667	\$5,327,708	\$5,350,799	\$5,373,940	\$5,397,131	\$5,420,372	\$5,443,663	\$5,467,004	\$5,490,395	\$5,513,836	\$5,537,327	\$5,560,868	\$5,584,459	\$5,608,090	\$5,631,771	\$5,655,502	\$5,679,283	\$5,703,114	\$5,727,005	\$5,750,946	\$5,774,937	\$5,798,978	\$5,823,069	\$5,847,210	\$5,871,401	\$5,895,642	\$5,919,933	\$5,944,274	\$5,968,665	\$5,993,106	\$6,017,597	\$6,042,138	\$6,066,729	\$6,091,370	\$6,116,061	\$6,140,802	\$6,165,593	\$6,190,434	\$6,215,325	\$6,240,266	\$6,265,257	\$6,290,298	\$6,315,389	\$6,340,530	\$6,365,721	\$6,390,962	\$6,416,253	\$6,441,594	\$6,466,985	\$6,492,426	\$6,517,917	\$6,543,458	\$6,569,049	\$6,594,690	\$6,620,381	\$6,646,122	\$6,671,913	\$6,697,754	\$6,723,645	\$6,749,586	\$6,775,577	\$6,801,618	\$6,827,709	\$6,853,850	\$6,879,991	\$6,906,182	\$6,932,423	\$6,958,714	\$6,985,055	\$7,011,446	\$7,037,887	\$7,064,378	\$7,090,919	\$7,117,510	\$7,144,151	\$7,170,842	\$7,197,583	\$7,224,374	\$7,251,215	\$7,278,106	\$7,305,047	\$7,332,038	\$7,359,079	\$7,386,170	\$7,413,311	\$7,440,502	\$7,467,743	\$7,495,034	\$7,522,375	\$7,549,766	\$7,577,207	\$7,604,698	\$7,632,239	\$7,659,830	\$7,687,471	\$7,715,162	\$7,742,903	\$7,770,694	\$7,798,535	\$7,82

KINGSTON FOSSIL PLANT OPTION 6 - DRY ASH IN-POND GYPSUM ON PENINSULA S&L PLANT OPTION 6 - DRY ASH IN-POND GYPSUM ON PENINSULA

(WITH BUFFER)

PRESENT WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2009 Dollars	Number of Cycles	2009 Dollars per Cycle	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Escalated Subtotal	PRESENT WORTH of using Capital Dollars				
	CAPITAL COSTS																																			
1	Erosion Control / Sediment Pond	Lump Sum	\$350,426	1	\$350,426																												\$350,426	\$350,426		
2	Seed / Mulch	Lump Sum	\$71,081	1	\$71,081																													\$71,081	\$71,081	
3	South Access Road	Lump Sum	\$54,920	1	\$54,920																													\$54,920	\$54,920	
4	Perimeter Road	Lump Sum	\$107,226	1	\$107,226																													\$107,226	\$107,226	
7	Gypsum Stack Peninsula	Lump Sum	\$593,766	1	\$593,766																													\$593,766	\$593,766	
8	Erosion Control Peninsula	Lump Sum	\$231,402	1	\$231,402																													\$231,402	\$231,402	
9	Roads	Lump Sum	\$59,348	1	\$59,348																													\$59,348	\$59,348	
10	Fencing	Lump Sum	\$25,345	1	\$25,345																													\$25,345	\$25,345	
11	Seed / Mulch	Lump Sum	\$71,454	1	\$71,454																													\$71,454	\$71,454	
12	Borrow Area Development	Lump Sum	\$58,144	1	\$58,144																													\$58,144	\$58,144	
13	Gypsum Disposal Facility	Lump Sum	\$8,014,500	1	\$8,014,500																													\$8,014,500	\$8,014,500	
14	Gypsum On Peninsula Disposal Cost	Lump Sum	\$708,330	1	\$708,330																													\$708,330	\$708,330	
15	Construction Parking	Lump Sum	\$25,465	1	\$25,465																													\$25,465	\$25,465	
17	Phase 2 Base Construction (Base Layers) QAC/C For Construction Of Disposal Facility	Lump Sum	\$4,847,516	2	\$2,423,758																													\$4,847,516	\$4,847,516	
18	Temporary Slope Protection	Lump Sum	\$161,235	1	\$161,235																													\$161,235	\$161,235	
19	Riprap Stilling Basin	Lump Sum	\$79,666	1	\$79,666																													\$79,666	\$79,666	
23	Dry Fly Ash Conversion	Lump Sum	\$28,242,500	1	\$28,242,500																													\$28,242,500	\$28,242,500	
x	Construction Facility	Lump Sum	\$911,865	11	\$83,815																													\$911,865	\$911,865	
z	Non Manual	Lump Sum	\$1,148,474	11	\$104,407																													\$1,148,474	\$1,148,474	
zz	Engineering	Lump Sum	\$990,000	1	\$990,000																													\$990,000	\$990,000	
	<b>Total Capital Costs</b>		<b>\$45,494,887</b>			<b>\$29,939,500</b>	<b>\$190,397</b>	<b>\$197,822</b>	<b>\$9,876,888</b>	<b>\$219,348</b>	<b>\$221,888</b>	<b>\$230,313</b>	<b>\$239,528</b>	<b>\$249,107</b>	<b>\$259,071</b>	<b>\$3,846,826</b>	<b>\$4,000,689</b>	<b>\$5,971</b>	<b>\$37,410</b>	<b>\$38,807</b>	<b>\$40,463</b>	<b>\$42,081</b>	<b>\$43,785</b>	<b>\$45,515</b>	<b>\$47,336</b>	<b>\$49,229</b>	<b>\$51,198</b>	<b>\$53,246</b>	<b>\$55,378</b>	<b>\$57,591</b>	<b>\$60,083,251</b>	<b>\$0</b>	<b>\$39,187,810</b>			
	OPERATING COSTS																																			
6	Dredge Cell Phase 1	Lump Sum	\$20,011,819	12	\$1,667,652																														\$20,011,819	\$20,011,819
14	Gypsum On Peninsula Disposal Cost	Lump Sum	\$3,644,075	20	\$182,204																														\$3,644,075	\$3,644,075
20,22,23,24	Phase 2 Dry Ash (Initial Three Stages)	Lump Sum	\$18,463,149	12	\$1,538,596																														\$18,463,149	\$18,463,149
	<b>Total Operating Costs</b>		<b>\$42,116,043</b>			<b>\$1,667,652</b>	<b>\$1,739,381</b>	<b>\$1,807,196</b>	<b>\$1,877,876</b>	<b>\$2,161,974</b>	<b>\$2,246,281</b>	<b>\$2,333,887</b>	<b>\$2,427,453</b>	<b>\$2,524,343</b>	<b>\$2,625,316</b>	<b>\$2,730,328</b>	<b>\$2,839,542</b>	<b>\$5,408,051</b>	<b>\$2,856,567</b>	<b>\$2,970,830</b>	<b>\$3,089,483</b>	<b>\$3,213,249</b>	<b>\$3,341,779</b>	<b>\$3,475,430</b>	<b>\$3,614,468</b>	<b>\$3,759,047</b>	<b>\$3,909,409</b>	<b>\$4,065,785</b>	<b>\$4,228,417</b>	<b>\$4,397,453</b>	<b>\$4,571,998</b>	<b>\$4,752,856</b>	<b>\$17,324,656</b>	<b>\$17,324,656</b>		
	<b>Total Costs</b>		<b>\$87,610,930</b>			<b>\$31,607,152</b>	<b>\$1,929,757</b>	<b>\$2,005,018</b>	<b>\$11,754,862</b>	<b>\$2,375,322</b>	<b>\$2,467,859</b>	<b>\$2,564,210</b>	<b>\$2,666,778</b>	<b>\$2,773,449</b>	<b>\$2,884,367</b>	<b>\$2,995,644</b>	<b>\$5,444,823</b>	<b>\$2,893,877</b>	<b>\$3,009,738</b>	<b>\$3,130,728</b>	<b>\$3,256,331</b>	<b>\$3,386,544</b>	<b>\$3,520,966</b>	<b>\$3,661,004</b>	<b>\$3,806,278</b>	<b>\$3,951,607</b>	<b>\$4,106,907</b>	<b>\$4,262,283</b>	<b>\$4,417,759</b>	<b>\$4,573,356</b>	<b>\$4,729,014</b>	<b>\$17,341,912</b>	<b>\$17,341,912</b>			
	<b>Present Worth of this Option</b>		<b>\$56,512,465</b>																														<b>\$56,512,465</b>	<b>\$56,512,465</b>		

(WITH BUFFER)  
PRESENT WORTH

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars per Cycle	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Escalated Subtotal	PRESENT WORTH of Initial Capital Dollars			
	Escalation Factor Contingency on the Pond		1.1																																
<b>CAPITAL COSTS</b>																																			
1	Final Control / Sediment Pond	Lump Sum	\$50,426	1	\$50,426																												\$50,426	\$300,426	
2	Seed / Mulch	Lump Sum	\$71,081	1	\$71,081																													\$71,081	\$71,081
3	South Access Road	Lump Sum	\$54,820	1	\$54,820																													\$54,820	\$54,820
4	Perimeter Road	Lump Sum	\$107,226	1	\$107,226																													\$107,226	\$107,226
5	Install Drains For Swan Pond Road	Lump Sum	\$1,987,828	1	\$1,987,828																													\$1,987,828	\$1,987,828
7A	Phase 2 Base Construction	Lump Sum	\$5,307,665	1	\$5,307,665																													\$5,307,665	\$4,669,718
7B	Phase 3 Base Construction	Lump Sum	\$2,803,687	1	\$2,803,687																													\$2,803,687	\$3,998,879
	CAOC For Construction Of Disposal Facility	Lump Sum	\$21,066	24	\$54,211																													\$54,211	\$328,321
8	Temporary Slope Protection	Lump Sum	\$154,224	1	\$154,224																													\$154,224	\$154,224
9	Riprap Sillling Basin	Lump Sum	\$79,666	1	\$79,666																													\$79,666	\$79,666
25	Dry Fly Ash Conversion	Lump Sum	\$24,175,580	1	\$24,175,580																													\$24,175,580	\$7,979,779
x	Construction Facility	Lump Sum	\$827,000	11	\$9,097,000																													\$9,097,000	\$417,335
z	Non Manual	Lump Sum	\$1,203,703	11	\$13,240,733																													\$13,240,733	\$607,192
zz	Engineering	Lump Sum	\$348,700	1	\$348,700																													\$348,700	\$348,700
<b>Total Capital Costs</b>																																			
			\$ 38,872,472			\$ 3,334,410	\$ 200,286	\$ 217,427	\$ 7,227,962	\$ 234,482	\$ 243,837	\$ 253,139	\$ 262,284	\$ 273,795	\$ 284,746	\$ 296,138	\$ 414,143	\$ 54,615	\$ 66,799	\$ 80,071	\$ 91,434	\$ 63,892	\$ 66,447	\$ 69,105	\$ 71,809	\$ 74,744	\$ 77,734	\$ 80,843	\$ 84,077	\$ 87,440	\$ 87,440	\$ 452,260,708	\$ 18,185,874		
<b>OPERATING COSTS</b>																																			
6	Dredge Cell Phase 1	Lump Sum	\$11,554,547	12	\$138,654																													\$138,654	\$1,663,852
10,11,12,13,18&19	Phase 2 Wet Gypsum (Initial Thru Stage 4)	Lump Sum	\$3,534,669	20	\$176,733																													\$176,733	\$3,534,669
14,15,16,17&20	Phase 3 Dry Ash (Initial Thru Stage 4)	Lump Sum	\$17,743,173	12	\$1,478,597																													\$1,478,597	\$17,743,173
<b>Total Operating Costs</b>																																			
			\$ 22,832,389			\$ 982,979	\$ 1,004,283	\$ 1,042,450	\$ 1,084,144	\$ 1,125,342	\$ 1,166,230	\$ 1,214,630	\$ 1,263,423	\$ 1,313,060	\$ 1,363,519	\$ 1,421,179	\$ 1,476,627	\$ 1,537,148	\$ 229,424	\$ 285,161	\$ 347,368	\$ 417,362	\$ 495,965	\$ 585,265	\$ 685,965	\$ 797,275	\$ 919,126	\$ 1,051,571	\$ 1,204,821	\$ 1,379,214	\$ 1,564,245	\$ 1,760,214	\$ 1,967,789	\$ 2,188,521	
<b>Total Costs</b>																																			
			\$ 71,705,861			\$ 4,317,389	\$ 2,028,569	\$ 2,084,900	\$ 2,168,288	\$ 2,250,824	\$ 2,338,067	\$ 2,430,260	\$ 2,527,493	\$ 2,629,120	\$ 2,735,039	\$ 2,845,317	\$ 2,960,806	\$ 3,081,775	\$ 3,208,572	\$ 3,347,330	\$ 3,499,531	\$ 3,666,723	\$ 3,849,488	\$ 4,049,150	\$ 4,266,415	\$ 4,502,280	\$ 4,758,155	\$ 5,034,626	\$ 5,333,290	\$ 5,655,704	\$ 6,013,489	\$ 6,407,253	\$ 6,838,774	\$ 7,310,500	
<b>Present Worth of this Option</b>																																			
			\$ 29,971,598			\$ 2,334,410	\$ 146,286	\$ 157,427	\$ 497,962	\$ 163,482	\$ 173,837	\$ 184,139	\$ 194,284	\$ 204,795	\$ 214,746	\$ 225,138	\$ 314,143	\$ 41,615	\$ 51,799	\$ 62,071	\$ 71,434	\$ 43,892	\$ 46,447	\$ 49,105	\$ 51,809	\$ 54,744	\$ 57,734	\$ 60,843	\$ 64,077	\$ 67,440	\$ 67,440	\$ 342,260,708	\$ 13,185,874		

70.78  
29.72



**Toney, Calvin L.**

---

**From:** Smith, Daniel R on behalf of Smith, Daniel R.  
**Sent:** Friday, January 21, 2005 6:54 AM  
**To:** Toney, Calvin L.; Hughes, Michael  
**Cc:** Melton, Gary; Bowers, Larry C; Petty, Harold L.  
**Subject:** KIF Peninsula Wetland mitigation costs

Calvin, for those alternatives that utilize the peninsula, (1,2,5,6 - Mike correct me if I'm wrong), add a line item called wetland mitigation costs. The wetland is a stream similar to what we're doing for BRF. The length of the impacted stream is 1300 ft, and @ \$200/ft, the cost is \$260,000.

The impacted area begins at the pond (I used the contour showing the depressed area of the pond) and measured along the stream to the toe of the facility - 1300 ft.

Please contact me on my cell phone (I'm out today) if you have any questions.

Daniel R. (Dan) Smith, P.E.  
Parsons E & C Phone: (423) 757-8088  
633 Chestnut St, Suite 400 Fax: (423) 266-0922  
Chattanooga, TN 37932 Cell: (423) 364-1679 Email: Daniel.R.Smith@parsonsec.com  
Please note my new email address: Daniel.R.Smith@parsonsec.com

**KINGSTON FOSSIL PLANT  
OPTION 1 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)**

Estimate Number 0509301      Option: 1      PCN Number: KIF530  
 Plant: KIF      Revision: 0      Estimate Type: Preliminary  
 Cost Engineer: C. L. Toney      Unit #: N      Estimate Accuracy: +/- 20%  
 Requesting Engr: Dan Smith      Phase: 2      Estimate Issue Date 12/20/2004

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<u>Phase II</u>		
Engineering		\$600,000
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$600,000</u></b>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$3,240,410
Labor ( T&L )	322,490.50	\$10,432,162
Labor ( Non-Manual )	22,630.56	\$1,131,528
Equipment		\$9,266,896
Subcontracts		\$16,526,504
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$31,500
Total Construction Cost		\$40,629,000
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$0
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$40,629,000</u></b>
<u>All Phases</u>		
Construction Partner	345,121.06	\$40,629,000
Long Lead Procurement		\$0
Engineering		\$600,000
Other / Other Organizations		\$0
Total Risk Dollars		\$0
<b><u>Total Project Costs</u></b>	<b><u>345,121.06</u></b>	<b><u>\$41,229,000</u></b>
<b><u>For Information only Total Environmental</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>



**KINGSTON FOSSIL PLANT**  
**OPTION 2 - DRY ASH IN POND & GYPSUM ON PENINSULA**  
**(WITHOUT BUFFER OPTION)**

Estimate Number 0509302      Option: 2      PCN Number: KIF530  
Plant: KIF      Revision: 0      Estimate Type: Preliminary  
Cost Engineer: C. L. Toney      Unit #: N      Estimate Accuracy: +/- 20%  
Requesting Engr: Dan Smith      Phase: 2      Estimate Issue Date 12/20/2004

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<u>Phase II</u>		
Engineering		\$600,000
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$600,000</u></b>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$2,500,802
Labor ( T&L )	894,910.72	\$27,623,343
Labor ( Non-Manual )	14,850.12	\$742,506
Equipment		\$20,879,512
Subcontracts		\$26,994,337
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$31,500
Total Construction Cost		\$78,772,000
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$0
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$78,772,000</u></b>
<u>All Phases</u>		
Construction Partner	909,760.84	\$78,772,000
Long Lead Procurement		\$0
Engineering		\$600,000
Other / Other Organizations		\$0
Total Risk Dollars		\$0
<b><u>Total Project Costs</u></b>	<b><u>909,760.84</u></b>	<b><u>\$79,372,000</u></b>
<b><u>For Information only Total Environmental</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

**KINGSTON FOSSIL PLANT**  
**OPTION 3 - WET ASH IN POND & GYPSUM IN POND**  
**(WITHOUT BUFFER OPTION)**

Estimate Number 0509303      Option: 3      PCN Number: KIF530  
Plant: KIF      Revision: 0      Estimate Type: Preliminary  
Cost Engineer: C. L. Toney      Unit #: N      Estimate Accuracy: +/- 20%  
Requesting Engr: Dan Smith      Phase: 2      Estimate Issue Date 12/20/2004

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<i><u>Total Phase I</u></i>		<i><u>\$0</u></i>
<u>Phase II</u>		
Engineering		\$317,003
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<i><u>Total Phase II</u></i>		<i><u>\$317,003</u></i>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$1,359,322
Labor ( T&L )	596,268.14	\$18,663,206
Labor ( Non-Manual )	20,149.78	\$1,007,489
Equipment		\$14,599,114
Subcontracts		\$30,783,866
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$50,000
Total Construction Cost		\$66,462,997
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$0
Other / Other Organizations		\$0
<i><u>Total Phase III</u></i>		<i><u>\$66,462,997</u></i>
<u>All Phases</u>		
Construction Partner	616,417.92	\$66,462,997
Long Lead Procurement		\$0
Engineering		\$317,003
Other / Other Organizations		\$0
Total Risk Dollars		\$0
<b><u>Total Project Costs</u></b>	<b><u>616,417.92</u></b>	<b><u>\$66,780,000</u></b>
<b><u>For Information only Total Environmental</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

**KINGSTON FOSSIL PLANT  
OPTION 4 - DRY ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)**

<b>Estimate Number</b> 0509304	<b>Option:</b> 4	<b>PCN Number:</b> KIF530
<b>Plant:</b> KIF	<b>Revision:</b> 0	<b>Estimate Type:</b> Preliminary
<b>Cost Engineer:</b> C. L. Toney	<b>Unit #:</b> N	<b>Estimate Accuracy:</b> +/- 20%
<b>Requesting Engr:</b> Dan Smith	<b>Phase:</b> 2	<b>Estimate Issue Date:</b> 12/20/2004

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
 <u>Phase II</u>		
Engineering		\$316,998
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$316,998</u></b>
 <u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$864,118
Labor ( T&L )	875,390.83	\$27,072,323
Labor ( Non-Manual )	13,662.12	\$683,106
Equipment		\$20,428,293
Subcontracts		\$26,837,162
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$50,000
Total Construction Cost		\$75,935,002
 Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$0
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$75,935,002</u></b>
 <u>All Phases</u>		
Construction Partner	889,052.95	\$75,935,002
Long Lead Procurement		\$0
Engineering		\$316,998
Other / Other Organizations		\$0
Total Risk Dollars		\$0
<b><u>Total Project Costs</u></b>	<b><u>889,052.95</u></b>	<b><u>\$76,252,000</u></b>
<b><u>For Information only Total Environmental</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

**KINGSTON FOSSIL PLANT  
OPTION 5 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)**

Estimate Number	0509305	Option:	5	PCN Number:	KIF530
Plant:	KIF	Revision:	0	Estimate Type:	Preliminary
Cost Engineer:	C. L. Toney	Unit #:	N	Estimate Accuracy:	+/- 20%
Requesting Engr:	Dan Smith	Phase:	2	Estimate Issue Date	12/20/2004

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<u>Phase II</u>		
Engineering		\$600,000
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$600,000</u></b>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$3,680,722
Labor ( T&L )	363,279.96	\$11,794,786
Labor ( Non-Manual )	28,149.14	\$1,407,457
Equipment		\$10,531,333
Subcontracts		\$16,307,202
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$31,500
Total Construction Cost		\$43,753,000
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$0
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$43,753,000</u></b>
<u>All Phases</u>		
Construction Partner	391,429.10	\$43,753,000
Long Lead Procurement		\$0
Engineering		\$600,000
Other / Other Organizations		\$0
Total Risk Dollars		\$0
<b><u>Total Project Costs</u></b>	<b><u>391,429.10</u></b>	<b><u>\$44,353,000</u></b>
<b><u>For Information only Total Environmental</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>

**KINGSTON FOSSIL PLANT  
OPTION 6 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)**

Estimate Number	0509306	Option:	6	PCN Number:	KIF530
Plant:	KIF	Revision:	0	Estimate Type:	Preliminary
Cost Engineer:	C. L. Toney	Unit #:	N	Estimate Accuracy:	+/- 20%
Requesting Engr:	Dan Smith	Phase:	2	Estimate Issue Date	12/20/2004

<u>Phase I</u>	<u>Hours</u>	<u>Dollars</u>
Engineering		\$0
Partner (Non-Manual)		
Other / Other Organizations		\$0
<b><u>Total Phase I</u></b>		<b><u>\$0</u></b>
<u>Phase II</u>		
Engineering		\$600,002
Long Lead Procurement		\$0
Partner ( Non-Manual )		
Other / Other Organizations		\$0
<b><u>Total Phase II</u></b>		<b><u>\$600,002</u></b>
<u>Phase III</u>		
Construction ( Partner )		
Permanent Material		\$2,941,113
Labor ( T&L )	935,852.54	\$28,985,967
Labor ( Non-Manual )	19,973.46	\$998,673
Equipment		\$22,144,690
Subcontracts		\$27,042,057
Partner Fee		\$0
Partner Insurance		\$0
Escalation		\$0
Construction Risk Dollars		\$0
Other		\$31,500
Total Construction Cost		\$82,144,000
Engineering		\$0
Direct plant support + TVA Other Costs		\$0
Project Risk Dollars		\$0
Other / Other Organizations		\$0
<b><u>Total Phase III</u></b>		<b><u>\$82,144,000</u></b>
<u>All Phases</u>		
Construction Partner	955,826.00	\$82,144,000
Long Lead Procurement		\$0
Engineering		\$600,002
Other / Other Organizations		\$0
Total Risk Dollars		\$0
<b><u>Total Project Costs</u></b>	<b><u>955,826.00</u></b>	<b><u>\$82,744,002</u></b>
<b><u>For Information only Total Environmental</u></b>		<b><u>\$0</u></b>
<b><u>For Information only Total Demolition Costs</u></b>		<b><u>\$0</u></b>



KINGSTON FOSSIL PLANT OPTION 4 - DRY ASH IN POND GYPSUM IN POND

(WITHOUT BUFFER)  
PRESENT WORTH

1.25 to 1.26 per acre

ITEM No.	DESCRIPTION	UNITS	Total Cost 2005 Dollars	Number of Cycles	2005 Dollars per Cycle	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Facilities Subtotal	PRESENT WORTH of Unit Capital Dollars			
<b>CAPITAL COSTS</b>																																			
1	Erosion Control / Sediment Pond	Lump Sum	\$318,588	1	\$318,588	\$318,588																										\$318,588	\$318,588		
2	Seed / Mulch	Lump Sum	\$54,819	1	\$54,819	\$54,819																											\$54,819	\$54,819	
3	South Access Road	Lump Sum	\$49,836	1	\$49,836	\$49,836																											\$49,836	\$49,836	
4	Perimeter Road	Lump Sum	\$97,478	1	\$97,478	\$97,478																											\$97,478	\$97,478	
7	Phase 2 Base Construction	Lump Sum	\$6,087,571	2	\$3,043,785	\$3,043,785																											\$6,087,571	\$2,167,403	
7	QA/QC For Construction Of Disposal Facility	Lump Sum	\$746,424	14	\$53,316	\$53,316																											\$746,424	\$196,350	
8	Temporary Slope Protection	Lump Sum	\$140,204	1	\$140,204	\$140,204																											\$140,204	\$140,204	
9	Remedial Slope Protection	Lump Sum	\$72,424	1	\$72,424	\$72,424																											\$72,424	\$72,424	
25	Dry Fly Ash Conversion	Lump Sum	\$29,875,000	1	\$29,875,000	\$29,875,000																											\$29,875,000	\$29,875,000	
X	Construction Facility	Lump Sum	\$367,200	11	\$33,381	\$33,381																											\$367,200	\$24,477	
Z	Non Material	Lump Sum	\$683,100	11	\$62,100	\$62,100																											\$683,100	\$454,680	
Z	Engineering	Lump Sum	\$317,000	1	\$317,000	\$317,000																											\$317,000	\$317,000	
<b>Total Capital Costs</b>			\$	\$	\$	\$28,830,621	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$28,830,621	\$8,700,489	
<b>OPERATING COSTS</b>																																			
6	Disposal Cell Phase 1	Lump Sum	\$20,011,819	12	\$1,667,652	\$1,667,652																												\$20,011,819	\$12,707,292
10,11,12,13,17&18	Phase 2 Wet Operations (Initial Three Slugs 4)	Lump Sum	\$3,334,889	20	\$178,733	\$178,733																												\$3,334,889	\$1,093,415
14,15,16,18&20	Phase 3 Dry Ash (Initial Three Slugs 4)	Lump Sum	\$18,105,994	12	\$1,508,832	\$1,508,832																												\$18,105,994	\$3,432,953
<b>Total Operating Costs</b>			\$	\$	\$	\$1,955,217	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$1,955,217	\$17,233,070	
<b>Total Costs</b>			\$	\$	\$	\$30,785,838	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$30,785,838	\$25,933,559

Present Worth of this Option

\$ 46,924,410

7A Phase 2 \$3,609,746 1 cycle 2008  
7B Phase 3 \$2,457,825 1 cycle 2016

For option 4, is 8

Spreadsheet Report  
KIF0509301/FLY&BOTTM ASH

KINGSTON FOSSIL PLANT  
OPTION 1 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)

Project name KIF0509301/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 0506201  
PCN # KIF530  
Requesting Engr Dan Smith  
Option 1  
Revision 0  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 25%  
Est. Issue Date 12/20/2004  
Funding Type Capital  
Unit N

Notes Wet ash in pond & gypsum on peninsula (Wet ash in dredge call/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cost savings retrofit. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity/Outage Seq  
Detail summary



Spreadsheet Report  
KIF0509301/FLY&BOITTM ASH

Incl 1570

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Erosion Controls P	Capital	Erod Silt Fence	1,000.00 lf	0.689	68.97 mh	1,694	502				2.81	2,613
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.016	68.80 mh	1,863	5,172				1.84	7,911
			D50 8" Riprap	5,215.00 ln	0.320	1,688.80 mh	49,697	53,637				24.85	129,568
			3" Stone, 1" Thick To Prevent Erosion (Assume 105pcf)	2,004.00 ln	0.096	192.38 mh	5,056	18,190				13.63	27,312
			Sig L-6 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 Ft/Ea)	4.00 ea	186.084	684.33 mh	20,450	20,198				10,860.64	43,443
			Coll (Excavation For Placement Of 48" Dia Half-Round Pipe) (3 b5)	52.00 sy	0.400	20.80 mh	599					14.91	776
			Fill With 1032 Compacted Crushed Stone	93.00 ln	0.600	37.20 mh	1,107	604				26.99	2,510
			30" Diameter CMP Crushed Stone	1,000.00 lf	0.600	600.00 mh	17,487	26,442				47.611	47,611
			Bedding For 30" CMP @ 6" Thick	135.00 ln	0.500	67.50 mh	1,943	1,284				25.81	3,457
			30" Diameter CMP Riprap (40 pps @ 6 Stages w/30" Per Stage)	720.00 lf	0.750	540.00 mh	16,038	19,038				22.79	37,940
			D50 8" Riprap Under Metal Spillway	53.00 ln	0.320	16.96 mh	505	539				24.85	1,317
			Advanced Compacted Metal Anti-Sleep Collar	16.00 ea	16.000	256.00 mh	7,461	4,882				969.59	13,914
	Erosion Controls S P	Capital	01			4,201.35 hrs	125,853	150,687				42,029	318,569
	Seed/Mulch	Capital	Seed/Mulch Disturbed Areas	26.00 ac		hrs	hrs	84,619				2,485.34	64,619
			02			hrs	hrs	64,619				64,619	64,619
	South Access Road	Capital	1032 Crushed Stone Base, 6" Depth	3,620.00 ln	0.120	422.40 mh	13,739	31,950				14.16	49,836
			03			422.40 hrs	13,739	31,950				4,147	49,836
			Perimeter Road			422.40 hrs	13,739	31,950				4,147	49,836
	Perimeter Road	Capital	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 ln	0.120	826.20 mh	26,872	62,493				14.16	97,478
			04			826.20 hrs	26,872	62,493				8,112	97,478
	Inlet Dred/Sump Pond	Capital	6" Dia Pipe, Bellmouth	24.00 ea	1.500	36.00 mh	1,036	4,882				245	6,163
			PVC Monitoring Wells	6.00 ea	0.200	34.80 mh	2,587	785				7.96	12,324
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 772)	16.00 ln	0.500	60.00 mh	230	152				25.61	3,774
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 780)	520.00 lf	0.200	104.00 mh	2,638	851				7.96	4,141
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 792)	491.00 lf	0.200	98.20 mh	2,680	813				7.96	3,910
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 810)	17.00 ln	0.500	8.50 mh	245	162				25.61	435
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 817)	1,282.00 lf	0.200	256.40 mh	6,998	2,122				7.96	10,208
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 825)	43.00 ln	0.500	21.50 mh	619	409				25.61	1,101
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 832)	1,180.00 lf	0.200	236.00 mh	6,441	2,016				7.96	9,689
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 825)	40.00 lf	0.500	20.00 mh	590	390				25.61	1,050
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 832)	1,180.00 lf	0.200	236.00 mh	6,441	2,016				7.96	9,396
			6" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL 832)	39.00 ln	0.500	19.50 mh	561	371				25.61	927
			6" Dia Non-Per HDPE (17,658 b5)	21,190.00 sy	0.200	4,238.00 mh	121,995	371				7.46	150,320
			Bedfill For 6" Dia Non-Perforated HDPE (12,361 b5)	14,833.00 sy	0.350	3,708.25 mh	108,746					10.20	151,227
			Bedfill For 6" Dia Perforated HDPE (18,166 b5)	21,824.00 sy	0.200	4,364.80 mh	129,648					7.46	162,748
			6" Dia Perforated HDPE Perimeter Underdrain (EL 783)	2,000.00 sy	0.250	3,819.00 mh	109,934					10.20	155,744
			1081 Crushed Stone	378.00 ln	0.200	400.00 mh	10,817	3,310				7.96	15,926
			Geotextile Woven Nonflammat	1,556.00 sy	0.021	32.01 mh	913	1,920				14.67	5,545
			6" Dia Perforated HDPE Perimeter Underdrain (EL 772)	3,790.00 lf	0.200	758.00 mh	20,688	6,273				7.96	30,179
			1081 Crushed Stone	2,948.00 sy	0.150	107.40 mh	3,092	6,499				14.67	19,503
			Geotextile Woven Nonflammat	4,180.00 ln	0.021	86.84 mh	2,730	5,959				2.68	7,905
			6" Dia Perforated HDPE Perimeter Underdrain (EL 780)	786.00 ln	0.200	832.00 mh	22,707	6,886				7.96	33,125
			1081 Crushed Stone	3,236.00 sy	0.021	66.56 mh	1,699	6,552				2.69	6,976
			Geotextile Woven Nonflammat	742.00 ln	0.150	111.30 mh	3,204	6,735				14.67	31,254
			6" Dia Perforated HDPE Perimeter Underdrain (EL 810)	3,053.00 sy	0.021	62.80 mh	1,792	6,182				14.67	19,885
			1081 Crushed Stone	6,410.00 ln	0.150	1,282.00 mh	3,499	10,610				7.96	51,042
			Geotextile Woven Nonflammat	1,211.00 ln	0.021	181.65 mh	5,229	10,982				14.67	17,785
			6" Dia Perforated HDPE Perimeter Underdrain (EL 817)	6,980.00 lf	0.021	102.56 mh	3,342	10,096				7.96	13,371
			1081 Crushed Stone	1,151.00 ln	0.150	172.65 mh	4,970	10,447				14.67	16,985
			Geotextile Woven Nonflammat	4,737.00 sy	0.021	97.44 mh	2,780	9,592				2.68	12,703

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Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
Capital			6" Dia Perforated HDPE Perimeter Underdrain (EL. 835)	5,900.00 lf	0.300	1,770.00 mh	32,205	9,795	-	5,010	-	7.98	48,981
			10#1 Crushed Stone	1,115.00 in	0.150	167.25 mh	4,814	10,121	-	1,422	-	14.67	16,357
			Geotextile Woven Monofilament	4,589.00 sy	0.021	94.40 mh	2,692	9,792	-	26	-	2.68	12,306
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,900.00 lf	0.300	1,770.00 mh	31,959	8,644	-	5,010	-	7.98	46,185
			10#1 Crushed Stone	1,095.00 in	0.150	164.40 mh	4,732	9,134	-	1,367	-	14.67	16,078
			Geotextile Woven Monofilament	4,511.00 sy	0.021	92.79 mh	2,647	13,097	-	316	-	2.68	12,087
			12" Dia Force Main HDPE Perimeter Underdrain (EL. 783)	2,580.00 lf	0.150	387.00 mh	1,043	5,219	-	733	-	12.08	33,432
			10#1 Crushed Stone	575.00 in	0.285	85.25 mh	2,485	5,085	-	209	-	14.67	8,435
			Submersible Pumping Station Equipment Package	1.00 ea	56,000	56.00 mh	1,810	3,051	-	478	-	7,560.57	7,561
			60" Diameter Catch Basin (Precast)	1.00 ea	1,515	1.515 mh	4,716	3,051	-	160	-	5,338.36	5,338
			Geotextile Woven Monofilament	2,293.00 sy	0.021	47.16 mh	1,515	2,855	-	488	-	90.19	4,870
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	1,900	3.80 mh	304	1,02	-	80	-	243.02	486
			Seal Weld 1/4" Thick A-38 Steel Plate	2.00 ea	4,000	8.00 mh	2,487	2,803	-	490	-	90.19	4,780
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	1,900	3.80 mh	304	1,02	-	80	-	243.02	486
			Seal Weld 1/4" Thick A-38 Steel Plate	2.00 ea	4,000	8.00 mh	2,487	2,803	-	490	-	90.19	4,780
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	1,900	3.80 mh	304	1,02	-	80	-	243.02	486
			Seal Weld 1/4" Thick A-38 Steel Plate	2.00 ea	4,000	8.00 mh	2,487	2,803	-	490	-	90.19	4,780
			24" CMP Storm Drain	38.00 lf	0.300	11.40 mh	333	773	-	68	-	35.24	1,339
			Excavation For 24" Dia Pipe (25 bcy)	30.00 sy	0.320	9.60 mh	153	173	-	77	-	17.13	360
			Backfill For 24" Diameter CMP (47 bcy)	47.00 sy	0.300	14.10 mh	59	38	-	25	-	25.61	102
			Bedding For 24" Culvert	72.00 sy	0.800	57.60 mh	1,529	2,709	-	207	-	58.80	4,233
			Excavation For 36" Dia Pipe (87 bcy)	87.00 sy	0.300	26.10 mh	79	66	-	451	-	17.13	976
			Backfill For 36" Diameter CMP (17 bcy)	17.00 sy	0.300	5.10 mh	159	35	-	15	-	25.61	230
			Bedding For 36" Culvert	57.00 sy	0.800	45.60 mh	1,259	2,709	-	207	-	58.80	4,233
			Upper & Lower LDPCE Cementitious	10,380.00 sy	0.350	3,633.00 mh	107,885	247,653	-	28,459	-	3.79	86,229
			Sediment Trap (3630 bcy)	1.00 lot	0.940	0.940 mh	5,807	5,807	-	25	-	8.31	419,051
			Inst DmsSwan Pond	1.00 lot	1,300.000	478.78 cd	1,559,419	-	-	-	-	0.00	0
			Elv. 810 To Elev. 866	623,416.00 sy	1,300.000	478.78 cd	1,559,419	-	-	-	-	0.00	0
			Bottom Ash Dike Fill	4,659,654.00 sy	375.000	1,619.28 cd	531,650	-	-	-	-	3.42	2,126,405
			Wet Dip And Slick	976,946.00 sy	375.000	1,619.28 cd	531,650	-	-	-	-	1.57	7,631,580
			Disposal Life (Assume Dike & Dredge Ash)	12.90 yr					-	-	-	2.65	1,796,563
			Dig Call#1 Opr Cost						-	-	-	0.00	0
			O & M						-	-	-	0.00	0
			Gypsum SK Peninsula						-	-	-	0.00	0
			Clear And Grub	1.00 lot					-	-	-	0.00	0
			Clear And Grub	90.00 ac	72.000	6,480.00 mh	193,715	-	-	-	-	3,941.32	354,719
			Strip 1 ft Vegetation And Topsoil - Spoil At Stockpile	129,000.00 cy	0.020	2,580.00 mh	76,380	-	-	-	-	161.618	161,618
			Capital						-	-	-	1.25	516,336
			Gypsum SK Peninsula						-	-	-	0.00	0
			Erosion Controls						-	-	-	0.00	0
			Erod. Silt Fence (Trench Bottom Of Fence, 10% Hay, Bales)	4,900.00 lf	0.055	335.98 mh	9,769	2,462	-	1,554	-	2.81	13,784
			Cul For Stormwater Runoff Pond (2,000 bcy)	2,400.00 sy	890.000	7,200.00 mh	3,199	5,076	-	2,525	-	2.39	5,724
			Cleanout Stormwater Runoff Pond (2,000 bcy)	2,400.00 sy	383.333	720.00 mh	3,638	2,350	-	2,350	-	2.24	6,189
			Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00 sy	1,904.000	7,560.00 mh	22,757	43,731	-	24,225	-	3.30	47,682
			Riprap For Stormwater Runoff Pond	4,300.00 in	0.200	860.00 mh	25,595	43,731	-	18,441	-	20.41	87,187
			Pipe Bedding	20.00 in	0.000	10.00 mh	288	199	-	34	-	25.03	521
			72" Dia CMP For Outlet Structure	5.00 lf	2,000	7.50 mh	214	1,851	-	45	-	376.24	2,257
			48" Dia CMP For Riser For Outlet Structure	7.00 lf	1,091	7.00 mh	214	1,851	-	45	-	376.24	2,257
			48" Dia CMP Outlet Pipe (Principle Spillway)	150.00 lf	0.620	93.00 mh	2,610	7,404	-	542	-	70.37	10,550
			Cul. Hole In Riser	3.00 ea	1,000	3.00 mh	74	1,000	-	15	-	29.92	90
			Anti-Sleep Collars (Assume Concrete)	4.00 sy	10,000	40.00 mh	16,994	5,076	-	105	-	555.30	22,333
			Composite Concrete For Riser Base (Assume 7' X 7' X 2')	7.00 ea	75,000	525.00 mh	66,982	62,480	-	1,373	-	3,347.60	201,919
			Capital						-	-	-	0.00	0
			Erosion Controls						-	-	-	0.00	0
			Bottom Ash (South Access Road)	2,600.00 cy	1,994.000	1,250.00 mh	3,052	26,323	-	3,118	-	2.57	6,170
			Crushed Stone Base (South Access Road)	2,900.00 in	0.120	348.00 mh	11,319	3,086	-	401	-	14.16	41,658
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 in	0.120	40.80 mh	1,327	3,086	-	401	-	14.16	4,514
			Capital						-	-	-	0.00	0
			Roads						-	-	-	0.00	0
			Erosion Controls						-	-	-	0.00	0
			Bottom Ash (South Access Road)	2,600.00 cy	1,994.000	1,250.00 mh	3,052	26,323	-	3,118	-	2.57	6,170
			Crushed Stone Base (South Access Road)	2,900.00 in	0.120	348.00 mh	11,319	3,086	-	401	-	14.16	41,658
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 in	0.120	40.80 mh	1,327	3,086	-	401	-	14.16	4,514
			Capital						-	-	-	0.00	0
			Roads						-	-	-	0.00	0

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labors Quantity	Labors Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	09					479.56 hrs	15,698	29,409		5,935			52,042
	Fencing	Capital	New Fencing (Including Grounding) Perimeter Security Gate Shed Gate, 20 FT WIDE, With Motorized Operator Capitl Fencing	20.00 lf 1.00 ea 1.00 ea					4,211 370 17,459			21.05 370 17,459.00	4,211 370 17,459 22,039 22,039
	Seed/Mulch	Capital	Seed/Mulch Disturbed Areas Seed/Mulch	25.00 ac					62,134 62,134 62,134			2,465.34	62,134 62,134 62,134
	Gypsum Disp Facility	Capital	<b>Disposal Facility Construction</b> Cut And Fill Balance (189,718 bcy) Cut & Soil Select Cut For Future 1 Ft Clay Layer In Final Cover Riprap For Ditch Ditch For Riprap (24 wide x 2 deep) Geotextile (If Riprap Is Used) Perimeter Road Surfacing - Bottom Ash Drainage Road Surfacing - Crushed Stone Final Layer (1 Ft Thick) For Liner (No. 57 Stone) Geotextile For Underdrain Pipes 8" Dia. HDPE SDR 17 Perforated Pipes 8" Dia. HDPE Standard Fillings Concrete Anchors For Underdrain Piping Pit/Pool Subgrade	1.00 lot 227,663.00 cy 145,001.00 cy 23,500.00 ln 7,300.00 lf 19,500.00 sy 2,400.00 cy 2,900.00 ln 168,000.00 ln 5,700.00 sy 6,400.00 lf 50.00 ea 65.00 ea 70.00 ac	2,800,000 1,904,000 0.200 0.044 0.015 1,904,000 0.120 0.096 0.011 0.200 0.200 12.500 7.000	81.31 cd 76.16 cd 4,700.00 mh 320.03 mh 292.50 mh 3,052 11,318 349.00 mh 16,128.00 mh 59.85 mh 1,280.00 mh 10.00 mh 1,092.50 mh 10.00 cd 36,560.74 hrs 36,560.74 hrs 36,560.74 hrs	244,855 169,178 139,881 19,811 9,920 3,052 11,318 507,694 1,723 34,955 248 34,373 9,497 1,171,687 1,171,687 1,171,687			265,808 196,528 100,761 12,904 995 3,116 3,417 257,040 203 5,439 2,778 653,092 853,092 853,092		0.00 2.24 2.80 20.41 3.25 1.82 2.57 14.15 13.20 1.67 7.95 13.10 568.55 170.67	510,463 382,707 479,657 23,816 35,443 6,170 41,058 2,817,010 9,595 50,887 47,309 12,577 3,797,367 3,797,367 3,797,367
	Gyp On Peninsula Cst	Capital	Allowances For Karst Geologic Features Additional Geotechnical Investigation	1.00 ls 1.00 ls					513,500 102,700 616,200			513,500.00 102,700.00 616,200.00	513,500 102,700 616,200
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack C & M Gyp On Peninsula Cst	20.00 yrs					616,200 616,200 616,200			0.00 2.65 2.65	616,200 3,644,075 4,260,275 4,260,275
	Construction Parking	Capital	Life Of Gypsum Disposal Stack										

Spreadsheet Report  
KIF0509301/FLY&BOTTM ASH

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
Capital			18" Dia Coarse Bottom Ash Drain Columns (neal 2 miles, 1,100 bcy) Roto Till Fly Ash Layer Bottom Ash Dike Fill 4" Diameter Perforated PVC Pipes (Underdrains) SDR 17.5 Trenching For The Drain System (4" Dia Underdrains), 966 bcy Ship Basting 1" Soil Cover (Phase 1 Expansion), 19,139 bcy Anchor Trench Oil Anchor Trench Fill & Compact 2' 0" Thick Bottom Ash Blanket Drain 1' 0" Thick Filler Drain Ash Layer Geomembrane Perforated Pipes ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) 6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipe (EL 760) 108" Coupled Stone, Bedding 6" Depth 6" Dia Perforated HDPE Drain (EL 760) Geotextile Woven Monofilament Cut For Underdrain System Backfill For Underdrain System Construction	16,900.00 lf 177,100.00 sv 153,614.00 cy 26,082.00 lf 1,100.00 cy 800.000 22,900.00 cy 1,308.00 cy 1,242.00 cy 24,940.00 cy 12,320.00 cy 36,980.00 sv 4,946.00 lf 4,121.00 sv 1,001.00 lf 1,236.00 lf 502.00 lf 157.00 lf 202.00 lf 1,176.00 sv 224.00 sv 193.00 sv 1,100 lf	1,400.000 1,300.000 0.070 0.600 800.000 0.000 0.020 1,300.000 1,300.000 0.950 0.009 0.021 0.150 0.030 0.130 0.500 0.500 0.500 0.500 0.021 0.000 0.000 0.020	128.50 cd 156.95 cd 49,659 3,973 14,125 1,219 397.46 mh 15,699 22,649 32,723 2,418 8,344 4,333 6,747 37,540 mh 1,648 500 8,253 4,116 690 2,391 1,200 1,200	74,394 304,775 49,659 3,973 14,125 1,219 397.46 15,699 22,649 32,723 2,418 8,344 4,333 6,747 37,540 1,648 500 8,253 4,116 690 2,391 1,200 1,200	40,842 40,842	347,537	20,541 6,542 252,191 1,872 14,530 3,330 9,835 39,291 4,712 4,200 268 1,276 1,050 1,657 2,298 268 17 1,284 487 82 7.46 504 31,500.00 470,247.87	20.54 3.42 3.76 7.46 1.27 8.31 17.13 3.42 3.42 7.96 2.68 14.97 7.96 14.67 7.96 25.61 7.96 25.61 2.68 1.870 10.20 31,500.00 470,247.87	347,537	347,537	347,537
Temp Slope Protect			17 Cut For Ditch (5,815 bcy) 180" 6" Riprap Solid Ditch Jute Matting Copper Temp Slope Protect	6,978.00 cy 4,239.00 lf 6,978.00 sv 6,978.00 sv	1,200.000 0.320 0.012	5,82 cd 1,356.48 mh 83.74 mh 1,765.86 hrs 53,741 1,765.86 hrs 53,741	10,981 40,371 2,389 53,741 83,741 53,741 53,741	161,766 161,766 5,464 48,575 48,575 48,575 48,575	817,784 817,784 3,593 3,593 3,593 3,593 3,593	1,902,386 1,902,386 427 34,545 34,545 34,545 34,545	31,500 31,500 1.19 1.19 1.19 1.19 1.19	31,500.00 470,247.87	5,407,402 5,407,402 5,407,402 5,407,402 5,407,402 5,407,402 5,407,402	
Capital			19 Riprap D50 Size 6" Cut For Basin (3,532 bcy) Copper Riprap Stilling Basin	2,344.00 lf 4,300.00 cy 2,344.00 lf 4,300.00 cy	0.320 1,200.000	750.08 mh 3.56 cd 950.75 hrs 950.75 hrs 29,091 29,091	22,324 6,767 29,091 29,091 29,091 29,091	23,838 23,838 23,838 23,838 23,838 23,838	12,075 7,420 19,495 19,495 19,495 19,495	12,075 7,420 19,495 19,495 19,495 19,495	1.57 1.57 1.57 1.57 1.57 1.57	708,588	58,237 14,188 72,424 72,424 72,424 72,424	
Capital			20 Dredge Ash Initial Disposal Life Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter O & M Ph 2 Initial Const	451,295.00 cy 0.90 yrs 7,370.00 lf 6,442.00 sv 1,922.00 lf 1,968.00 lf 338.00 lf	0.200 0.021 0.150 0.200 0.150	1,474.00 mh 126.34 mh 223.80 mh 331.60 mh 50.40 mh 2,206.14 hrs 2,206.14 hrs	40,229 3,604 6,442 9,050 1,451 60,777 60,777	12,199 12,437 13,542 2,744 3,050 43,972 43,972	12,075 7,420 19,495 19,495 19,495 19,495 19,495	12,075 7,420 19,495 19,495 19,495 19,495 19,495	1.57 1.57 1.57 1.57 1.57 1.57 1.57	708,588	58,237 14,188 72,424 72,424 72,424 72,424 72,424	
O & M			21 Stage 1 (3 To 1 Side Slopes) Compacted Fly Ash Dike Fill (50% F.A. & 50% B.A.) Dredge Ash Stage 1 Disposal Life (Assume Dike & Dredge Ash) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter O & M Ph 2 Operational Cost	1.00 lot 255,668.00 cy 1,334,690.00 cy 11,995.00 lf 9,279.00 sv 2,238.00 lf 2,986.00 lf 524.00 lf	1,300.000 0.200 0.150 0.200 0.150	196.30 cd 2,899.00 mh 197.04 mh 10,052 14,116 517.20 mh 76.60 mh 17,574.59 hrs 17,574.59 hrs	475,359 82,740 6,321 10,052 14,116 2,263 76,600 570,156 570,156	19,028 19,396 21,131 4,280 4,756 589 68,589 68,589 68,589	12,075 7,420 19,495 19,495 19,495 19,495 19,495 19,495	12,075 7,420 19,495 19,495 19,495 19,495 19,495 19,495	1.57 1.57 1.57 1.57 1.57 1.57 1.57 1.57	708,588	58,237 14,188 72,424 72,424 72,424 72,424 72,424 72,424	
O & M			22 Ph 2 Operational Cost											

4937,153

ne to  
Hopper 2015-2016  
#2 Base Construct

2005  
2005

2017-2020

2017-2020

Location	Activity	Outage Seq	Description	Takeoff Quantity	Unit	Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		O & M	<b>Stage 2 (3 To 1 Side Slopes)</b> Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.) Dredge Ash	1.00 lot 253,403.00 cy 1,509,673.00 cy	lot cy cy	1,300,000	202.62 cd	490,659	-	-	-	-	0.00	0
		O & M	<b>Stage 2 Disposal Life (Assume Dike &amp; Dredge Ash)</b> Perforated Pipe ADS Drain Tube, 6" Diameter Gravelle For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost	3.70 Yrs 11,865.00 lf 9,868.00 sv 2,403.00 ln 2,670.00 lf 541.00 tn	Yrs lf sv ln lf tn	0.200 0.021 0.150 0.200 0.150	2,373.00 mh 203.40 mh 360.45 mh 544.00 mh 81.15 mh 18,140.47 hrs 18,140.47 hrs	64,765 6,802 10,376 14,574 2,336 588,514 588,514	18,639 20,022 21,811 4,419 4,911 70,801 70,801	-	10,075 692 3,064 2,267 680 426,011 426,011	-	7.96 2.68 14.67 7.96 14.67	94,479 26,516 35,251 21,381 7,936 3,459,041 3,459,041
		O & M	<b>Stage 3 (3 To 1 Side Slopes)</b> Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.) Dredge Ash	1.00 lot 227,056.00 cy 1,344,916.00 cy	lot cy cy	1,300,000	174.70 cd	433,046	-	-	-	-	0.00	0
		O & M	<b>Stage 3 Disposal Life (Assume Dike &amp; Dredge Ash)</b> Perforated Pipe ADS Drain Tube, 6" Diameter Gravelle For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost	3.30 Yrs 10,230.00 lf 8,525.00 sv 2,072.00 ln 2,302.00 lf 486.00 tn	Yrs lf sv ln lf tn	0.200 0.021 0.150 0.200 0.150	2,046.00 mh 175.36 mh 310.80 mh 465.40 mh 88.80 mh 15,640.64 hrs 15,640.64 hrs	55,841 5,603 8,942 12,656 2,012 507,414 507,414	16,932 17,202 18,807 3,810 4,230 61,041 61,041	-	8,687 587 2,642 1,855 564 367,306 367,306	-	7.96 2.68 14.67 7.96 14.67	81,490 22,861 30,395 18,330 6,636 3,050,423 3,050,423
CONST ACTIVITY		Capital	Mobilize, Drug Test, Misc Other, & Demobilize Construct Facilities *CONST FACILITY	1.00 ls	ls	11,746,522	11,746.52 mh 11,746.52 hrs 11,746.52 hrs	380,000 380,000 380,000	-	-	205,000 205,000 205,000	-	585,000.00	585,000 585,000 585,000
VON MANUAL		Non-Manual	Non-Manual *NON MANUAL	1.00 ls	ls	22,630,560	22,630.56 mh 22,630.56 hrs 22,630.56 hrs	1,131,528 1,131,528 1,131,528	-	-	-	-	1,131,528.00	1,131,528 1,131,528 1,131,528

5,927,080 \$30,74  
 \$ 5,204,873 ~~MC~~ 192,840 HP  
 \$ 4,069,852 \$ 35.40 ~~MC~~ 114,972 MR

{ 286,008 }

~~372,700 26.97~~  
~~200,500 35.10~~

~~5.5~~

~~12,412 CHRS~~  
 206,641 MHS

~~12,412 CHRS~~

206,633 MHS

Estimate Totals

Labor	4,980,740	hrs	182,633,970	
Material	14,428,193			
Subcontract	6,678,987			
Equipment	3,990,051			
Other	5,018,480			
	35,096,451			
Engineered Materials - Ph 2		100,000 %		C
Adjustment - Engr Materials		(100,000) %		C
	35,096,451			
Environmental Costs		100,000 %		C
Adjustment Environmental		(100,000) %		C
	35,096,451			
Demolition Costs		100,000 %		C
Adjustment Demolition		(100,000) %		C
	35,096,451			
Small Tools Expense	86,778	0.450 \$/hr		H
Consumables & Expendables	198,230	4.000 %		C
Office Supplies & Expense		3.000 %		C
Subcontract Fee	286,008			C
Escalation - Craft Labor	224,133	4.500 %		C
Escalation - Subcontract	180,360	2.700 %		C
Escalation - Subcontract Fee		0.350 %		C
Escalation - Perm Materials	245,296	1.700 %		C
Escalation - HED Equipment		5.000 %		C
Escalation - Tagged Equipment		5.000 %		C
Escalation - Small Tools	6,587	0.200 \$/hr		H
Escalation - Consumables	5,961	0.200 %		C
Escalation - Non-Manual Labor		5.000 %		C
Escalation - Office Supplies		0.200 %		C
	668,307			
Partner Insurance (FY04)	148,422	3.000 %		C
Partner Award Fee (FY04)	250,032	5.000 %		C
	398,459			
FPG Proj Engr - Phase 1	1	0.000 % @ 42.00 A		A
FPG Mech Engr - Phase 1	1	0.000 % @ 42.00 A		A
FPG Elec Engr - Phase 1	1	0.000 % @ 42.00 A		A
FPG Civil Engr - Phase 1	1	0.000 % @ 42.00 A		A
FPG Syst Engr - Phase 1	1	0.000 % @ 42.00 A		A
Non-TVA Engr - Phase 1	1	0.000 % @ 72.00 A		A
FPG Proj Cntrl Cost - Phase 1	1	0.000 % @ 42.00 A		A
FPG Proj Cntrl Sched - Phase 1	1	0.000 % @ 42.00 A		A
FPG Cost Estimating - Phase 1	1	0.000 % @ 42.00 A		A
	9			
Avg				
FPG Proj Engr - Phase 2	1	0.000 % @ 42.00 A		A
FPG Mech Engr - Phase 2	1	0.000 % @ 42.00 A		A
FPG Elec Engr - Phase 2	1	0.000 % @ 42.00 A		A
FPG Civil Engr - Phase 2	1	0.000 % @ 42.00 A		A
FPG Syst Engr - Phase 2	1	0.000 % @ 42.00 A		A
Non-TVA Engr - Phase 2	1	0.000 % @ 72.00 A		A
FPG Proj Cntrl Cost - Phase 2	1	0.000 % @ 42.00 A		A
FPG Proj Cntrl Sched - Phase 2	1	0.000 % @ 42.00 A		A
FPG Cost Estimating - Phase 2	1	0.000 % @ 42.00 A		A
FPG Engr Records - Phase 2	1	0.000 % @ 42.00 A		A
	10			
FPG Proj Engr - Phase 3	1	0.000 % @ 42.00 A		A
FPG Mech Engr - Phase 3	1	0.000 % @ 42.00 A		A
FPG Elec Engr - Phase 3	1	0.000 % @ 42.00 A		A
FPG Civil Engr - Phase 3	1	0.000 % @ 42.00 A		A
FPG Syst Engr - Phase 3	1	0.000 % @ 42.00 A		A
Non-TVA Engr - Phase 3	1	0.000 % @ 72.00 A		A
FPG Proj Cntrl Cost - Phase 3	1	0.000 % @ 42.00 A		A
FPG Proj Cntrl Sched - Phase 3	1	0.000 % @ 42.00 A		A
FPG Engr Records - Phase 3	1	0.000 % @ 42.00 A		A
CAO DWG Support - Phase 3	3	0.000 % @ ### A		A
	12			

Rounding  
 36,447,256  
 Total 36,447,256

Estimate Totals

Labor	11,653,890								
Material	3,240,410								
Subcontract	16,526,504								
Equipment	9,286,686								
Other	31,560								
	<u>40,829,000</u>								
Engineered Materials - Ph 2					100,000 %				
Adjustment - Engr Materials					(100,000) %				
	<u>40,829,000</u>								
Environmental Costs									
Adjustment Environmental					100,000 %				
	<u>40,829,000</u>								
FPG Chll Engr - Phase 2	30,076				0.207 % @	42.00 A			716
Non-TVA Engr - Phase 2	594,088				2.270 % @	72.00 A			7,834
FPG Proj Chll Cost - Phase 2	977				0.007 % @	42.00 A			23
FPG Proj Chll Sched - Phase 2	2,927				0.020 % @	42.00 A			70
FPG Estimating - Phase 2	976				0.007 % @	42.00 A			23
FPG Engr Records - Phase 2	976				0.007 % @	42.00 A			23
	<u>600,000</u>								
Rounding									
	<u>41,229,000</u>								
<b>Total</b>	<b>41,229,000</b>								

KINGSTON FOSSIL PLANT  
OPTION 1 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)

Project name KIF/0509301/FLY&BOTTM ASH  
 Engineer DAN SMITH  
 Estimator C. L. Toney  
 Labor rate table KIF 40 2004

Equipment rate table

TVA Equipment  
 Ash  
 Project KIF  
 Plant KIF  
 Estimate # 0509301  
 PCN # KIF530  
 Requesting Engr Dan Smith  
 Option 1  
 Revision 0  
 Phase 2  
 Estimate Type Preliminary  
 Estimate Accuracy +/- 20%  
 Est. Issue Date 12/20/2004  
 Funding Type Capital  
 Unit N

Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2. Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (Incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Notes

Report format Sorted by Location/Activity/Outage Seq  
 Detail summary





Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Capital		1081 Crushed Stone	378.00 in	0.150	56.70 mh	1,692	3,431		482		14.67	5,545
			Geotextile Woven Monofilament	1,555.00 sy	0.021	32.01 mh	913	3,151		109		2.68	4,173
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,790.00 lf	0.200	758.00 mh	20,688	6,273		3,218		7.96	30,178
			1081 Crushed Stone	716.00 in	0.150	107.40 mh	3,092	6,489		913		14.67	19,503
			Geotextile Woven Monofilament	2,948.00 sy	0.021	60.64 mh	1,730	5,969		206		2.68	7,905
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,160.00 lf	0.200	832.00 mh	22,707	6,886		3,532		7.96	33,125
			1081 Crushed Stone	795.00 in	0.150	117.90 mh	3,394	7,134		1,002		14.67	11,530
			Geotextile Woven Monofilament	3,238.00 sy	0.021	68.96 mh	1,899	6,552		226		2.68	8,678
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	3,925.00 lf	0.200	785.00 mh	21,425	6,497		3,333		7.96	31,254
			1081 Crushed Stone	742.00 in	0.150	111.30 mh	3,204	6,735		646		14.67	10,885
			Geotextile Woven Monofilament	3,053.00 sy	0.021	62.30 mh	1,792	6,192		214		2.68	8,187
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	6,410.00 lf	0.200	1,282.00 mh	34,988	10,610		5,443		7.96	51,042
			1081 Crushed Stone	1,211.00 in	0.150	181.65 mh	5,223	11,544		1,544		14.67	17,765
			Geotextile Woven Monofilament	4,868.00 sy	0.021	102.56 mh	2,926	10,096		349		2.68	13,371
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	5,090.00 lf	0.200	1,218.00 mh	33,242	10,080		5,171		7.96	48,494
			1081 Crushed Stone	1,151.00 in	0.150	172.95 mh	4,970	10,447		1,468		14.67	16,895
			Geotextile Woven Monofilament	4,737.00 sy	0.021	97.44 mh	2,780	9,582		331		2.68	12,703
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	5,900.00 lf	0.200	1,180.00 mh	32,205	10,121		5,010		7.96	46,981
			1081 Crushed Stone	1,115.00 in	0.150	167.25 mh	4,814	10,121		1,422		14.67	16,357
			Geotextile Woven Monofilament	4,589.00 sy	0.021	94.40 mh	2,693	9,282		321		2.68	12,308
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200	1,160.00 mh	31,659	9,900		4,925		7.96	46,185
			1081 Crushed Stone	1,096.00 in	0.150	164.40 mh	4,732	9,948		1,397		14.67	16,078
			Geotextile Woven Monofilament	4,511.00 sy	0.021	92.78 mh	2,642	9,134		316		2.68	12,087
			6" Dia Force Main HDPE Perimeter Underdrain (EL. 763)	2,590.00 lf	0.250	645.00 mh	17,604	13,087		2,741		14.67	33,432
			1081 Crushed Stone	1.00 ls	0.150	86.25 mh	2,483	5,219		209		12.96	33,432
			Summersible Pumping Station Equipment Package	1.00 ea	56.000	56.00 mh	2,289	5,085		209		7,560.57	7,561
			60" Diameter Catch Basin (Precast)	2,293.00 sy	60.000	60.00 mh	1,810	3,051		478		5,938.36	5,938
			Geotextile Woven Monofilament	54.00 sy	0.021	47.17 mh	1,348	4,643		160		2.68	6,149
			Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ss	1,000	54.00 mh	1,515	2,856		499		90.19	4,870
			Gout Seal Storm Drain - 24" Diameter (Pump & Plug)	53.00 sy	4,000	8.00 mh	304	102		80		243.02	489
			Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ss	1,000	53.00 mh	1,487	2,803		490		90.19	4,780
			Gout Seal Storm Drain - 24" Diameter (Pump & Plug)	23.00 sy	4,000	8.00 mh	264	102		80		243.02	485
			Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ea	4,000	23.00 mh	645	1,216		212		90.19	2,074
			24" CMP Storm Drain	38.00 lf	4,000	8.00 mh	304	102		80		243.02	488
			Excavation For 24" Dia Pipe (25 bcy)	21.00 cy	0.200	18.24 mh	498	773		77		35.24	249
			Backfill For 24" Diameter CMP (1.7 bcy)	4.00 in	0.320	6.72 mh	183	173		166		17.13	360
			Bedding For 24" Culvert	72.00 lf	0.500	2.00 mh	58	38		7		25.51	102
			36" CMP Storm Drain	81.00 cy	0.900	43.20 mh	1,259	2,709		265		58.90	4,233
			Excavation For 36" Dia Pipe (67 bcy)	57.00 cy	0.200	16.20 mh	466	831		207		6.73	1,173
			Backfill For 36" Diameter CMP (47 bcy)	9.00 in	0.320	18.24 mh	523	451		451		17.13	976
			Bedding For 36" Culvert	10,380.00 cy	0.500	4.50 mh	130	86		15		25.81	310
			Anchor Trench - Excavate into Borrow Area (6,550 bcy)	110,688.00 cy	0.200	2,076.00 mh	59,760	247,653		26,469		8.31	66,228
			Upper & Lower LLDFE Geomembrane	4,356.00 cy	0.040	5,534.40 mh	157,865	495,205		14,113		3.79	419,651
			Sediment Trap (3,630 bcy)	12.90 yr	0.040	174.24 mh	5,807	495,205		4,592		2.39	10,389
			Capitol			35,789.66 hrs	1,016,066	495,205		265,158		0.00	1,788,753
			Instl Drns/Swan Pond			35,789.66 hrs	1,016,066	495,205		265,158		0.00	1,788,753
76	Drg CellIP1 Opr Cost	O & M	Elev. 810 To Elev. 866	1.00 lot								0.00	
			Bottom Ash Dike Fill	622,416.00 cy	1,300,000	478.78 cd	1,159,419			966,986		3.42	2,126,405
			Dredge	4,853,654.00 cy	375,000	1,810.26 cd	531,659			7,631,580		1.57	7,631,580
			Wet Dike And Stack							1,264,903		2.65	1,796,565
			Disposal Life (Assume Dike & Dredge Ash)									0.00	
			O & M			48,954.36 hrs	1,691,078			7,631,580		0.00	11,554,547
			Drg CellIP1 Opr Cost			48,954.36 hrs	1,691,078			7,631,580		0.00	11,554,547
77	Gypsum Slk Peninsula	Capital	Clear And Grub	1.00 lot								0.00	
			Clear And Grub	90.00 ac	72,000	6,480.00 mh	183,775			160,944		3,941.32	354,719
			Strip 1 ft Vegetation And Topsoil - Spoil At Stockpile	129,000.00 cy	0.020	2,580.00 mh	79,800			82,238		1.25	161,618

Location	Activity	Outage Seq	Description	Takeoff Quantity	Unit	Productivity	Material	Labor	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
8	Erosion Controls		Gypsum Silt Peninsula 07	9,060.00 hrs	hrs			273,155		243,181			516,336
			Erect Silt Fence (Trench Bottom Off Fence, 10% Hwy Bases)	4,900.00 lf	lf	0.069		9,769		1,554		2.81	13,784
			Cut For Stormwater Runoff Pond (2,000 bcy)	2,400.00 cy	cy	800.000		3,199		2,625		2.39	5,724
			Cleanout Stormwater Runoff Pond (2,300 bcy)	1,904.000 cy	cy	393.333		3,839		2,350		2.24	5,189
			Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00 cy	cy	1,904.000		22,757		24,725		3.30	47,482
			Riprap For Stormwater Runoff Pond	4,300.00 ln	ln	0.200		23,595		18,441		20.41	87,767
			Pipe Bedding	20.00 ln	ln	0.500		288		34		26.03	521
			72" Dia. CMP For Outlet Structure	6.00 lf	lf	2.000		337		70		376.24	2,257
			48" Dia. CMP For Riser For Outlet Structure	7.00 lf	lf	1.091		214		45		170.84	1,195
			48" Dia. CMP Outlet Pipe (Principle Spillway)	150.00 lf	lf	0.620		2,610		542		70.37	10,556
			Cut Holes In Riser	3.00 sq	sq	1.000		74		15		29.92	90
			Composite Concrete For Riser Base (Assume 7' x 7' x 2')	4.00 cy	cy	10.000		1,284		105		555.30	2,221
			Anti-Sleep Collars (Assume Concrete)	7.00 ea	ea	75.000		16,984		51,777		3,347.60	23,433
			Erosion Controls					86,962		51,777			201,219
								86,962		51,777			201,219
19	Roads												
			Bottom Ash (South Access Road)	2,400.00 cy	cy	1,904.000		3,152		3,118		2.57	6,170
			Crushed Stone Base (South Access Road)	2,900.00 ln	ln	0.120		11,319		3,417		14.16	41,053
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 ln	ln	0.120		1,327		401		14.16	4,814
			Capitol					15,698		6,935			52,042
			Roads					15,698		6,935			52,042
10	Fencing												
			New Fencing (Including Grounding)	200.00 lf	lf				4,211			21.05	4,211
			Personnel Swinging Gate	1.00 ea	ea				370			369.72	370
			Sliding Gate, 20 Ft Wide, With Motorized Operator	1.00 ea	ea				17,459			17,459.00	17,459
			Capitol						22,039				22,039
			Fencing						22,039				22,039
11	Seed/Mulch												
			Seed/Mulch Disturbed Areas	25.00 ac	ac							2,485.34	62,134
			Capitol						62,134				62,134
			Seed/Mulch						62,134				62,134
13	Gypsum Disp Facility												
			Disposal Facility Construction	1.00 lot	lot							0.00	0.00
			Cut And Fill Balance (189,719 bcy)	227,663.00 cy	cy	2,800.000		244,655		265,808		2.24	510,463
			Cut & Spoil Select Cut For Future 1 Ft Clay Layer In Final Cover	145,001.00 cy	cy	1,904.000		166,178		196,528		2.50	362,707
			Riprap For ditch	23,500.00 ln	ln	0.200		139,891		100,781		20.41	479,657
			Ditch For Riprap (24" wide x 2' deep)	7,300.00 lf	lf	0.044		10,911		12,904		3.26	23,816
			Geotextile (If Riprap Is Used)	19,500.00 sq	sq	0.015		8,420		985		1.82	35,443
			Penmeter Road Surfacing - Bottom Ash	2,400.00 tn	tn	1,904.000		3,052		3,118		2.57	6,170
			Drainage Layer (1 Ft Thick) For Liner (No. 57 Stone)	183,000.00 ln	ln	0.098		11,319		3,417		14.16	41,058
			Geotextile For Underdrain Pipe	5,700.00 lf	lf	0.011		507,694		257,049		13.20	2,217,010
			8" Dia. HDPE SDR 17 Perforated Pipe	6,400.00 lf	lf	0.200		1,723		203		1.87	9,535
			Concrete Anchors For Underdrain Piping	90.00 ea	ea	0.200		34,373		407		13.10	50,987
			Proofroll Subgrade	85.00 ea	ea	12.000		8,497		2,778		566.58	47,309
			Capitol					1,171,887		853,082			3,797,367
			Gypsum Disp Facility					1,171,887		853,082			3,797,367

Location	Activity	Usage Set	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Unit	Labor Amount	Material Amount	Slip Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount				
		13					36,560.74 hrs	1,171,887	1,772,388		853,092			3,797,367				
	Gyp On Peninsula Cst	Capital	Allowance For Karst Geologic Features Addition Geotechnical Investigation Capital	1.00 ls 1.00 ls						513,500 102,700 616,200			513,500 102,700 616,200	513,500 102,700 616,200				
		O & M	Cut For Underdrain System 6" Dia Perforated HDPE Perimeter Underdrains Fill For Underdrain System 1081 Crushed Stone, 6" Depth (110 pcf) Cut For Lateral Outlet Pipes 6" Dia Non-Perforated HDPE Lateral Outlet Pipes Fill For Lateral Outlet Pipes 1081 Crushed Stone, 6" Depth (110 pcf) Gypsum Disposal Stack (Wet Sluice) Wet Cast Gypsum Gypsum Dike Cut Rim Ditches	4,407.00 cy 59,491.00 lf 3,525.00 cy 3,272.00 tn 551.00 cy 7,436.00 lf 441.00 cy 409.00 tn 5,535,853.00 cy 1,011,347.00 cy 114,575.00 cy	0.200 0.200 0.250 0.150 0.200 0.250 0.150 0.150 375.000 375.000	881.40 mh 11,898.20 mh 881.25 mh 490.80 mh 110.20 mh 1,487.20 mh 110.25 mh 61.35 mh 2,895.93 cd 305.53 cd	25,372 324,733 10,571 14,128 3,172 40,590 3,174 1,766 792,965 89,183	96,468 25,368 29,699 12,308 1,222 3,712	7,492 50,517 10,571 4,172 937 6,314 1,222 521 1,884,452 213,489			7,46 7,96 10,20 14,67 4,106 59,212 4,496 5,000 2,676,517 303,221 0						
		14	Life Of Gypsum Disposal Stack Gyp On Peninsula Cst	20.00 yrs			39,940.32 hrs 39,940.32 hrs	1,320,101 1,320,101	144,187 144,187	616,200 616,200	2,179,787 2,179,787			4,260,275 4,260,275				
5	Construction in Parking	Capital	Silt Fence Cut And Fill Balance (500 bcy) Cut & Soil Additional Material Crushed Stone Base Capital Construction Parking	1,000.00 lf 600.00 cy 400.00 cy 1,400.00 tn	0.020 2,800.000 1,904.000 0.120	20.00 mh 0.21 cd 0.21 cd 168.00 mh 226.30 hrs 220.30 hrs 220.30 hrs	526 645 458 5,464 7,093 7,093	320						6,846 1,226.4 1,001 19,821 23,073 23,013 23,013				
7	Ph 2 Base Construct	Capital	Base Layers Cut For Dredge Cell (268,500 bcy) Compacted Fly Ash Base (Fill) Protective Subgrade 0.5" Thick Fly Ash Filter Layer 18" Dia Coarse Bottom Ash Drain Columns (haul 1,100 bcy) Bottom Ash Dike Fill 4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5 Trenching For The Drain System (4" Dia Underdrains), 966 bcy Strip Existing 1' Soil Cover (Phase 1 Expansion), 19,333 bcy Anchor Trench Cut Anchor Trench Fill & Compact 2.0" Thick Bottom Ash Blanket Drain 1.0" Thick Filter Drain Ash Layer Geomembrane Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) #57 Stone For Outlet pipe Bedding (135 pcf) 6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL 760) 1081 Crushed Stone, Bedding 6" Depth 6" Dia Perforated HDPE Drain (EL 760) 1081 Crushed Stone Geotextile Woven Monofilament Cut For Underdrain System Backfill For Underdrain System	1.00 lot 322,200.00 cy 573,650.00 cy 177,100.00 sy 152,217.00 cy 30,543.00 cy 15,923.00 lf 177,100.00 sy 163,614.00 cy 25,092.00 lf 1,160.00 cy 22,960.00 cy 1,306.00 cy 1,242.00 cy 24,640.00 cy 12,320.00 cy 36,960.00 sy 4,121.00 sy 1,001.00 tn 1,236.00 lf 250.00 tn 10.00 lf 286.00 tn 1,176.00 sy 224.00 cy 168.00 cy	0.040 1,300.000 28,111.100 1,300.000 1,300.000 1,400.000 1,300.000 0.070 800.000 0.200 0.200 0.320 1,300.000 1,300.000 0.050 0.200 0.021 0.150 0.200 0.150 0.200 0.500 0.500 0.200 0.200 0.200 0.200 0.200 0.280	12,888.00 mh 441.27 cd 6.30 cd 117.47 cd 23.49 cd 128.50 cd 125.96 cd 1,825.74 mh 232.00 mh 28.70 cd 261.20 mh 397.44 mh 18.95 cd 9.48 cd 1,846.00 mh 888.20 mh 84.77 mh 150.15 mh 247.20 mh 37.30 mh 60.40 mh 5.00 mh 302.40 mh 144 302.40 mh 4,116 143.00 mh 24.19 mh 44.80 mh 42.00 mh	428,505 1,098,579 5,353 284,477 56,895 74,304 304,775 49,829 6,678 14,128 7,519 11,441 45,869 52,740 8,186 4,200 288 4,322 6,747 1,079 1,649 144 6,253 4,116 690 1,280 1,209											

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Slip Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
	Capital		17	1.00 ls 1.00 ls										
	Capital		18	6,978.00 cy 4,233.00 in 6,978.00 sy 6,978.00 sy	1,200.00 0.320 0.012	5.82 cd 1,356.48 mh 83.74 mh 1,765.86 hrs 1,765.86 hrs	2,493,966 2,493,966 2,493,966	161,766 161,766 161,766	470,247 817,784 817,784	1,902,386 1,902,386 1,902,386	31,500 31,500 31,500	31,500.00 470,246.87	31,500 470,247 5,407,402 5,407,402 5,407,402	
	Capital		19	2,244.00 in 4,200.00 cy	0.320 1,200.00	750.08 mh 950.75 hrs 950.75 hrs	22,324 6,767 29,091 23,838	23,838		12,075 7,420			24.85 7.420 3.30	59,237 14,186 72,424 72,424
	O & M		20	451,295.00 cy 0.90 yrs										
	O & M		21	255,189.00 cy 1,334,496.00 cy	1,300.00	196.30 cd	475,359			396,462			0.00 3.42 1.57	0 671,821 2,088,277
	O & M		22	1.00 lot 3.30 yrs										
	O & M		23	1.00 lot 283,403.00 cy 1,509,673.00 cy	1,300.00	202.62 cd	490,659			409,223			0.00 3.42 1.57	0 659,883 2,373,715
	O & M		24	11,865.00 lf 3.70 yrs	0.200	2,373.00 mh	64,765	19,639		10,075			0.00 7.96	0 94,479 94,479

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KIF0509301/FLY&BOTTM ASH

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		O & M	Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost 23	9,888.00 sy 2,403.00 tn 2,670.00 lf 541.00 tn	0.021 0.150 0.200 0.150	203.40 mh 360.45 mh 534.00 mh 81.15 mh 18,140.47 hrs 18,140.47 hrs	5,802 10,376 14,574 2,336 588,514 588,514	20,022 2,811 4,419 4,911 70,801 70,801	2,373,715 2,373,715 2,373,715	426,071 426,071	-	2.68 14.67 7.96 14.67	28,516 35,251 21,261 3,459,041 3,459,041
	Ph 2 Operational Cost												
	O & M		Stage 3 (3 To 1 Side Slopes) Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.) Dredge Ash	1.00 lot 227,106.00 sy 1,344,916.00 sy	1,300.000	174.70 cd	423,046	-	2,114,661	352,832	-	0.00 3.42 1.57	0 775,879 2,114,661
			Stage 3 Disposal Life (Assume Dike & Dredge Ash)	3.30 Yrs									
			Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost 24	10,230.00 lf 8,323.00 sy 2,072.00 tn 2,302.00 lf 466.00 tn	0.200 0.021 0.150 0.200 0.150	2,046.00 mh 175.36 mh 310.80 mh 460.40 mh 69.90 mh 15,640.64 hrs 15,640.64 hrs	55,841 5,003 8,947 12,566 2,012 507,414 507,414	16,932 17,262 13,807 3,810 4,230 61,041 61,041	2,114,661 2,114,661	367,306 367,306	-	7.96 2.98 14.57 7.96 14.67	81,460 22,861 30,395 19,330 6,836 3,050,423 3,050,423
xCONST FACILITY	Construct Facilities	Capital											
	Non-Manual	Capital	Mobilize, Drug Test, Misc Other, & Demobilize	0.00 ls	#####	0.00 mh	0					0.00	0
	Non-Manual	Capital	Non Manual	0.00 ls	#####	0.00 mh	0					0.00	0

\$ 32.35/HR  
\$ 39.65/HR

\$ 5,314,122  
X  
119

\$ 584,553 we 585K  
L = 65% \$ 380,000  
E = 35% \$ 205,000

181,033  
X 1.125  
222,629

Estimate Totals

Material	10,052,162	310,743,974	hrs						
Subcontract	3,240,410								
Equipment	16,526,504	228,634,338	hrs						
Other	9,061,896								
	31,500								
	<u>38,912,472</u>	38,912,472							
Engineered Materials - Ph 2				100,000 %					
Adjustment - Engr Materials				(100,000) %					
		38,912,472							
Environmental Costs				100,000 %					
Adjustment Environmental				(100,000) %					
		38,912,472							
Demolition Costs				100,000 %					
Adjustment Demolition				(100,000) %					
		38,912,472							
Small Tools Expense	139,835			0.450 \$/hr					
Consumables & Expendables	402,086			4,000 %					
Office Supplies & Expense				3,000 %					
Subcontract Fee	<u>541,921</u>	39,454,393							
Escalation - Craft Labor	452,347			4,500 %					
Escalation - Subcontract	446,216			2,700 %					
Escalation - Subcontract Fee				0.350 %					
Escalation - Perm Materials	55,087			1,700 %					
Escalation - HED Equipment				2,000 %					
Escalation - Tagged Equipment				2,000 %					
Escalation - Small Tools	10,565			0.034 \$/hr					
Escalation - Consumables	20,104			0.200 %					
Escalation - Non-Manual Labor				3,400 %					
Escalation - Office Supplies	<u>884,319</u>	40,438,712		0.200 %					
Partner Insurance (FY04)	301,565			3,000 %					
Partner Award Fee (FY04)	<u>502,608</u>	41,242,895		5,000 %					
	804,173								
FPG Civil Engrng - Phase 2	27,080			0.207 % @	42.00 A			645	
Non-TVA Engr - Phase 2	509,560			2.278 % @	72.00 A			7,077	
FPG Proj Cntrl Cost - Phase 2	880			0.007 % @	42.00 A			21	
FPG Proj Cntrl Sched - Phase 2	2,635			0.020 % @	42.00 A			63	
FPG Estimating - Phase 2	878			0.007 % @	42.00 A			21	
FPG Engr Records - Phase 2	<u>878</u>	41,784,796		0.007 % @	42.00 A			21	
	541,911								
Rounding		41,784,796							
<b>Total</b>		<b>41,784,796</b>							

KINGSTON FOSSIL PLANT  
OPTION 1 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)

Project name KIF/0509301/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KF 402004

Equipment rate table TVA Equipment

Project  
Plant  
Estimate #  
PCN #  
Requesting Engr  
Option  
Revision  
Phase  
Estimate Type  
Estimate Accuracy  
Est. Issue Date  
Funding Type  
Unit

Ash  
KIF  
0509301  
KF530  
Dan Smith  
1  
0  
2  
Preliminary  
+/-20%  
12/20/2004  
Capital  
N

Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Notes

Report format Sorted by Location/Activity/  
Detail summary



ADJUST COLUMNS TO INCLUDE CIRCULATION  
6-1999  
M=1.72  
53.716 E=2.2

ADD ROW  
CAPITAL  
OR  
O+M

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Meter Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
1	Erosion Controls/S P	Erect Silt Fence	1,000.00 lf	0.999	66.57 mh	1,875	484	-	311	-	-	2,480	
		Geotextile (Nonwoven) Erosion Protection Channel	4,000.00 sy	0.016	88.80 mh	1,649	576	-	172	-	-	7,497	
		D50 8" Riprap	5,215.00 tn	0.320	1,682.80 mh	41,737	92,150	-	26,338	-	-	120,225	
		3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 tn	0.096	192.38 mh	5,089	17,886	-	3,006	-	-	25,981	
		Sig 1-6 CMP IRI Spillway (1/2 of 18" Dia Riser Stand Pipe @ 128 F/Ea)	4.00 ea	166.084	664.33 mh	17,185	19,660	-	2,740	-	-	39,785	
		Cut (Excavation For Placement, 1/4 18" Dia Half-Round Pipe) 1/3 by	52.00 cy	0.400	20.80 mh	503	1,730	-	173	-	-	676	
		Fill With 1032 Compacted Crushed Stone	39.00 tn	0.400	37.20 mh	930	587	-	2,308	-	-	2,308	
		30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	14,695	26,000	-	44,300	-	-	44,300	
		Bedding For 30" CMP, 6" Thick	135.00 tn	0.500	87.50 mh	1,833	1,262	-	225	-	-	3,121	
		30" Diameter CMP Stand Pipe (4 Pipes w/30" Per Stage)	790.00 lf	0.750	540.00 mh	13,969	18,720	-	2,255	-	-	34,923	
		D50 8" Riprap Outlet For Metal Spillway	53.00 tn	0.320	16.96 mh	424	530	-	268	-	-	1,222	
		Galvanized Corrugated Metal Anti-Seep Collar	16.00 ea	16.000	256.00 mh	6,270	4,800	-	1,340	-	-	12,610	
		Erosion Controls/S P	16.00 ea		4,201.35 hrs	105,759	148,168	-	41,205	-	-	295,132	
							105,759		41,205				295,132
		2	Seed/Mulch	Seed/Mulch Disturbed Areas	26.00 ac		0.00 hrs	0	-	62,920	-	-	2,420.00
Seed/Mulch					0.00 hrs	0	-	62,920	0	-		62,920	
3	South Access Road	1032 Crushed Stone Base, 6" Depth	3,620.00 tn	0.120	422.40 mh	11,545	31,416	-	4,066	-	13.36	47,027	
		South Access Road			422.40 hrs	11,545	31,416	-	4,066	-		47,027	
4	Perimeter Road	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 tn	0.120	826.20 mh	22,582	61,449	-	7,953	-	13.36	91,983	
		Perimeter Road			826.20 hrs	22,582	61,449	-	7,953	-		91,983	
5	Instl Dms/Stream Pond	6" Dia Pipe Bollards	24.00 ea	1.500	36.00 mh	871	4,800	-	240	-	2,000.00	5,911	
		PVC Monitoring Wells	6.00 ea		84.80 mh	2,174	771	-	395	-	-	7.05	3,340
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 772)	16.00 tn	0.200	3.00 mh	184	150	-	27	-	-	23.12	370
		Crushed Stone, Bedding 6" Depth	920.00 lf	0.200	104.00 mh	2,385	845	-	433	-	-	7.05	3,664
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 780)	18.00 tn	0.200	3.60 mh	218	188	-	30	-	-	23.12	416
		Crushed Stone, Bedding 6" Depth	491.00 lf	0.200	98.20 mh	2,252	799	-	308	-	-	7.05	3,480
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 792)	17.00 tn	0.200	3.40 mh	206	159	-	28	-	-	23.12	393
		Crushed Stone, Bedding 6" Depth	1,282.00 lf	0.200	256.40 mh	5,881	2,086	-	1,087	-	-	7.05	9,054
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 810)	43.00 tn	0.500	21.50 mh	502	402	-	72	-	-	23.12	994
		Crushed Stone, Bedding 6" Depth	1,218.00 lf	0.200	243.60 mh	5,587	1,982	-	1,014	-	-	7.05	8,583
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 817)	41.00 tn	0.500	20.50 mh	468	363	-	68	-	-	23.12	948
		Crushed Stone, Bedding 6" Depth	1,800.00 lf	0.200	360.00 mh	5,413	1,920	-	982	-	-	7.05	8,315
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 825)	40.00 tn	0.500	20.00 mh	464	374	-	67	-	-	23.12	925
		Crushed Stone, Bedding 6" Depth	1,160.00 lf	0.200	232.00 mh	5,331	1,888	-	966	-	-	7.05	8,175
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 832)	39.00 tn	0.500	19.50 mh	472	365	-	65	-	-	23.12	901
Crushed Stone, Bedding 6" Depth	2,190.00 cy	0.200	438.00 mh	10,257	3,618	-	35,318	-	-	5.51	137,838		
Cut For 6" Dia Non-Perforated HDPE (17,658 bcy)	14,633.00 cy	0.250	3,708.25 mh	89,793	31,416	-	49,609	-	-	8.99	133,312		
Backfill For 6" Dia Non-Perforated HDPE (12,381 bcy)	21,824.00 cy	0.200	4,364.80 mh	105,585	35,979	-	53,979	-	-	6.51	141,960		
Cut For 6" Dia Perforated HDPE (18,186 bcy)	15,276.00 cy	0.250	3,819.00 mh	92,382	44,911	-	66,911	-	-	6.99	137,293		
Backfill For 6" Dia Perforated HDPE (12,730 bcy)	2,000.00 lf	0.200	400.00 mh	9,174	3,255	-	1,695	-	-	7.05	14,084		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 765)	378.00 tn	0.150	56.70 mh	1,372	3,374	-	473	-	-	13.80	5,218		
1081 Crushed Stone	1,558.00 sy	0.021	32.01 mh	787	3,098	-	107	-	-	2.55	3,972		
Geotextile Woven Monofilament	3,780.00 lf	0.200	756.00 mh	17,385	6,188	-	3,155	-	-	7.05	26,708		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	716.00 lf	0.150	107.40 mh	2,580	6,390	-	805	-	-	13.80	9,883		
1081 Crushed Stone	2,948.00 sy	0.021	60.64 mh	1,264	5,889	-	202	-	-	2.55	7,525		
Geotextile Woven Monofilament	4,180.00 lf	0.200	836.00 mh	19,062	5,770	-	3,483	-	-	7.05	28,316		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,180.00 lf	0.150	626.40 mh	2,852	7,015	-	993	-	-	13.80	10,850		
Geotextile Woven Monofilament	3,236.00 sy	0.021	66.56 mh	1,596	6,443	-	222	-	-	2.55	8,261		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	3,925.00 lf	0.200	785.00 mh	18,004	6,388	-	3,288	-	-	7.05	27,659		
Geotextile Woven Monofilament	742.00 tn	0.150	111.30 mh	2,692	6,622	-	928	-	-	13.80	10,242		
1081 Crushed Stone	3,053.00 sy	0.021	62.80 mh	1,506	6,076	-	209	-	-	2.55	7,793		
Geotextile Woven Monofilament	6,410.00 lf	0.200	1,282.00 mh	29,403	10,432	-	5,338	-	-	7.05	45,171		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	1,211.00 tn	0.150	181.65 mh	4,384	10,808	-	1,512	-	-	13.80	16,716		
Geotextile Woven Monofilament	4,986.00 sy	0.021	102.56 mh	2,459	9,827	-	342	-	-	2.55	12,728		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	6,090.00 lf	0.200	1,218.00 mh	27,895	9,911	-	5,070	-	-	7.05	42,916		
Geotextile Woven Monofilament	1,151.00 tn	0.150	172.65 mh	4,176	10,273	-	1,438	-	-	13.80	15,886		
1081 Crushed Stone	4,737.00 sy	0.021	97.44 mh	2,338	9,491	-	328	-	-	2.55	12,652		
Geotextile Woven Monofilament	5,900.00 lf	0.200	1,180.00 mh	27,963	9,602	-	4,912	-	-	7.05	41,577		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	1,115.00 tn	0.150	167.25 mh	4,046	9,951	-	1,394	-	-	13.80	15,381		
1081 Crushed Stone						-		-	-		5,911		
						-		-	-		2,000		
						-		-	-		3,340		
						-		-	-		1,634		

Spreadsheet Report  
KIF050930/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Unit	Labor Productivity	Labor Quantity	Labor Unit	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		Install Dams/Swan Pond												
		Geotextile Woven Monofilament	4,589.00	sf	0.021	94.40	mh	2,263	9,137				2.55	11,714
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,900.00	lf	0.200	1,180.00	mh	25,605	9,440				7.05	40,673
		1081 Crushed Stone	1,956.00	ln	0.150	164.40	mh	3,977	9,782				13.80	15,129
		Geotextile Woven Monofilament	4,511.00	sf	0.021	92.78	mh	2,224	8,981				2.55	11,515
		12" Dia Force Main HDPE Perimeter Underdrain (EL. 763)	2,560.00	lf	0.250	645.00	mh	14,793	12,668				11.76	30,349
		1081 Crushed Stone	375.00	ln	0.150	86.25	mh	2,096	5,132				13.80	7,937
		Submersible Pumping Station Equipment Package	1,000.00	ls	60.000	56.00	mh	1,905	5,000				7.110	7,110
		60" Diameter Catch Basin (Precast)	1.00	ea	60.000	60.00	mh	1,521	3,000				4,989.02	4,989
		Geotextile Woven Monofilament	2,293.00	sf	0.021	47.17	mh	1,131	4,555				2.55	5,653
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	54.00	cy	1.000	54.00	mh	1,273	2,808				217.09	4,571
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00	ea	1.000	2.00	mh	256	1,000				84.64	4,468
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	53.00	cy	1.000	53.00	mh	1,250	2,755				217.09	4,434
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00	ea	1.000	2.00	mh	256	1,000				84.64	4,468
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	23.00	cy	1.000	23.00	mh	542	1,195				84.64	1,947
		24" CMP Storm Drain	2.00	ea	0.480	0.96	mh	386	1,500				217.09	4,34
		Excavation For 24" Dia Pipe (25 bcy)	36.00	lf	0.200	18.24	mh	145	780				32.77	1,245
		Backfill For 24" Diameter CMP (17 bcy)	4.00	ln	0.500	2.00	mh	48	37				7.34	220
		Bedding For 24" Culvert	72.00	lf	0.600	43.20	mh	1,058	2,684				15.50	328
		36" CMP Storm Drain	57.00	cy	0.200	19.24	mh	392	1,584				23.12	82
		Excavation For 36" Dia Pipe (67 bcy)	81.00	cy	0.500	40.50	mh	109	84				15.50	384
		Backfill For 36" Diameter CMP (47 bcy)	10.900	cy	0.200	2.18	mh	50.218	25.959				23.12	208
		Anchor Trench - Excavate Into Borrow Area (0.650 bcy)	110.868	sf	0.050	5.544	mh	132.676	243.514				7.34	76.168
		Upper & Lower L/DPE Geotextiles	4,556.00	cy	0.040	174.24	mh	4,880	13,836				3.52	390.025
		Soil Dms/Swan Pond				35,789.66	hrs	853,837	486,927				2.15	1,612,723
		05				35,789.66	hrs	853,837	486,927				2.15	1,612,723
6		Dig Cell#1 Opr Cost											0.00	0
		Elv. 810 To Elv. 866	1.00	lot									0.00	0
		Bottom Ash Dike Fill	622.416	cy	1.300	478.78	cd	974.301	948.025				3.08	1,322.327
		Dredge	4,853.854	cy						7,430.944			1.53	7,430.944
		Wet Dip And Stack	678.848	cy	375.000	1,810.26	cd	446.773	1,240.101				2.49	1,686.974
		Disposal Life (Assume Dike & Dredge Ash)	12.90	yr									0.00	0
		Dig Cell#1 Opr Cost											0.00	0
		06				48,954.36	hrs	1,421,074	743,944				11.040,145	11,040,145
		Clear And Grub											0.00	0
		Clear And Grub	90.00	ac	72.000	6,480.00	mh	162,856	157,788				3,562.49	320,624
		Strip 1 ft Vegetation And Topsoil - Spot At Stockpile	129,000.00	cy	0.020	2,580.00	hrs	66,706	80,625				1.14	147,331
		Gypsum Silt Peninsula				9,060.00	hrs	229,542	238,413				26.143	467,955
		07				9,060.00	hrs	229,542	238,413				26.143	467,955
8		Erosion Controls												
		Erect Silt Fence (Trench Bottom Of Fence, 10% Hwy Bales)	4,900.00	lf	0.059	335.99	mh	8,209	2,421				2.48	12,153
		Cut For Stormwater Runoff Pond (2,000 bcy)	2,400.00	cy	800.000	3,000	cd	2,688	2,475				2.15	5,164
		Clearout Stormwater Runoff Pond (2,300 bcy)	2,750.00	cy	383.333	7.20	cd	3,226	2,304				2.00	5,530
		Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00	cy	1,904.000	7.56	cd	19,124	24,240				3.01	43,363
		Pipe Bedding	4,300.00	ln	0.200	860.00	mh	21,509	43,000				19.21	82,588
		48" Dia CMP For Outlet Structure	20.00	ln	0.500	10.00	mh	242	33				23.54	471
		72" Dia CMP For Riser For Outlet Structure	6.00	lf	2.000	12.00	mh	183	1,620				361.90	2,171
		48" Dia CMP Outlet Pipe (Principle Spillway)	7.00	lf	1.091	7.64	mh	189	920				166.40	1,114
		Cut Holes In Giser	150.00	lf	0.620	93.00	mh	2,183	7,280				66.70	10,005
		Composite Concrete For Riser Base (Assume 7 x 7 x 2)	4.00	cy	1.000	3.00	mh	63	15				25.86	78
		Anti-Sleep Collars (Assume Concrete)	7.00	ea	10.000	40.00	mh	1,087	809				1.999	499.70
		Erosion Controls				2,763.38	hrs	73,077	61,436				2,944.23	20,610
		08				2,763.38	hrs	73,077	61,436				2,944.23	185,274
9		Roads												
		Bottom Ash (South Access Road)	2,400.00	cy	1,904.000	1.26	cd	2,555	3,057				2.34	5,922
		Crushed Stone Base (South Access Road)	2,900.00	ln	0.120	348.00	mh	9,512	25,883				13.36	38,741
		Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00	ln	0.120	40.80	mh	1,115	3,035				13.36	4,542
		Roads				479.56	hrs	13,192	6,799				28.917	48,908
		09				479.56	hrs	13,192	6,799				28.917	48,908
0		Fencing												
		New Fencing (Including Grounding)	200.00	lf	4.100					4.100			20.50	4,100
		Personnel Swinging Gate	1.00	ea						360			360.00	360

Spreadsheet Report  
KJF0509301/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
11	Fencing 2008	Sliding Gate, 20 Ft. Wides, With Motorized Operator Fencing 10	1.00 ea		0.00 hrs			17,000			17,000.00	17,000	
	Seed/Mulch 2008	Seed/Mulch Disturbed Areas Seed/Mulch 11	25.00 ac		0.00 hrs			60,500			2,420.00	60,500	
13	Gypsum Disp Facility 2008	<b>Disposal Facility Construction</b> Cut And Fill Balance (189,719 boy) Cut & Spoil Select Cut For Future 1 Ft. Clay Layer In Final Cover Riprap For Ditch Ditch For Filter (24" wide x 2' deep) Geotextile (If Riprap Is Used) Perimeter Road Surfacing - Bottom Ash Perimeter Road Surfacing - Crushed Stone Drainage Layer (1 Ft. Thick) For Liner (No. 57 Stone) Geotextile For Underdrain Pipe 8" Dia. HDPE SDR 17 Perforated Pipe 8" Dia. HDPE Standard Fittings Concrete Anchors For Underdrain Piping Proofroll Subgrade Gypsum Disp Facility 73	1.00 lot 227,683.00 cy 145,001.00 cy 23,500.00 tn 7,300.00 lf 19,500.00 sf 2,400.00 sf 2,400.00 sf 168,000.00 tn 5,700.00 sf 6,400.00 lf 50.00 ea 85.00 ea 70.00 ac	2,800.000 1,904.000 0.200 0.044 0.015 1,904.000 0.120 0.096 0.011 0.200 0.200 12.500 7.000	81.31 cd 76.16 cd 4,700.00 mh 320.03 mh 292.50 mh 1.26 cd 348.00 mh 16,128.00 mh 59.85 mh 1,280.00 mh 10.00 mh 1,062.50 mh 10.00 cd 36,560.74 hrs	205,596 139,846 117,547 9,169 7,076 2,665 9,512 429,634 7,481 29,357 209 28,885 984,779 984,779	260,536 192,875 98,895 12,821 975 3,057 9,350 232,000 1,425,000 200 5,333 2,724 4,000 836,385 836,365					0.00 2.05 2.29 19.21 2.99 1.73 2.34 13.36 12.84 1.80 7.05 12.17 4.00 158.14 3,563,905 3,563,905	0 466,189 332,320 21,460 451,352 33,644 5,622 38,744 2,108,634 9,123 45,109 809 11,140 3,563,905 3,563,905
14	Gyp On Peninsula Cst. 2009-2009 2009 2009-2009 CAPITAL 2008	Cut For Underdrain System 6" Dia Perforated HDPE Perimeter Underdrains Fill For Underdrain System 1081 Crushed Stone, 6" Depth (110 pcf) Cut For Lateral Outlet Pipes 6" Dia Non-Perforated HDPE Lateral Outlet Pipes Fill For Lateral Outlet Pipes 1081 Crushed Stone, 6" Depth (110 pcf) <b>Gypsum Disposal Stack (Wet Sluice)</b> Wet Cast Gypsum Gypsum Dike Cut Rim Ditches <b>Life Of Gypsum Disposal Stack</b> Allowance For Karst Geologic Features Additional Geotechnical Investigation Gyp On Peninsula Cst. 14	4,407.00 cy 59,491.00 lf 3,525.00 cy 3,272.00 tn 551.00 cy 7,436.00 lf 441.00 cy 409.00 tn 5,535,853.00 cy 1,011,347.00 cy 114,575.00 cy 20.00 yrs 1.00 ls 1.00 ls	0.200 0.200 0.250 0.150 0.200 0.250 0.150 0.150 375.000 375.000 375.000 1.000 1.000	881.40 mh 11,899.20 mh 881.25 mh 490.80 mh 119.20 mh 1,487.20 mh 110.25 mh 61.35 mh 2,668.93 cd 305.55 cd	21,321 272,885 21,317 11,872 2,666 34,109 2,667 1,484 665,601 75,406	7,345 49,526 10,364 4,080 918 6,190 1,297 511 1,847,502 293,303				6.51 419,233 31,681 45,155 3,584 52,401 3,953 5,646 2,513,103 2,49 2,49 2,49 240,000 240,000 100,000 3,728,151 3,728,151	28,666 419,233 31,681 45,155 3,584 52,401 3,953 5,646 2,513,103 2,49 2,49 2,49 240,000 240,000 100,000 3,728,151 3,728,151	
15	Construction Parking 2008	Silt Fence Cut And Fill Balance (600 boy) Cut & Spoil Additional Material Crushed Stone Base Construction Parking 15	1,000.00 lf 600.00 cy 400.00 cy 1,400.00 tn	0.020 2,800.000 1,904.000 0.120	20.00 mh 0.21 cd 0.21 cd 220.30 hrs 220.30 hrs	542 385 4,992 5,961 5,961					0.76 2.05 2.29 13.36	757 1,229 917 18,704 21,606 21,606	
17	Ph 2 Base Construct 2015-2016 See OA/QC	<b>Base Layers</b> Cut For Dredge Cell (268,500 boy) Compacted Fly Ash Base (Fill) Proofroll Subgrade 2.5" Thick Bottom Ash Layer 0.5" Thick Fly Ash Filter Layer 18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 boy) Bottom Ash Dike Fill 163,614.00 sf 125.96 cd 26,082.00 lf 1,160.00 cy 22,560.00 cy 1,306.00 cy 1,242.00 cy 24,840.00 cy 1,300.000 36,960.00 sf	322,200.00 cy 573,650.00 cy 177,100.00 sf 152,717.00 cy 30,543.00 cy 177,100.00 sf 163,614.00 sf 125.96 cd 26,082.00 lf 1,160.00 cy 22,560.00 cy 1,306.00 cy 1,242.00 cy 24,840.00 cy 1,300.000 36,960.00 sf	0.040 1,300.000 28,111.100 1,300.000 1,300.000 1,300.000 1,300.000 1,300.000 0.070 0.200 800.000 0.200 0.320 1,300.000 0.050	12,888.00 mh 441.27 cd 6,30 cd 117.47 cd 23.49 cd 128.50 cd 125.96 cd 1,625.74 mh 232.00 mh 28.70 mh 261.20 mh 397.44 mh 18.95 cd 19,625 1,848.00 mh	360,928 897,965 4,499 239,056 47,911 62,440 256,114 5,612 40,268 1,933 11,873 6,318 9,614 38,570 19,625 44,302	332,231 873,748 2,520 232,609 46,521 20,240 246,207 7,609 89,740 1,933 14,637 3,265 9,642 37,500 19,625 4,620					0.00 2.15 3.09 0.04 3.09 3.09 20.00 3.09 3.44 3.44 6.51 1.16 7.34 15.50 3.09 3.52	0 663,220 1,771,714 7,018 471,665 44,332 338,400 82,990 505,321 89,740 7,546 28,510 9,593 19,256 76,100 38,050 130,231

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 2 Base Construct	Perforated Pipe ADS Drain Tube, 6" Diameter	4,946.00 lf	0.200	989.20 mh	22,087	8,050	-	4,118	-	7.05	34,854
		Geotextile For Underdrain	4,121.00 sy	0.021	84.77 mh	2,032	8,205	-	283	-	2.55	10,520
		#57 Stone For Outlet Pipe Bedding (135 pc)	1,001.00 tn	0.150	150.15 mh	3,632	8,934	-	1,251	-	13.80	13,817
		Solid Outlet Pipe ADS Drain, 6" Diameter	1,238.00 lf	0.200	247.20 mh	5,107	2,012	-	1,029	-	7.05	8,710
		#57 Stone For Outlet Pipe Bedding (135 pc)	250.00 tn	0.150	37.50 mh	1,107	2,231	-	313	-	13.80	3,451
		6" Dia Non-Per HDPE Compogated Tubing Lateral Outlet Pipes (EL. 760)	312.00 lf	0.200	60.40 mh	1,385	482	-	251	-	7.05	2,128
		10" Crushed Stone, Bedding 6" Depth	1,000.00 tn	0.500	500.00 mh	1,211	94	-	17	-	23.12	2,311
		6" Dia Perforated HDPE Drain (EL. 760)	1,512.00 lf	0.200	302.40 mh	6,938	2,481	-	1,259	-	7.05	10,655
		1081 Crushed Stone	286.00 tn	0.500	143.00 mh	3,459	2,674	-	478	-	23.12	9,602
		Geotextile Woven Monofilament	1,176.00 sy	0.021	24.19 mh	580	2,341	-	81	-	2.55	3,062
		Cut For Underdrain System	224.00 cy	0.200	44.80 mh	1,084	-	-	373	-	6.51	1,457
		Backfill For Underdrain System	168.00 cy	0.250	42.00 mh	1,016	-	-	484	-	8.99	1,510
		Certification	1.00 ls	-	-	-	-	-	-	-	31,500.00	31,500
		O/VOC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	-	-	-	457,884	457,884
		Ph 2 Base Construct	-	-	75,247.27 hrs	2,095,770	159,062	796,284	1,855,084	31,500	31,500	4,947,700
		17	-	-	75,247.27 hrs	2,095,770	159,062	796,284	1,855,084	31,500	31,500	4,947,700
	Temp Slope Protect	Cut For Ditch (5.815 bcy)	6,978.00 cy	1,200.000	5.82 cd	9,228	-	-	11,804	-	3.01	21,032
		550 9" Riprap	4,238.00 tn	0.320	1,356.48 mh	33,926	42,380	-	21,409	-	23.05	67,724
		Seed Ditch	6,978.00 sy	-	-	-	-	3,489	-	-	0.50	3,489
		Julie Matting	6,978.00 sy	0.012	83.74 mh	2,007	5,373	-	419	-	1.12	7,789
		Temp Slope Protect	-	-	1,765.86 hrs	45,161	47,763	3,489	33,632	-	13.80	130,045
		18	-	-	1,765.86 hrs	45,161	47,763	3,489	33,632	-	13.80	130,045
	Riprap Stilling Basin	Riprap D50 Size 6"	2,344.00 tn	0.320	750.08 mh	19,760	23,440	-	11,838	-	23.05	54,038
		Cut For Basin (3.582 bcy)	4,300.00 cy	1,200.000	3.58 cd	5,688	-	-	7,274	-	3.01	12,960
		Riprap Stilling Basin	-	-	950.75 hrs	24,446	23,440	-	19,112	-	19.112	66,998
		19	-	-	950.75 hrs	24,446	23,440	-	19,112	-	19.112	66,998
		Ph 2 Initial Constr	-	-	251,295.00 cy	-	-	890,933	-	-	1.53	690,933
		Disposal Ash	-	-	-	-	-	-	-	-	0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	33,806	11,955	-	6,136	-	7.05	51,935
		Geotextile For Underdrain	5,142.00 sy	0.021	106.34 mh	3,028	12,229	-	421	-	2.55	15,679
		#57 Stone For Outlet Pipe Bedding (135 pc)	1,492.00 tn	0.150	223.80 mh	5,414	13,316	-	1,865	-	13.80	20,595
		Solid Outlet Pipe ADS Drain, 6" Diameter	1,658.00 lf	0.200	331.60 mh	7,605	2,938	-	1,380	-	7.05	11,684
		#57 Stone For Outlet Pipe Bedding (135 pc)	336.00 tn	0.150	50.40 mh	1,219	2,999	-	420	-	13.80	4,638
		Ph 2 Initial Constr	-	-	2,206.14 hrs	51,073	43,237	690,933	10,222	-	13.80	795,485
		20	-	-	2,206.14 hrs	51,073	43,237	690,933	10,222	-	13.80	795,485
	Ph 2 Operational Cost	Stage 1 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	255,189.00 cy	1,300.000	196.30 cd	399,461	-	-	388,688	-	3.08	788,149
		Dredge Ash	1,334,496.00 cy	-	-	-	-	2,043,113	-	-	1.53	2,043,113
		Stage 1 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs	-	-	-	-	-	-	-	0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf	0.200	2,299.00 mh	52,728	18,708	-	9,570	-	7.05	81,005
		Geotextile For Underdrain	9,579.00 sy	0.021	197.04 mh	4,724	19,072	-	657	-	2.55	24,453
		#57 Stone For Outlet Pipe Bedding (135 pc)	2,328.00 tn	0.150	348.20 mh	8,447	20,777	-	2,910	-	13.80	32,135
		Solid Outlet Pipe ADS Drain, 6" Diameter	2,586.00 lf	0.200	517.20 mh	11,862	4,209	-	2,153	-	7.05	18,224
		#57 Stone For Outlet Pipe Bedding (135 pc)	524.00 tn	0.150	78.60 mh	1,901	4,677	-	655	-	13.80	7,458
		Ph 2 Operational Cost	-	-	17,574.59 hrs	479,123	67,443	2,043,113	404,833	-	13.80	4,298,432
		22	-	-	17,574.59 hrs	479,123	67,443	2,043,113	404,833	-	13.80	4,298,432
	Ph 2 Operational Cost	Stage 2 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0
		Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	263,403.00 cy	1,300.000	202.62 cd	412,219	-	-	401,199	-	3.09	813,518
		Dredge Ash	1,509,673.00 cy	-	-	-	-	2,311,309	-	-	1.53	2,311,309
		Stage 2 Disposal Life (Assume Dike & Dredge Ash)	3.70 yrs	-	-	-	-	-	-	-	0.00	0
		Perforated Pipe ADS Drain Tube, 6" Diameter	11,865.00 lf	0.200	2,373.00 mh	54,425	19,310	-	9,878	-	7.05	69,613
		Geotextile For Underdrain	9,898.00 sy	0.021	203.40 mh	4,876	19,687	-	678	-	2.55	25,241
		#57 Stone For Outlet Pipe Bedding (135 pc)	2,403.00 tn	0.150	360.45 mh	8,719	21,447	-	3,004	-	13.80	33,170
		Solid Outlet Pipe ADS Drain, 6" Diameter	2,670.00 lf	0.200	534.00 mh	12,247	4,345	-	2,223	-	7.05	18,816
		#57 Stone For Outlet Pipe Bedding (135 pc)	541.00 tn	0.150	81.15 mh	1,963	4,828	-	676	-	13.80	7,458
		Ph 2 Operational Cost	-	-	18,140.47 hrs	494,549	69,618	2,311,309	417,658	-	13.80	3,293,135
		23	-	-	18,140.47 hrs	494,549	69,618	2,311,309	417,658	-	13.80	3,293,135

Page 5  
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(14 copies) 2015-2029  
Temp Slope Protect 2005  
Riprap Stilling Basin 2005  
Ph 2 Initial Constr 2017-2029  
Ph 2 Operational Cost  
Ph 2 Operational Cost  
Ph 2 Operational Cost  
Ph 2 Operational Cost  
Ph 2 Operational Cost

PHZ (Annual cycles) for Pre-bid sheet  
02/11  
2017-2029  
2017-2029  
2017-2029  
2017-2029  
2017-2029

Location	Activity	Description	Takeoff Quantity	Takeoff Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 2 Operational Cost	Stage 3 (3 To 1 Side Slopes) Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.) Dredge Ash	1.00 lot 227,096.00 cy 1,344,915.00 cy	1,300.000	174.70 cd	355,501	-	2,059,066	345,914	-	0.00	701,415 2,059,066
		Stage 3 Disposal Life (Assume Dike & Dredge Ash) Corroated Pipe ADS Drain Tubes 8" Diameter Aggregate For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 8" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) Ph 2 Operational Cost	3.30 yrs 10,230.00 ft 8,525.00 ft 2,072.00 tn 2,302.00 ft 466.00 tn	0.200 0.021 0.150 0.200 0.150	2,046.00 mh 175.36 mh 310.30 mh 460.40 mh 69.90 mh 15,640.84 hrs	46,925 4,204 7,518 10,558 1,691 426,399	16,649 16,873 18,493 3,747 4,159 60,021	2,059,066	8,516 585 2,590 1,916 583 360,104	-	7.05 2.55 13.80 7.05 13.80	72,091 21,762 28,601 16,222 6,432 2,905,599 2,905,599
CONST FACILITY	Construct Facilities	Mobilize, Drug Test, Misc Other, & Demobilize Construct Facilities XCONST FACILITY	1.00 ls	14,801.325	14,801.33 mh 14,801.33 hrs	402,300 402,300	-	-	216,600 216,600	0	618,900.00	618,900 618,900
NON MANUAL	Non-Manual	Non Manual Non-Manual ZNON MANUAL	1.00 ls	28,155.000	28,155.00 mh 28,155.00 hrs	1,407,750 1,407,750	-	-	-	-	1,407,750.00	1,407,750 1,407,750

*(MINDS NOW MAXIM)*  
 $\$ 10,052,162 \div 310,744 \text{ MHS} = 32.35/\text{hr}$   
 $3,061,896 \div 228,534 \text{ hrs} = 13.40/\text{hr}$

Estimate Totals

Labor	10,257,245	353,700,289	hrs
Material	3,186,244		
Subcontract	15,832,019		
Equipment	8,100,576		
Other	31,500		
<b>Total</b>	<b>38,407,584</b>		

Engineered Materials - Ph 2	100,000 %	C
Adjustment - Engr Materials	(100,000) %	C
<b>Total</b>	<b>38,407,584</b>	

Environmental Costs	100,000 %	C
Adjustment Environmental	(100,000) %	C
<b>Total</b>	<b>38,407,584</b>	

Demolition Costs	100,000 %	C
Adjustment Demolition	(100,000) %	C
<b>Total</b>	<b>38,407,584</b>	

Small Tools Expense	0.450 \$/hr	H
Consumables & Expendables	4.000 %	C
Office Supplies & Expense	3.000 %	C
Subcontract Fee		C
<b>Total</b>	<b>38,950,292</b>	

Escalation - Craft Labor	398,227	4.500 %	C
Escalation - Subcontract	427,465	2.700 %	C
Escalation - Subcontract Fee		0.350 %	C
Escalation - Perm Materials		1.700 %	C
Escalation - HED Equipment	54,186	2.000 %	C
Escalation - Tagged Equipment		2.000 %	C
Escalation - Small Tools	11,069	0.034 \$/hr	H
Escalation - Consumables	17,699	0.200 %	C
Escalation - Non-Manual Labor	47,864	3.400 %	C
Escalation - Office Supplies	2,816	0.200 %	C
<b>Total</b>	<b>955,306</b>		

Partner Insurance (FY04)	307,717	3.000 %	C
Partner Award Fee (FY04)	512,862	5.000 %	C
<b>Total</b>	<b>820,579</b>		

FFG Civil Engr - Phase 2	30,823	0.207 % @ 42.00	A
Non-TVA Engr - Phase 2	580,000	2.278 % @ 72.00	A
FFG Proj Conf Cost - Phase 2	1,001	0.007 % @ 42.00	A
FFG Proj Conf Sched - Phase 2	2,999	0.020 % @ 42.00	A
FFG Estimating - Phase 2	1,000	0.007 % @ 42.00	A
FFG Engr Records - Phase 2	1,000	0.007 % @ 42.00	A
<b>Total</b>	<b>618,823</b>		

Rounding	41,347,000		L
<b>Total</b>	<b>41,347,000</b>		

{ 542,708

{ 429,815

{ 707,960

{ 1,680,479

8,849,495

18.99%

we  
19%

600K

per Don Smith  
on 12-17-04 @ 4:35 PM

Engr. \$750,000 (Perimeter + Water)  
 Engr. \$250,000 (Pond)  
 Engr. \$500,000 (Reminders)

KINGSTON FOSSIL PLANT  
OPTION 2 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)

KIF0509302FLY&BOTTM.ASH

DAN SMITH

C. L. Toney

KIF 40 2004

TVA Equipment

Ash

KIF

0509302

KIFE30

Dan Smith

2

0

2

Preliminary

+/- 20%

12/20/2004

Capital

N

Dry ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed, Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 415,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Project name

Engineer

Estimator

Labor rate table

Equipment rate table

Project

Plant

Estimate #

PCN #

Requesting Engr

Option

Revision

Phase

Estimate Type

Estimate Accuracy

Est. Issue Date

Funding Type

Unit

Notes

Report format

Sorted by 'Location/Activity/Cutage Seq'  
'Detail' summary

Spreadsheet Report  
KF0509302/FLYBOTTIN ASH

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount
	Erosion Controls P	Capital	Erect Silt Fence Geotextile (Nonwoven) Erosion Protection Channel D50 9" Riprap 3" Stone, 1" Thick To Prevent Erosion (Assume 105 bcf) Sig 1.4 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 F/Ea) Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 bcf Fill With 1032 Compacted Crushed Stone 30" Diameter CMP Culvert Bedding For 30" CMP, 6" Thick 30" Diameter CMP Stand Pipe (4 Pipes @ 5 Stages w/30" Per Stage) D50 9" Riprap Culvert For Metal Spillway Galvanized Coupled Metal Anti-Sweep Collar Erosion Controls P 01	1,000.00 lf 4,300.00 sy 5,215.00 ln 2,094.00 ln 4.00 ea 52.00 cy 93.00 ln 1,000.00 lf 135.00 ln 720.00 lf 53.00 ln 16.00 ea	0.086 0.018 0.020 0.054 166.004 0.000 0.000 0.000 0.000 0.750 0.320 16.000	68.57 mh 68.80 mh 1,699.80 mh 102.38 mh 664.33 mh 20.90 mh 37.20 mh 17,467 67.50 mh 19,653 540.00 mh 16.98 mh 256.00 mh 4,201.35 hrs 150,687 125,853 4,201.35 hrs	1,994 1,993 49,667 6,056 20,450 559 1,107 17,467 1,940 16,653 505 7,461 225,653 125,853 4,201.35 hrs	502 5,772 53,037 18,190 20,198 804 26,442 284 19,038 4,539 150,687 43,928 150,687	64,619 64,619 64,619	317 175 26,665 3,066 2,795 177 569 47,611 3,467 52,70 13,914 669.59		2,813 1,911 12,958 24,96 27,332 13,63 43,443 776 2,699 47,611 3,467 37,940 13,17 318,569 318,569 318,569	
	Seed/Mulch	Capital	Seed/Mulch Disturbed Areas Capital Seed/Mulch 02	26.00 ac		hrs hrs hrs	64,619 64,619 64,619		2,485.34			64,619 64,619 64,619	
	South Access Road	Capital	1032 Crushed Stone Base, 5" Depth Capital South Access Road 03	3,820.00 ln	0.120	422.40 mh 422.40 hrs 422.40 hrs	13,739 13,739 13,739	31,950 31,950 31,950		4,147 4,147 4,147	14.16	49,636 49,636 49,636	
	Perimeter Road	Capital	1032 Roller Compacted Crushed Stone Base, 6" Depth Capital Perimeter Road 04	6,665.00 ln	0.120	826.20 mh 826.20 hrs 826.20 hrs	26,872 26,872 26,872	62,493 62,493 62,493		8,112 8,112 8,112	14.16	97,478 97,478 97,478	
	Drig CallP1 Opr Cost	O & M	Elev. 810 To Elev. 866 Dry Ash Stack Wet Dip And Stack Bottom Ash Only Disposal Life (Assume Dike & Dredge Ash) Haul Distance (Round Trip) O & M Drig CallP1 Opr Cost 06	1.00 lot 5,475,070.00 cy 678,848.00 cy 12.90 yr 0.50 mile	1,100,000 375,000 531,659	4,976.25 cd 1,810.26 cd	10,903,210 531,659			1,312,047 1,268,903	0.00 0.00	18,215,257 1,798,553 0 0	
	Gygaum Silt Peninsulas	Capital	Clear And Grub Clear And Grub Strip 1 ft Vegetation And Topsoil - Spoil At Stockpile Capital Gygaum Silt Peninsulas 07	1.00 lot 90.00 ac 125,000.00 cy	72,000 0.020	6,480.00 mh 2,580.00 mh 9,060.00 hrs	193,775 79,980 273,155 273,155			180,944 82,238 243,161 243,161 243,161	0.00 1.25	394,719 161,618 516,336 516,336	
	Erosion Controls	Capital	Erect Silt Fence (Trench Bottom Of Fence, 10% Hay Bales) Cul For Stormwater Runoff Pond (2,000 bcf) Cleanout Stormwater Runoff Pond (2,000 bcf) Fill For Stormwater Runoff Pond (12,000 bcf) Riprap For Stormwater Runoff Pond Pipe Bedding 72" Dia. CMP For Outlet Structure 48" Dia. CMP For Riser For Outlet Structure Cul. Holes In Riser Composite Concrete For Riser Base (Assume 7 x 7.4.2) Anti-Sweep Collars (Assume Concrete) Capital Erosion Controls	4,900.00 lf 2,400.00 cy 2,760.00 cy 14,400.00 cy 4,300.00 cy 20.00 lf 6.00 lf 150.00 lf 3.00 ea 4.00 cy 7.00 ea	0.069 900,000 365,333 1,904,000 0.200 0.500 2.000 1.091 0.620 1,000 10,000 75,000	335.99 mh 3.00 cd 7.20 cd 7.96 cd 890.00 mh 10.00 mh 12.00 mh 7.64 mh 63.00 mh 3.00 mh 40.00 mh 525.00 mh 2,763.38 hrs 2,763.38 hrs	9,169 3,199 3,939 22,197 25,956 288 337 2,910 74 1,634 16,894 86,902 86,902	2,462 3,000 7,200 43,731 1,851 939 7,610 923	1,554 2,525 2,350 24,725 18,441 34 45 52 15 1373 51,777 51,777	2.81 5.724 6.169 3.30 47,482 87,797 2,267 1,195 10,556 2,221 2,221 23,433 207,210 207,210			



Spreadsheet Report  
KIF0509302/FLY&BOITTM ASH

Location	Activity	Outage Set	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	08					2,763.38 hrs	86,982	62,480		51,777			201,219
Roads	Capital		Bottom Ash (South Access Road)	2,400.00 cy	1,904.000	1.26 cd	3,052			3,116		2.57	6,170
			Crushed Stone Base (South Access Road)	2,900.00 in	0.120	348.00 mh	11,319	26,323		3,417		14.16	41,058
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 in	0.120	40.80 mh	1,327	3,086		401		14.16	4,814
			Capitol			479.56 hrs	15,698	29,409		6,935			52,042
			Roads			479.56 hrs	15,698	29,409		6,935			52,042
Fencing	Capital		New Fencing (Including Grounding)	200.00 lf					4,211			21.05	4,211
			Personal Swinging Gate	1.00 ea					370			366.72	370
			Sliding Gate, 20 Ft Wide, With Motorized Operator	1.00 ea					17,459			17,450.00	17,459
			Capitol						22,039				22,039
			Fencing						22,039				22,039
			10						22,039				22,039
Seed/Mulch	Capital		Seed/Mulch Disturbed Areas	25.00 ac					62,134			2,485.34	62,134
			Capitol						62,134				62,134
			Seed/Mulch						62,134				62,134
			11						62,134				62,134
Gypsum Disp Facility	Capital		Disposal Facility Construction	1.00 lot								0.00	0
			Cut And Fill Balance (196,719 bcy)	227,683.00 cy	2,800.000	81.31 cd	244,655			265,606		2.24	510,463
			Cut & Spot Select Cut For Future 1 Ft Clay Layer In Final Cover	145,001.00 cy	1,904.000	70.14 cd	186,176			196,528		2.50	362,707
			Riprap For Ditch	29,900.00 in	0.200	4,200.00 mh	139,891	238,995		100,781		20.41	478,667
			Ditch For Riprap (24" wide x 2' deep)	7,300.00 lf	0.044	232.95 mh	10,911			12,904		3.26	23,816
			Geotextile (If Riprap Is Used)	19,900.00 sq	1,904.000	348.23 cd	3,052	26,029		3,118		1.62	35,443
			Perimeter Road Surfacing - Bottom Ash	2,400.00 cy	0.120	288.00 mh	1,116	26,323		3,417		14.16	41,058
			Perimeter Road Surfacing - Crushed Stone	2,900.00 in	0.096	15,780.00 mh	507,694	1,462,276		257,040		13.20	2,217,010
			Drainage Layer (1 Ft Thick) For Liner (No. 57, Stone)	5,700.00 sq	0.011	1,960.00 mh	2,153	10,583		5,439		7.96	50,967
			Geotextile For Underdrain Pipe	6,400.00 lf	0.000	100.00 mh	248	407		2,776		43.10	6,655
			6" Dia. HDPE, SDR 17 Perforated Pipe	95.00 ea	12.600	1,095.00 mh	34,373	10,157		4,080		556.56	47,309
			Concrete Anchors For Underdrain Piping	70.00 ac	7.000	10.00 cd	847			853.982		12.977	3,797.367
			Proofroll Subgrade							853.982			3,797.367
			Capitol							853.982			3,797.367
			13							853.982			3,797.367
Gyp On Peninsula Cst	Capital		Allowance For Karst Geologic Features	1.00 ls									246,460
			Addition Geotechnical Investigation	1.00 ls									102,700
			Capitol										349,160
			2008										246,460
			O & M										102,700
			2009-2019										349,160
			Life Of Underdrain System	4,607.00 sq	0.200	351.40 mh	26,372			7,492		7.46	32,864
			6" Dia Perforated HDPE Perimeter Underdrains	59,491.00 lf	0.200	11,896.20 mh	324,733	98,456		50,417		7.96	473,716
			Fill For Underdrain System	3,215.00 cy	0.250	801.25 mh	25,368			10,571		10.20	35,939
			1081 Crushed Stone, 6" Depth (110 pcf)	3,272.00 in	0.150	490.80 mh	14,128	29,659		837		14.67	47,999
			Cut For Lateral Outlet Pipes	7,551.00 sq	0.200	110.20 mh	3,172	12,308		6,314		7.46	24,109
			6" Dia Non-Perforated HDPE Lateral Outlet Pipes	41,036.00 lf	0.250	1,102.25 mh	3,174	1,756		1,322		10.20	59,212
			Fill For Lateral Outlet Pipes	539.00 in	0.150	81.95 mh	1,756	3,712		521		0.00	6,000
			1081 Crushed Stone, 6" Depth (110 pcf)										1,467
			Capitol										6,000
			2009-2019										2,676,517
			Gypsum Disposal Stack (Wet Stulce)	5,535.837.00 cy	375.000	2,896.93 cd	792,095			1,894,452		2.65	303,221
			Wet Cast Gypsum Gypsum Dike	1,011.347.00 sq		306.53 cd	96,733			213,489		0.00	303,221
			Cut Rim Ditches	114,675.00 sq									0
			Life Of Gypsum Disposal Stack	20.00 yrs									3,644,075
			O & M										3,993,255
			Gyp On Peninsula Cst										3,993,255
			14										3,993,255
Construction Parking	Capital		Site Fence	1,000.00 lf	0.020	20.00 mh	590	320		701		0.85	645
			Cut And Fill Balance (500 bcy)	900.00 cy	2,800.000	0.21 cd	645			592		2.50	1,001
			Cut & Spot Additional Material	400.00 cy	1,904.000	0.21 cd	465			1,650		14.16	19,821
			Crushed Stone Base	1,400.00 in	0.120	168.00 mh	5,464	12,707		1,650			23,013
			Capitol										23,013
			2008										23,013
			Construction Parking										23,013

500K

6/14, 200



Spreadsheet Report  
KIF0509302/FLY&BOTTM ASH

Location	Activity	Output Seq	Description	Factor Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		O & M	Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,73,076.00 cy	1,100,000	1,611.89 cd	3,550,309			2,367,540		0.00	5,897,849
		O & M	Stage 2 Disposal Life (Assume Dry Stack Area) Ph 2 Operation Cost	3.70 yrs		116,055.88 hrs 116,055.88 hrs	3,550,309 3,530,309			2,367,540 2,367,540		0.00	5,897,849 5,897,849
		O & M	Ph 2 Operation Cost	23		116,055.88 hrs	3,530,309			2,367,540			5,897,849
		O & M	Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,572,022.00 cy	1,100,000	1,428.11 cd	3,129,999			2,099,078		0.00	5,229,076
		O & M	Stage 2 Disposal Life (Assume Dry Stack Area) Ph 2 Operation Cost	3.30 yrs		102,895.99 hrs 102,895.99 hrs	3,129,999 3,129,999			2,099,078 2,099,078		0.00	5,229,076 5,229,076
		O & M	Ph 2 Operation Cost	24		102,895.99 hrs	3,129,999			2,099,078			5,229,076
		Capital	Dry Fly Ash Converter	1.00 ls					25,675,000			25,675,000.00	25,675,000
		Capital	Dry Fly Ash Converter Capital Cost						25,675,000			25,675,000.00	25,675,000
		Capital	Dry Fly Ash Converter						25,675,000			25,675,000.00	25,675,000
		Capital	Mobile, Drug Test, Misc Other, & Demobils	1.00 ls	8,253.97	8,253.97 hrs	254,800			137,200		382,000.00	382,000
		Capital	Construct Facilities		8,253.97	8,253.97 hrs	254,800			137,200		382,000.00	382,000
		Capital	Construct Facilities		8,253.97	8,253.97 hrs	254,800			137,200		382,000.00	382,000
		Capital	NON MANUAL	1.00 ls	14,850.12	14,850.12 hrs	742,506					742,506.00	742,506
		Capital	NON MANUAL		14,850.12	14,850.12 hrs	742,506					742,506.00	742,506
		Capital	NON MANUAL		14,850.12	14,850.12 hrs	742,506					742,506.00	742,506

Estimate Totals

Labor	28,365,810	909,760,841	hrs
Material	2,500,802		
Subcontract	25,964,339		
Equipment	20,875,512	626,546,003	hrs
Other	31,590		
	<u>78,772,002</u>		

Engineered Materials - Ph 2	100.000	%	C
Adjustment - Eng Materials	(100.000)	%	C
	<u>78,772.002</u>		

Environmental Costs	100.000	%	C
Adjustment Environmental	(100.000)	%	C
	<u>78,772.002</u>		

FPG Mech Engr - Phase 2	15,001	0.039	% @	42.00	A	357
FPG Elec Engr - Phase 2	15,001	0.039	% @	42.00	A	357
FPG Civil Engr - Phase 2	30,067	0.079	% @	77.00	A	716
Non-TVA Engr - Phase 2	534,057	0.693	% @	77.00	A	7,417
FPG Proj Chrt Cost - Phase 2	678	0.003	% @	42.00	A	23
FPG Proj Chrt Sched - Phase 2	2,078	0.008	% @	42.00	A	70
FPG Cost Estimating - Phase 2	678	0.003	% @	42.00	A	23
FPG Engr Records - Phase 2	678	0.003	% @	42.00	A	23
	<u>589,988</u>					

Rounding	78,372,000			L
	<u>78,372,000</u>			

<b>Total</b>	<b>78,372,000</b>			
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KINGSTON FOSSIL PLANT  
 OPTION 2 - DRY ASH IN POND & GYPSUM ON PENINSULA  
 (WITHOUT BUFFER OPTION)

KIF/0509302/FL1&BOTTM ASH

Project name DAN SMITH  
 Engineer

Estimator C. L. Toney  
 Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
 Plant KIF  
 Estimate # 05093C2  
 PCN # KIF530  
 Requesting Engr Dan Smith  
 Option 2  
 Revision 0  
 Phase 2  
 Estimate Type Preliminary  
 Estimate Accuracy +/- 20%  
 Est. Issue Date 12/20/2004  
 Funding Type Capital  
 Unit N

Notes  
 Dry ash in pond & gypsum on peninsula (Not ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula).  
 All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by "Location/Activity/Outage Seq"  
 "Detail" summary

Spreadsheet Report  
KIF/0509302FLY&BOTTM ASH

Section	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
Erosion Controls P	Capital		Erect Silt Fence	1,000.00 lf	0.089	88.57 mh	1,894	502	317	2.81			2,813	
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sf	0.018	68.80 mh	1,893	5,772	26,865	13.63				7,516
			D50 9" Riprap	5,215.00 ln	0.320	1,638.80 mh	49,687	15,190	10,850.64	14.91				21,312
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 cu)	2,004.00 ln	0.086	192.38 mh	6,056	20,199	2,795	28.96				48,443
			Sig L6 CMP MI Solloway (1/2" 48" Dia Riser Stand Pipe @ 128 F/Ea)	4.00 ea	168.004	20.90 mh	599	804	17	2,510				776
			Cut (Excavation For Placement Of 48" Dia Fall-Round Pipe) 13.05'	52.00 lf	0.400	37.20 mh	1,107	3,662	47.61	47.61				47.61
			Fill With 1032 Compacted Crushed Stone	83.00 lf	0.400	37.20 mh	1,107	3,662	47.61	47.61				47.61
			30" Diameter CMP Culvert	1,000.00 lf	0.890	900.00 mh	1,943	2,730	25.61	37.94				37.94
			Bedding For 30" CMP, 6" Thick	135.00 lf	0.500	97.50 mh	1,923	273	24.85	13.014				13.014
			30" Diameter CMP Stand Pipe (4" Pipes @ 5 Stages w/3.0' Per Stage)	720.00 lf	0.750	16.80 mh	505	1,571	42.026	318.868				318.868
D50 9" Riprap/Outlet For Metal Spillway	53.00 ln	0.320	35.00 mh	746	4,862	42.029	318.868				318.868			
Advanced Corrugated Metal Anti-Sleep Collar	16.00 ea	18.000	4,201.35 hrs	125,853	150,867	42,029	318,569				318,569			
Capital	Erosion Controls P					4,201.35 hrs	125,853	150,867				318,569		
01														
Seed/Mulch	Capital		Seed/Mulch Disturbed Areas	28.00 ac					64,619			2,485.34	64,619	
			Seed/Mulch						64,619				64,619	
			Seed/Mulch							64,619			64,619	
South Access Road	Capital		1032 Crushed Stone Base, 6" Depth	3,500.00 ln	0.120	422.40 mh	13,738	31,950			4,147	49,836		
			Caplar										4,147	
			South Access Road										4,147	
02														
Perimeter Road	Capital		1032 Filler Compacted Crushed Stone Base, 6" Depth	6,885.00 ln		826.20 mh	26,872	62,493			8,112	97,478		
			Caplar										8,112	
			Perimeter Road										8,112	
04														
Dry Cell/P1 Opr Cost	O & M		Env. 810 To Env. 866	1.00 lot								0.00		
			Dry Ash Stack	5,476.00 cu yd	1,100.000	4,976.25 cu yd	10,903.210					7,312.267	18,215.257	
			Wet Dip And Slack Bottom Ash Only	9,194.00 cu yd	375.000	1,810.26 cu yd	531,559					1,264.953	1,796,553	
05														
Gypsum Silt Peninsulas	Capital		Clear And Grub	1.00 lot								0.00		
			Ship 1 ft Vegetation And Topsoil - Spoil At Stoopile	90.00 ac									3,941.32	
			Gypsum Silt Peninsulas	128,000.00 cu yd	72,000	5,480.00 mh	193,775					160,944	354,719	
7														
Erosion Controls	Capital		Erect Silt Fence (Trench Bottom Of Fence, 10% Hay Bales)	4,900.00 lf	0.099	335.98 mh	9,769	2,482	1,554	2.81			13,764	
			Cut For Stormwater Runoff Pond (2,000 bcy)	2,400.00 cu yd	600.000	3,100 cu yd	3,199	2,525	2,350	2.39				5,724
			Cleanout Stormwater Runoff Pond (2,300 bcy)	2,700.00 cu yd	383.333	720 cu yd	3,839	2,224	3,300	2.24				6,108
			Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00 cu yd	1,604.000	7,500 cu yd	22,757	24,725	20,411	3.30				47,945
			Riprap For Stormwater Runoff Pond	4,300.00 ln	0.200	860.00 mh	25,595	43,731	26.03	26.03				52
			Pipe Bedding	20.00 lf	0.500	10.00 mh	288	199	170.64	1.968				1,968
			72" Dia CMP For Outlet Structure	5.00 lf	2.000	7.64 mh	337	1,851	70.37	10.586				70.37
			48" Dia CMP For Riser For Outlet Structure	7.00 lf	1.091	63.00 mh	2,610	7,404	28.92	82				28.92
			48" Dia CMP Outlet Pipe (Principle Spillway)	150.00 lf	0.600	3.00 mh	74	823	1.373	558.33				558.33
			Cut Holes In Riser	3.00 ea	1.000	4.00 mh	1,294	16,984	5.076	3,347.60				3,347.60
Composite Concrete For Riser Base (Assume T.X.T.X.2)	4.00 cu yd	10.000	505.00 mh	6,902	62,480	51.777	20,219				20,219			
Anti-Sleep Collars (Assume Concrete)	7.00 ea	75.000	2,763.38 hrs	86,982	2,763.38 hrs	86,982	20,219				20,219			
Capital	Erosion Controls													
06														



Spreadsheet Report  
KF0509302/FLY&BOTTOM ASH

Location	Activity	Outage Seq	Description	Target Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		15				220.30 hrs	7,093	13,028		2,892			23,013
	Ph 2 Base Construct		Base Layers	1.00 lot								0.00	0
	Capital		Compacted Fly Ash Base (Fill)	573,950.00 cy	1,300,000	441.27 cd	1,688,579	40,942		891,223		3.42	1,958,802
			Profile Subgrade	177,000.00 cy	28,111,100	6.30 cd	5,363			27,971		0.05	7,823
			2.5" Thick Bottom Ash Layer	152,117.00 cy	1,300,000	117.47 cd	284,477			41,762		3.42	521,738
			0.5" Thick Fly Ash Filler Layer	30,943.00 cy	1,300,000	23.49 cd	56,885		317,537			20.54	347,837
			18" Dia Coarse Bottom Ash Drain Columns (incl 2 miles, 1.00 bsc)	18,920.00 lf	1,400,000	126.50 cd	74,384			20,645		0.54	94,949
			Relo Tilt Fly Ash Layer	177,000.00 sy	1,300,000							0.00	0
			Bottom Ash Dike Fill	0.00 cy	1,300,000							0.00	0
			4" Diameter Perforated PVC Pipe (Underdrains) SDR 7.5	26,892.00 lf	0.070	1,825.74 mh	48,939			7,792		2.78	98,533
			Trenching For The Drain System (4" Dia Underdrains) 666 bcy	1,190.00 cy	0.200	232.00 mh	6,678			1,430		5.57	28,656
			Strip Existing 1" Soil Cover (Phase 1 Expansion), 19,133 bcy	22,890.00 cy	800,000	28.70 cd	14,128			14,930		0.65	10,848
			Anchor Trench Cut	1,335.00 cy	0.320	261.20 mh	7,519			9,935		7.43	21,275
			Anchor Trench Fill & Compact	1,242.00 cy	1,300,000	397.44 mh	11,441			38,281		3.43	64,178
			2.0" Thick Bottom Ash Blanket Drain	42,230.00 sy	1,300,000	18.85 cd	48,939			19,140		3.42	42,090
			1.0" Thick Filler Drain Ash Layer	35,860.00 sy	0.950	1,846.00 mh	22,949			4,712		2.66	40,126
			Perforated Pipe ADS Drain Tube, 6" Diameter	4,131.00 lf	0.021	84.77 mh	2,418			4,200		7.98	39,384
			Geotextile For Underdrain	1,001.00 lf	0.150	150.15 mh	4,322			1,279		4.32	14,684
			Solid Outlet Pipe ADS Drain 6" Diameter	1,298.00 lf	0.200	247.20 mh	6,747			1,950		5.26	9,842
			5" Dia Non-Per HDPE Compacted Tubing Lateral Outlet Pipes (EL. 760)	255.00 lf	0.150	37.50 mh	1,079			2,269		14.67	3,657
			1081 Crushed Stone, Bedding 6" Depth	302.00 lf	0.200	60.40 mh	1,648			500		5.43	2,405
			6" Dia Perforated HDPE Drain (EL. 760)	1,512.00 lf	0.500	5.00 mh	144			1,282		2.61	256
			Geotextile Woven Monofilament	296.00 lf	0.500	302.40 mh	8,253			1,826		26.61	12,040
			Backfill For Underdrain System	224.00 cy	0.200	44.80 mh	690			301		3.15	3,154
			Certification	150.00 lf	0.250	42.00 mh	1,209			504		10.20	1,713
			QA/QC For Construction Of Disposal Facility	1.00 lf								31.50	31,500
			Capital									470.247	470,247
			Ph 2 Base Construct									31,500	31,500
			Temp Slope Protect									1,309,258	1,309,258
18	Temp Slope Protect		Cut For Ditch (5,815 bcy)	6,978.00 cy	1,200,000	5.82 cd	10,981			12,041		3.30	23,022
	Capital		D50 9' Riprap	4,238.00 lf	0.350	1,356.48 mh	40,371			21,837		24.85	105,319
			Seed Ditch	6,978.00 sy						3,593		0.51	8,280
			Jute Matting	6,978.00 sy	0.012	83.74 mh	2,388			427		3.36	6,204
			Temp Slope Protect									34,304	34,304
			Capital									3,583	3,583
			Temp Slope Protect									34,304	34,304
19	Riprap Stillling Basin		Riprap D50 Size 9'	2,344.00 lf	0.320	750.08 mh	22,324			12,075		24.95	56,237
	Capital		Cut For Basin (3,562 bcy)	4,300.00 cy	1,200,000	3.59 cd	6,767			7,420		3.30	11,186
			Seed Ditch	6,978.00 sy								19,495	19,495
			Temp Slope Protect									23,838	23,838
			Capital									19,495	19,495
			Temp Slope Protect									23,838	23,838
20	Ph 2 Initial Constr		Dry Stack Ash Quantities	614,998.00 cy	1,100,000	556.01 cd	1,224,324			821,071		3.32	2,045,355
	O & M		Initial Construction Disposal Life (Assume Dry Ash Stack)	1.30 yrs								0.00	0
			O & M									821,071	821,071
			Ph 2 Initial Constr									821,071	821,071
22	Ph 2 Operational Cost		Stage 1 (3 To 1 Side Slopes)	1.00 lot	1,100,000	1,446.17 cd	3,165,166			2,122,663		0.00	5,287,829
	O & M		Dry Stack Ash Quantities	1,599,995.00 cy	1,100,000							3.32	5,287,829
			Stage 1 Disposal Life (Assume Dry Stack Area)	3.30 yrs								0.00	0
			Haul Distance (Round Trip)	0.50 mile								0.00	0
			O & M									2,122,663	2,122,663
			Ph 2 Operational Cost									2,122,663	2,122,663
23	Ph 2 Operational Cost											0.00	0
	O & M											0.00	0
												0.00	0



Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		O & M	Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,773,076.00 cy	1,100,000	1,811.99	3,530,309			2,367,540		0.00	0
		O & M	Stage 2 Disposal Life (Assume Dry Stack Area)	3.70 yrs		116,055.88 hrs	3,530,309			2,367,540		0.00	5,897,849
			Ph 2 Operational Cost			116,055.88 hrs	3,530,309			2,367,540			5,897,849
			23										
		O & M	Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,572,022.00 cy	1,100,000	1,429.11	3,129,998			2,099,078		0.00	0
			Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs		102,895.99 hrs	3,129,998			2,099,078		0.00	5,229,076
			Ph 2 Operational Cost			102,895.99 hrs	3,129,998			2,099,078			5,229,076
			24										
		Capital	Dry Fly Ash Conver	1.00 ls					25,675,000			25,675,000.00	25,675,000
			Dry Fly Ash Conversion Capital Cost						25,675,000				25,675,000
			Dry Fly Ash Conver						25,675,000				25,675,000
			25						25,675,000				25,675,000
CONST FACILITY	Construct Facilities	Capital	Mobilize, Drug Test, Misc Other, & Demobilize	0.00 ls	#####	0.00 mh	0			0		0.00	0
NON MANUAL	Non-Manual	Capital	Non Manual	0.00 ls	#####	0.00 mh	0					0.00	0

Spreadsheet Report  
KIF/0509302/FLY&BOTTOM ASH

\$30.87/MH  
\$33.35/ea

\$3,563,756  
x 1176

we \$392,000

L=656 254,800  
E=356 137,200

118,802  
x 125  
14,850

Estimate Totals

	27,988,543	688,656,753	hrs		
Labor	27,988,543				
Material	2,500,832				
Subcontract	20,942,932				
Equipment	20,942,932				
Other	31,502				
	77,637,496	622,432,060	hrs		
Engineered Materials - Ph. 2		100,000 %			
Adjustment - Eng. Materials		(100,000) %			
	77,637,496				
Environmental Costs					
Adjustment Environmental		100,000 %			
	77,637,496	(100,000) %			
Demolition Costs					
Adjustment Demolition		100,000 %			
	77,637,496	(100,000) %			
Small Tools Expense	368,996				
Consumables & Expensables	1,064,742				
Office Supplies & Expense					
Subcontract Fee	1,463,738				
	79,131,234				
Escalation - Craft Labor	1,231,584				
Escalation - Subcontract	728,847				
Escalation - Subcontract Fee					
Escalation - Perm Materials	42,514				
Escalation - HED Equipment					
Escalation - Tagged Equipment					
Escalation - Small Tools	30,146				
Escalation - Consumables	54,737				
Escalation - Non-Manual Labor					
Escalation - Office Supplies					
	2,087,928				
Partner Insurance (F704)	821,055				
Partner Award Fee (F704)	1,395,427				
	2,198,483				
FFG Mech Eng - Phase 2	15,771				
FFG Elec Eng - Phase 2	15,767				
FFG Civil Eng - Phase 2	28,446				
Non-TVA Eng - Phase 2	1,058,273				
FFG Proj Contr Cost - Phase 2	637				
FFG Proj Contr Sched - Phase 2	2,752				
FFG Cost Estimating - Phase 2	937				
FFG Engi Records - Phase 2	931				
	1,125,137				
Rounding					
	84,533,672				
<b>Total</b>	<b>84,533,672</b>				

375  
375  
894  
14,712  
22  
66  
22  
22

**Spreadsheet Report**  
KIF/0509302/FLY&BOTTM ASH

**KINGSTON FOSSIL PLANT  
OPTION 2 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITHOUT BUFFER OPTION)**

Project name KIF/0509302/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 0509302  
PCN # KIF530  
Requesting Engr Dan Smith  
Option 2  
Revision 0  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 12/20/2004  
Funding Type Capital  
Unit N

Notes  
Dry ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2. Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by 'Location/Activity'  
Detail summary

ADJUST COLUMNS TO INCLUDE ESCALATION

CAPITAL  
D/C  
OTM

L-198 M=1176 SUB=2178 E=28

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
Erosion Controls/S P	LS 2005	Erect Silt Fence	1,000.00 lf	0.069	68.57 mh	1,675	484	-	311	-	2.48	2,480	
		Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sf	0.016	68.80 mh	1,649	5,676	-	172	-	1.74	7,497	
		650 3" Riprap	5,215.00 ln	0.320	1,669.80 mh	41,737	52,150	-	26,338	-	23.05	120,225	
		3" Stone, 1" Thick To Prevent Erosion (Assume 10% pct)	2,004.00 ln	0.096	192.38 mh	5,089	17,696	-	3,005	-	12.96	25,981	
		Sig 1-6 CMP MH Sillway (1/2 of 48" Dia Riser Stand Pipe @ 128 FIVEs)	4.00 ea	166.084	664.33 mh	17,185	19,660	-	2,740	-	9,946.25	39,785	
		Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 bcy	52.00 cy	0.400	20.80 mh	503	1,773	-	173	-	13.01	676	
		Fill With 1032 Compacted Crushed Stone	93.00 lf	0.400	37.20 mh	930	791	-	587	-	2.308	2,308	
		30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	14,685	26,000	-	3,610	-	44.30	44,304	
		Bedsing For 30" CMP, 6" Thick	135.00 ln	0.990	87.56 mh	1,633	1,282	-	225	-	23.12	3,121	
		30" Diameter CMP Stand Pipe (4 Pipes @ 6 Stages w/30 Per Stage)	720.00 lf	0.750	540.00 mh	13,989	18,720	-	2,235	-	23.05	34,923	
Erosion Controls/S P	2005	D50 3" Riprap Outlet For Metal Spillway	53.00 ln	0.320	16.96 mh	530	4,800	-	1,540	-	788.12	12,610	
		Galvanized Compacted Metal Anti-Seep Collar	16.00 ea	16.000	256.00 mh	6,270	4,800	-	1,540	-	788.12	12,610	
		Erosion Controls/S P	4,201.35 hrs		4,201.35 hrs	105,759	148,168	-	41,205	-	2,942.23	185,274	
			26.00 ac		0.00 hrs	0	62,920	-	0	-	2,420.00	62,920	
			0.00 hrs		0.00 hrs	0	62,920	-	0	-	62,920	62,920	
		Seed/Mulch Disturbed Areas	3,520.00 ln	0.120	422.40 mh	11,545	31,416	-	4,066	-	13.36	47,027	
		Seed/Mulch	422.40 hrs		422.40 hrs	11,545	31,416	-	4,066	-	47,027	47,027	
		1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 ln	0.120	826.20 mh	22,582	61,449	-	7,953	-	13.36	91,983	
		Perimeter Road	1.00 lot		4,975.25 cd	9,162.361	-	-	-	-	0.00	9,162.361	
		Drg Cell/P1 Opr Cost	5,476.070.00 cy	1,100.000	1,810.25 cd	445.773	-	-	-	-	2.98	16,331.035	
Gypsum Silt Peninsula	2005-2017 OTM	Clear And Grub	60.00 ac	0.020	9,060.00 hrs	229,542	-	-	-	-	1.14	147,381	
		Silt 1 ft Vegetation And Topsoil - Spoil At Stockpile	125,000.00 cy		9,060.00 hrs	229,542	-	-	-	-	-	467,955	
		Gypsum Silt Peninsula	1.00 lot		372,915.76 hrs	9,609,134	-	-	-	-	-	18,017,908	
			60.00 ac		372,915.76 hrs	9,609,134	-	-	-	-	-	18,017,908	
			125,000.00 cy		9,060.00 hrs	229,542	-	-	-	-	-	467,955	
			1.00 lot		372,915.76 hrs	9,609,134	-	-	-	-	-	18,017,908	
			60.00 ac		9,060.00 hrs	229,542	-	-	-	-	-	467,955	
			125,000.00 cy		9,060.00 hrs	229,542	-	-	-	-	-	467,955	
			1.00 lot		372,915.76 hrs	9,609,134	-	-	-	-	-	18,017,908	
			60.00 ac		9,060.00 hrs	229,542	-	-	-	-	-	467,955	
Erosion Controls	2008	Erect Silt Fence (Trench, Bottom Of Fence, 10% Hay/Bales)	4,900.00 lf	0.069	335.89 mh	8,209	2,421	-	1,523	-	2.48	12,153	
		Cut For Stormwater Runoff Pond (2,000 bcy)	2,400.00 cy	800.000	3,000 cd	2,688	-	-	-	-	-	2,688	
		Cleanout Stormwater Runoff Pond (2,300 bcy)	2,750.00 cy	383.333	7,200 cd	3,226	-	-	-	-	-	3,226	
		Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00 cy	1,904.000	7,560 cd	19,124	-	-	-	-	-	19,124	
		Riprap For Stormwater Runoff Pond	4,300.00 ln	0.200	860.00 mh	21,509	43,000	-	16,078	-	19.21	82,588	
		Pipe Bedding	20.00 ln	0.500	10.00 mh	242	195	-	33	-	23.54	471	
		72" Dia. CMP For Outlet Structure	6.00 lf	2.000	12.00 mh	283	1,620	-	44	-	361.90	2,114	
		48" Dia. CMP For Riser For Outlet Structure	7.00 lf	1.091	7.64 mh	180	920	-	44	-	133.40	1,144	
		48" Dia. CMP Outlet Pipe (Principle Spillway)	150.00 lf	1.000	93.00 mh	2,183	7,280	-	531	-	66.70	10,005	
		Cut, Holes In Riser	3.00 ea	1.000	3.00 mh	63	15	-	15	-	25.96	78	
Roads	2008	Composite Concrete For Riser Base (Assume 7' x 7' x 2')	4.00 cy	10.000	40.00 mh	1,087	809	-	103	-	499.70	1,999	
		Anti-Seep Collars (Assume Concrete)	7.00 ea	75.000	525.00 mh	14,273	4,991	-	50,762	-	2,942.23	20,610	
		Erosion Controls	2,763.38 hrs		2,763.38 hrs	73,077	61,436	-	50,762	-	2,942.23	185,274	
			2,400.00 cy		1.26 cd	2,585	-	-	-	-	-	2.34	5,622
			2,900.00 ln		348.00 mh	9,512	25,883	-	3,957	-	13.36	38,744	
			340.00 ln		40.80 mh	1,115	3,035	-	393	-	13.36	4,442	
			479.56 hrs		479.56 hrs	13,192	28,917	-	6,799	-	13.36	48,208	
			2,400.00 cy		1.26 cd	2,585	-	-	-	-	-	2.34	5,622
			2,900.00 ln		348.00 mh	9,512	25,883	-	3,957	-	13.36	38,744	
			340.00 ln		40.80 mh	1,115	3,035	-	393	-	13.36	4,442	

Spreadsheet Report  
KIF0509302/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	09				479.56 hrs	13,192	28,917		6,799			48,908
	Fencing	New Fencing (Including Grounding), Personnel Swinging Gate, Sliding Gate, 20 Ft Wide, With Motorized Operator Fencing	200.00 lf 1.00 ea 1.00 ea					4,100 360 17,000			20.50 360.00 17,000.00	4,100 360 17,000 21,460
	10				0.00 hrs	0	0	21,460	0			21,460
	Seed/Mulch	Seed/Mulch Disturbed Areas	25.00 ac					60,500			2,420.00	60,500
	11				0.00 hrs	0	0	60,500				60,500
	Gypsum Disp Facility	Disposal Facility Construction Cut And Fill Balance (189,719 bcy) Cut & Spoil Select Cut For Future 1 Ft Clay Layer In Final Cover Riprap For Ditch Ditch For Riprap (24 wide x 2 deep) Geotextile (If Riprap Is Used) Perimeter Road Surfacing - Bottom Ash Perimeter Road Surfacing - Crushed Stone Drainage Layer (1 Ft Thick) For Liner (No. 57 Stone) Geotextile For Underdrain Pipe 8" Dia. HDPE SDR 17 Perforated Pipe 8" Dia. HDPE Standard Fittings Concrete Anchors For Underdrain Piping Pneum. Subgrade Gypsum Disp Facility	1.00 lot 227,663.00 cy 145,001.00 cy 23,500.00 ln 7,300.00 lf 19,500.00 sf 2,400.00 cy 2,900.00 ln 185,000.00 ln 6,400.00 sf 50.00 ea 85.00 ea 70.00 ac	2,800.000 1,904.000 0.200 0.044 0.015 1,904.000 0.120 0.096 0.011 0.200 0.200 12.500 7.000	81.31 ed 76.16 cd 4,700.00 mh 320.03 mh 292.50 mh 1.26 cd 348.00 mh 18,128.00 mh 59.85 mh 1,280.00 mh 10.00 mh 1,062.50 mh 10.00 cd 36,560.74 hrs	205,593 139,648 117,547 9,169 7,076 2,565 9,512 426,634 1,448 29,357 209 28,985 7,140 984,779 984,779	25,883 1,428,000 7,481 10,415 400 9,988 1,742,761 1,742,761		260,596 156,873 98,895 12,651 3,057 3,350 252,000 200 5,333 2,724 836,365 836,365	2.05 2.29 19.21 2.99 1.73 13.36 12.54 1.60 7.05 488.37 156.14	486,189 332,320 451,352 2,1821 33,644 5,622 2,106,634 9,129 45,106 11,140 3,563,905 3,563,905	
	13				39,940.32 hrs	1,109,329	141,777	340,000	2,137,046			3,728,151
	Gyp On Peninsula Cst	Life Of Gypsum Disposal Stack Allowance For Karst Geologic Features Additional Geotechnical Investigation Gyp On Peninsula Cst	4,407.00 cy 58,491.00 lf 3,525.00 cy 3,272.00 ln 551.00 cy 7,436.00 lf 499.00 ln 5,535,853.00 cy 1,111,347.00 cy 114,575.00 cy 20.00 yrs 1.00 ls 1.00 ls	0.200 0.250 0.200 0.200 0.200 0.150 375.000 375.000	861.40 mh 11,898.20 mh 881.25 mh 490.80 mh 110.20 mh 1,487.20 mh 110.25 mh 61.35 mh 2,898.93 cd 305.53 cd	21,321 272,895 11,317 11,872 2,686 34,109 2,667 1,484 665,001 75,406	96,822 28,203 9.18 12,102 3,650	7,345 49,526 31,661 4,060 5.51 6.99 52,401 3,963 5,646 1,847,502 209,303	6.51 7.05 8.99 13.80 7.05 8.99 13.80 0.00 2.49 2.49 0.00	28,666 419,233 31,661 45,165 3,584 92,401 3,963 5,646 284,708 240,000 240,000 3,728,151 3,728,151		
	14				39,940.32 hrs	1,109,329	141,777	340,000	2,137,046			3,728,151
	Construction Parking	Construction Parking	1,000.00 lf 600.00 cy 400.00 cy 1,400.00 ln	0.020 2,800.000 1,804.000 0.120	20.00 mh 0.21 cd 0.21 cd 188.00 mh 220.30 hrs 220.30 hrs	442 542 385 4,811	3.15 12,495 12,810 12,810	687 532 1,617 2,835 2,835	0.76 2.05 2.23 13.36	757 1,229 917 16,704 21,606 21,606		
	15				220.30 hrs	5,961	12,810	338,400	2,835			21,606
	Ph 2 Base Construct	Base Layers Compacted Fly Ash Base (Fill) Proofroll Subgrade 2.5" Thick Bottom Ash Layer 0.5" Thick Fly Ash Filter Layer 18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy) Roto Till Fly Ash Layer Bottom Ash Dike Fill 4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5 Trenching For The Drain System (4" Dia Underdrains), 966 bcy Ship Existing 1' Soil Cover (Phase 1 Expansion), 19,133 bcy Anchor Trench Cut	1.00 lot 573,950.00 cy 177,100.00 sf 152,117.00 cy 16,920.00 lf 177,100.00 sf 26,082.00 lf 1,160.00 cy 22,960.00 cy 1,306.00 cy	1,300.000 28,111.000 1,300.000 1,300.000 1,400.000 1,300.000 0.070 0.200 800.000 0.200	441.27 cd 6.30 cd 11.47 cd 23.49 cd 126.50 cd 0.00 cd 1,825.74 mh 232.00 mh 28.70 cd 261.20 mh	897,995 4,498 239,056 47,811 62,440 0 41,873 5,612 11,873 6,318	40,258 49,258	873,746 2,520 232,609 94,332 20,240 0 7,609 6,512 14,637 3,265	3.09 0.04 3.09 3.09 0.47 0.00 3.44 6.51 1.16 7.34	1,771,714 7,018 471,665 94,332 82,880 0 85,740 7,546 26,510 9,583		

2008

2-DD8

2008

ATM  
2008

CAPITAL 2008

2008

See 04/02  
2008



Spreadsheet Report  
KIF0509302/FLY&BOTTMASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
2053	Dry Fly Ash Conver	Dry Fly Ash Conversion Capital Cost	1.00 ls		102,895.99 hrs	2,630,250			2,057,920			4,688,170
IST FACILITY	Dry Fly Ash Conver	Dry Fly Ash Conver	1.00 ls		hrs			25,000,000			25,000,000.00	25,000,000
205-2049	Construct Facilities	Mobilize, Drug Test, Misc Other, & Demobilize	1.00 ls	11,330.505	11,330.51 mh	293,800			158,200		452,000.00	452,000
I MANUAL	Construct Facilities	Construct Facilities	1.00 ls	11,330.51	11,330.51 hrs	293,800			158,200		452,000	452,000
205-2049	Non Manual	Non Manual	1.00 ls	20,228.000	20,228.00 mh	1,011,400					1,011,400.00	1,011,400
	Non Manual	ZNON MANUAL	1.00 ls	20,228.000	20,228.00 hrs	1,011,400					1,011,400.00	1,011,400

Spreadsheet Report  
KIF/0509302/FLY&BOTIM ASH

Estimate Totals

Labor	25,270,416	956,022.654	hrs						
Material	2,499,989								
Subcontract	26,284,653	652,484,222	hrs						
Equipment	21,249,948								
Other	31,500								
	<u>75,295,516</u>	<u>75,295,516</u>							
Engineered Materials - Ph 2			100.000 %						C
Adjustment - Engr Materials			(100.000) %						C
	<u>75,295,516</u>	<u>75,295,516</u>							
Environmental Costs			100.000 %						C
Adjustment Environmental			(100.000) %						C
	<u>75,295,516</u>	<u>75,295,516</u>							
Demolition Costs			100.000 %						C
Adjustment Demolition			(100.000) %						C
	<u>75,295,516</u>	<u>75,295,516</u>							
Small Tools Expense	421,108		0.450 \$/hr						H
Consumables & Expendables	970,361		4.000 %						C
Office Supplies & Expense	30,342		3.000 %						C
Subcontract Fee	<u>1,421,811</u>	<u>76,717,327</u>							C
Escalation - Craft Labor	1,091,656		4.500 %						C
Escalation - Subcontract	709,666		2.700 %						C
Escalation - Subcontract Fee			0.350 %						C
Escalation - Perm Materials	41,803		1.700 %						C
Escalation - HED Equipment			2.000 %						C
Escalation - Tagged Equipment			2.000 %						C
Escalation - Small Tools	31,817		0.034 \$/hr						H
Escalation - Consumables	48,518		0.200 %						C
Escalation - Non-Manual Labor	34,388		3.400 %						C
Escalation - Office Supplies	<u>2,023</u>	<u>76,677,218</u>	0.200 %						C
Partner Insurance (FY04)	756,112		3.000 %						C
Partner Award Fee (FY04)	<u>1,265,521</u>	<u>80,698,851</u>	5.000 %						C
	<u>2,021,633</u>								
FPG Mech Engr - Phase 2	17,005		0.042 % @	42.00 A					405
FPG Elec Engr - Phase 2	17,001		0.042 % @	42.00 A					405
FPG Civil Engr - Phase 2	30,998		0.077 % @	42.00 A					738
Non-TVA Engr - Phase 2	1,142,143		1.659 % @	72.00 A					15,863
FPG Proj Cost - Phase 2	1,000		0.002 % @	42.00 A					24
FPG Proj Cost Sched - Phase 2	2,993		0.007 % @	42.00 A					71
FPG Cost Estimating - Phase 2	1,000		0.002 % @	42.00 A					24
FPG Engr Records - Phase 2	<u>1,004</u>	<u>81,912,001</u>	0.003 % @	42.00 A					24
	<u>1,213,150</u>								
Rounding									L
		<u>81,912,001</u>							
<b>Total</b>		<b>81,912,001</b>							

*60023*



KINGSTON FOSSIL PLANT  
OPTION 3 - WET ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)

DFA Facility  
year  
"2016"

Project name KIF/0509303/FLY&BOTT/ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Plant Estimate # PCN # Requesting Engr Option Revision Phase Estimate Type Estimate Accuracy Est. Issue Date Funding Type Unit

(Wet ash in dredge cell/Phase 1, Wet gypsum in Phase 2, Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,960 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Set'  
'Detail' summary

Spreadsheet Report  
KIP/0509303/FLYB01TM ASH

Location	Activity	Outage Set	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
1	Erosion Controls/S P	Capital	Erect Silt Fence	1,000.00 lf	0.689	689.00 mh	1,994	502			317		2.813		
			Geotextile (Nonwoven) Erosion Protection Channel	4,900.00 sy	0.016	68.80 mh	1,953	5,772				175		1.94	
			250 9" Riprap	52,150.00 in	0.320	16,680.00 mh	49,657	53,037				26,965		24.85	129,569
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pc)	2,004.00 in	0.086	192.38 mh	6,056	16,190				2,795		10.866	43,443
			18" 304	4.00 ea	0.400	20.00 mh	599	1,197				177		14.81	776
			3" 1.6 CMP Mill Spillway (1/2 of 48" Dia Rise Stand Pipe @ 128 FUEs)	57.00 sy	0.400	22.80 mh	1,107	804				599		28.99	2,510
			Cut (Excavation For Placement of 48" Dia Rise Stand Pipe @ 128 FUEs)	95.00 in	0.400	37.20 mh	1,107	26,402				3,862		47.61	4,761
			Fill With 1032 Compacted/Quashed Stone	1,000.00 lf	0.600	600.00 mh	1,461	2,484				230		25.61	3,457
			30" Diameter CMP Culvert	1,000.00 lf	0.500	500.00 mh	1,461	10,038				2,279		52.70	37,940
			30" Diameter CMP Stand Pipe (4 Pipes @ 6 Stages w/40' Per Stage)	720.00 lf	0.750	540.00 mh	1,461	539				273		24.85	1,317
			950 9" Riprap Outlet For Metal Spillway	53.00 in	0.320	16.96 mh	4,862					1,671		869.69	13,914
			Galvanized Corrugated Metal Anti-Steep Collar	16.00 ea	16.000	256.00 mh	1,461	4,829				42,029		318.569	318,569
			Erosion Controls/S P			4,201.35 hrs	125,853	150,687				42,029		318,569	318,569
01			4,201.35 hrs	125,853	150,687				42,029		318,569	318,569			
2	Seed/Mulch	Capital	See/Mulch Disturbed Areas	26.00 ac					64,619			2,485.34	64,619		
			Seed/Mulch						64,619			64,619	64,619		
02									64,619			64,619	64,619		
3	South Access Road	Capital	1032 Crushed Stone Base, 6" Depth	3,520.00 in	0.120	422.40 mh	13,738	31,950			4,147		14.16	49,636	
			Capital								4,147			49,636	
			South Access Road								4,147			49,636	
03									4,147			49,636			
4	Perimeter Road	Capital	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 in	0.120	826.20 mh	26,872	62,493			8,112		14.16	87,478	
			Capital								8,112			87,478	
			Perimeter Road								8,112			87,478	
			04								8,112			87,478	
5	Inlet Dms/Swan Pond	Capital	6" Dia Pipe Bollards	24.00 ea	1.500	36.00 mh	1,036	4,892			245		256.76	6,163	
			PVC Monitoring Wells	6.00 ea	0.200	1.20 mh	2,587	765				403		7.96	12,324
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.200	94.80 mh	2,587	165				27		25.61	410
			Crushed Stone, Bedding 6" Depth	16.00 in	0.200	3.20 mh	2,587	85				442		7.96	4,141
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 780)	520.00 lf	0.200	104.00 mh	2,587	171				31		25.61	491
			Crushed Stone, Bedding 6" Depth	18.00 in	0.500	9.00 mh	2,587	813				417		7.96	3,810
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 782)	491.00 lf	0.200	98.20 mh	2,587	162				29		25.61	435
			Crushed Stone, Bedding 6" Depth	17.00 in	0.500	8.50 mh	2,587	162				1,089		7.96	10,206
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 910)	1,282.00 lf	0.200	256.40 mh	6,119	2,122				73		25.61	10,101
			Crushed Stone, Bedding 6" Depth	43.00 in	0.500	21.50 mh	6,119	409				1,034		7.96	9,669
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 617)	1,218.00 lf	0.200	243.60 mh	6,000	390				70		25.61	10,590
			Crushed Stone, Bedding 6" Depth	41.00 in	0.500	20.50 mh	6,000	380				1,002		7.96	9,385
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 625)	1,180.00 lf	0.200	236.00 mh	5,441	1,953				1,002		25.61	10,241
			Crushed Stone, Bedding 6" Depth	40.00 in	0.200	8.00 mh	5,441	360				69		7.96	9,237
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 632)	1,160.00 lf	0.200	232.00 mh	5,132	1,820				66		25.61	9,989
			Crushed Stone, Bedding 6" Depth	39.00 in	0.200	7.80 mh	5,132	371				66		7.46	158,020
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 632)	2,190.00 lf	0.200	438.00 mh	11,195	3,625				36,025		10.20	151,227
			Backfill For 6" Dia Non-Perforated HDPE (17,658 bcy)	14,893.00 cy	0.200	2,978.60 mh	169,146	4,481				37,103		7.46	162,748
			6" Dia Non-Perforated HDPE (12,361 bcy)	21,624.00 lf	0.200	4,324.80 mh	125,146	4,481				45,610		10.20	155,744
			Cut For 6" Dia Perforated HDPE (18,188 bcy)	15,276.00 cy	0.250	3,819.00 mh	109,854	4,481				1,698		7.96	15,926
			6" Dia Perforated HDPE (12,730 bcy)	2,000.00 lf	0.200	400.00 mh	10,917	3,310				1,698		14.67	5,545
1081 Crushed Stone	378.00 in	0.150	56.70 mh	1,632	341				108		4.173	30,179			
Geotextile Woven Monofilament	1,556.00 sy	0.021	32.68 mh	913	3,625				3,218		7.96	10,503			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,780.00 lf	0.200	756.00 mh	20,895	6,273				913		14.67	7,905			
Crushed Stone	716.00 in	0.190	135.12 mh	3,952	9,696				2,026		7.96	33,125			
Geotextile Woven Monofilament	2,648.00 sy	0.021	55.61 mh	1,730	6,966				3,532		7.96	11,678			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,160.00 lf	0.200	832.00 mh	22,707	6,966				1,002		14.67	6,678			
Crushed Stone	788.00 in	0.150	118.20 mh	3,944	7,444				2,026		2.69	11,254			
Geotextile Woven Monofilament	3,236.00 sy	0.021	67.56 mh	1,699	6,552				3,333		7.96	10,885			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	3,925.00 lf	0.200	785.00 mh	21,624	6,492				1,698		14.67	10,885			
Crushed Stone	742.00 in	0.150	111.30 mh	3,204	6,786				214		7.96	8,187			
Geotextile Woven Monofilament	3,053.00 sy	0.021	64.10 mh	1,782	6,162				5,443		7.96	51,042			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 610)	6,410.00 lf	0.200	1,282.00 mh	34,998	10,910				1,544		14.67	17,751			
Crushed Stone	1,211.00 in	0.150	181.65 mh	5,229	10,986				349		2.68	13,371			
Geotextile Woven Monofilament	4,985.00 sy	0.021	102.95 mh	2,925	10,986				5,171		7.96	48,494			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 617)	6,080.00 lf	0.200	1,216.00 mh	33,242	10,050				1,468		14.67	16,895			
Crushed Stone	1,151.00 in	0.150	172.65 mh	4,970	10,447				1,468		2.68	12,703			
Geotextile Woven Monofilament	4,737.00 sy	0.021	97.44 mh	2,170	9,562				331		7.96	12,703			

Spreadsheet Report  
KIF0609303/FLYBOTTM ASH

Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Materials Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
16	Capital	05	3" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	5,000.00 lf	0.200	1,180.00 mh	32,235	5,765	-	-	-	7.96	46,951	
			1081 Crushed Stone	1,115.00 ln	0.150	167.25 mh	4,814	10,121	-	-	-	-	1.422	16,357
			Geotextile Woven Monofilament	4,589.00 sf	0.024	94.40 mh	2,693	5,292	-	-	-	-	3.21	12,306
			5" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	1,008.00 lf	0.200	1,816.00 mh	31,659	6,600	-	-	-	-	4.925	46,185
			1081 Crushed Stone	1,008.00 ln	0.150	151.20 mh	4,732	6,948	-	-	-	-	1.977	16,079
			Geotextile Woven Monofilament	4,511.00 sf	0.024	92.79 mh	2,647	5,134	-	-	-	-	3.16	12,097
			1/2" Dia 10x10 Mesh HDPE Perimeter Underdrain (EL. 793)	2,660.00 lf	0.250	645.00 mh	17,604	13,087	-	-	-	-	2.14	33,432
			1081 Crushed Stone	675.00 ln	0.150	101.25 mh	2,483	5,219	-	-	-	-	1.467	8,435
			Geotextile Woven Monofilament	1,008.00 sf	0.024	20.16 mh	1,151	2,855	-	-	-	-	7.33	7,661
			1081 Crushed Stone	2,660.00 ln	0.150	398.40 mh	1,810	3,051	-	-	-	-	2.09	5,338
			Geotextile Woven Monofilament	2,660.00 sf	0.024	63.84 mh	1,346	2,855	-	-	-	-	9.019	4,970
			1081 Crushed Stone	54.00 ln	0.150	8.10 mh	1,515	2,855	-	-	-	-	9.019	4,970
			Geotextile Woven Monofilament	2,633.00 sf	0.024	63.19 mh	1,487	2,803	-	-	-	-	243.02	4,780
			1081 Crushed Stone	2,000.00 ln	0.150	300.00 mh	1,487	2,803	-	-	-	-	243.02	4,780
			Geotextile Woven Monofilament	53.00 sf	1.000	53.00 mh	1,000	490	-	-	-	-	243.02	4,780
			1081 Crushed Stone	23.00 ln	0.150	3.45 mh	1,000	490	-	-	-	-	243.02	4,780
			Geotextile Woven Monofilament	38.00 sf	1.000	38.00 mh	1,000	490	-	-	-	-	243.02	4,780
			1081 Crushed Stone	21.00 ln	0.150	3.15 mh	1,000	490	-	-	-	-	243.02	4,780
			Geotextile Woven Monofilament	72.00 sf	1.000	72.00 mh	1,000	490	-	-	-	-	243.02	4,780
			1081 Crushed Stone	81.00 ln	0.150	12.15 mh	1,000	490	-	-	-	-	243.02	4,780
			Geotextile Woven Monofilament	9.00 sf	1.000	9.00 mh	1,000	490	-	-	-	-	243.02	4,780
			1081 Crushed Stone	110,696.00 ln	0.200	22,139.20 mh	59,760	126,853	-	-	-	-	2,662	10,389
			Geotextile Woven Monofilament	4,356.00 sf	0.040	174.24 mh	5,607	12,662	-	-	-	-	2,662	10,389
			1081 Crushed Stone	1,016,000.00 ln	0.200	203,200.00 mh	1,016,000	495,205	-	-	-	-	2,662	10,389
			Geotextile Woven Monofilament	35,789.66 sf	0.040	1,431.59 mh	35,789.66	15,158	-	-	-	-	2,662	10,389
			1081 Crushed Stone	35,789.66 ln	0.200	7,157.93 mh	35,789.66	15,158	-	-	-	-	2,662	10,389
			Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389
			1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389
			Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389
			1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389
			Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389
			1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389
			Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389
			1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389
			Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament	1,016,066.00 sf	0.040	40,642.64 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
1081 Crushed Stone	4,356.00 ln	0.200	871.20 mh	1,016,066	495,205	-	-	-	-	2,662	10,389			
Geotextile Woven Monofilament</														

B 14, 13, 10, 11, 17, 10

Spreadsheet Report  
KIP0509303/FL Y&B/OTM ASH

10, 11, 12, 13, 14, 17, 10

Location	Activity	Outlets Set	Description	Taskoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
9	Temp Slope Protect	Capital	Cut For Ditch (6.815' by)	6,976.00 cy	1,200.000	5.82 cd	10,981				12,041	3.30	21,022		
			Ditch	4,236.00 in	0.320	1,356.48 mh	40,371					21,937	20.95	105,916	
			Shed Ditch	6,976.00 sy						43,111	3,593			3,593	8,280
			June Weeding	6,976.00 sy	0.012	83.74 mh	2,389					427		1.19	140,204
			Capital			1,765.86 hrs	53,741					34,304		34,304	140,204
			Temp Slope Protect			1,765.86 hrs	53,741					34,304		34,304	140,204
			08												140,204
															140,204
															140,204
															140,204
10	Riprap Stilling Basin	Capital	Riprap D50 Size 5"	2,344.00 in	0.320	750.06 mh	22,324				12,075	24.65	59,237		
			Cut For Basin (3.582' by)	4,300.00 cy	1,200.000	3.59 cd	6,077					7,420	3.30	14,186	
			Capital			950.75 hrs	29,091					19,495		19,495	72,424
			Riprap Stilling Basin			950.75 hrs	29,091					19,495		19,495	72,424
			09												72,424
															72,424
															72,424
															72,424
															72,424
															72,424
11	Rim Ditches	O & M	Wet Sluice Sedimented Gypsum Quantities	457,295.00 cy								0.00	0		
			Initial Disposal Life	1.40 yrs									0.00	0	
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	40,229					6,259		6,259	59,696
			Geotextile For Underdrain	9,142.00 sy	0.021	129.34 mh	3,804					4,300		4,300	21,887
			#57 Stone For Outlet Pipe Bedding (135 pcf)	1,482.00 in	0.150	223.80 mh	6,442					1,902		1,902	13,542
			Solid Outlet Pipe ADS Drain 6" Diameter	1,656.00 lf	0.200	331.20 mh	9,050					2,744		2,744	13,202
			#57 Stone For Outlet Pipe Bedding (135 pcf)	336.00 in	0.150	50.40 mh	1,451					428		428	14,517
			O & M			2,206.14 hrs	60,777					10,427		10,427	115,175
			Ph 2 Initial Constr			2,206.14 hrs	60,777					10,427		10,427	115,175
			10												115,175
12	Rim Ditches	O & M	Wet Sluice Gypsum Quantities	255,199.00 cy								0.00	0		
			Stage 1 (3 To 1 Side Slopes)	1.00 lot									0.00	0	
			Wet Cast Gypsum Dike Fill	255,199.00 cy	375.000	680.50 cd	199,859					475,495		475,495	635,354
			O & M			2,864.62 hrs	105,164					250,203		250,203	355,368
			Rim Ditches			2,864.62 hrs	105,164					250,203		250,203	355,368
			11												355,368
															355,368
															355,368
															355,368
															355,368
13	Temp Slope Protect	Capital	Wet Sluice Gypsum Quantities	1,334,496.00 cy								0.00	0		
			Stage 1 Disposal Life (Assumes Dikes & Sluice Gypsum)	4.90 yrs									0.00	0	
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,485.00 lf	0.200	2,299.00 mh	62,746					9,751		9,751	91,533
			Geotextile For Underdrain	9,579.00 sy	0.021	197.04 mh	5,821					2,596		2,596	25,697
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,328.00 in	0.150	349.20 mh	10,652					2,131		2,131	34,151
			Solid Outlet Pipe ADS Drain 6" Diameter	2,596.00 lf	0.200	517.20 mh	14,116					4,290		4,290	20,592
			#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 in	0.150	78.60 mh	2,263					688		688	7,697
			O & M			8,885.07 hrs	294,656					401,759		401,759	655,005
			Ph 2 Operational Cost			8,885.07 hrs	294,656					401,759		401,759	655,005
			12												655,005
14	Dry Ash Stack	O & M	Wet Sluice Gypsum Quantities	253,403.00 cy								0.00	0		
			Stage 2 (3 To 1 Side Slopes)	1.00 lot									0.00	0	
			Wet Cast Gypsum Dike Fill	253,403.00 cy	375.000	702.41 cd	206,292					480,901		480,901	697,063
			O & M			2,864.62 hrs	105,164					250,203		250,203	355,368
			Disposal Life (Assumes Dry Stack Ash)	1.20 yrs										0.00	0
			O & M			37,294.89 hrs	1,134,475					760,816		760,816	1,695,281
			13												1,695,281
															1,695,281
															1,695,281
															1,695,281

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Spreadsheet Report  
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10, 11, 12, 13, 14, 17, 10

Spreadsheet Report  
KIF0509303/FLY&BOTTM ASH

Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
5	Ph 3 Operational Cost		14	37,294.89 hrs	1,134,475	760,816	1,895,291					1,895,291
	O & M		Stage 1 (3 To 1 Side Slopes)	1.00 lot	1,100,000						0.00	0
			Dry Stack Ash Quantities	1,349,180.00 cy	1,100,000	2,886,305	4,487,828				3.33	4,487,828
			Stage 1 Disposal Life (Assume Dike Stack)	2.80 yrs		2,686,305	4,487,828				0.00	4,487,828
			O & M			1,801,923	4,487,828					4,487,828
			Ph 3 Operational Cost			2,686,305	4,487,828					4,487,828
6	Ph 3 Operational Cost		15	98,497.64 hrs	2,996,204	2,009,352	5,005,556					5,005,556
	O & M		Stage 2 (3 To 1 Side Slopes)	1.00 lot	1,100,000	2,996,204	5,005,556				0.00	5,005,556
			Dry Stack Ash Quantities	1,594,825.00 cy	1,100,000	2,996,204	5,005,556				3.33	5,005,556
			Stage 2 Disposal Life (Assume Dry Stack)	3.20 yrs		2,009,352	5,005,556				0.00	5,005,556
			O & M			2,009,352	5,005,556					5,005,556
			Ph 3 Operational Cost			2,009,352	5,005,556					5,005,556
7	Ph 3 Operational Cost		16	87,328.74 hrs	2,656,457	1,781,506	4,437,963					4,437,963
	O & M		Stage 3 (3 To 1 Side Slopes)	1.00 lot	1,100,000	2,656,457	4,437,963				0.00	4,437,963
			Dry Stack Ash Quantities	1,354,166.00 cy	1,100,000	2,656,457	4,437,963				3.33	4,437,963
			Stage 3 Disposal Life (Assume Dry Stack)	2.80 yrs		2,656,457	4,437,963				0.00	4,437,963
			O & M			1,781,506	4,437,963					4,437,963
			Ph 3 Operational Cost			2,656,457	4,437,963					4,437,963
8	Ph 2 Operational Cost		17	7,907.39 hrs	262,232	437,843	700,016					700,016
	O & M		Stage 3 (3 To 1 Side Slopes)	1.00 lot	375,000	437,843	700,016				0.00	700,016
			Wet Cast Gypsum Dike Fill	227,105.00 cy	375,000	437,843	700,016				2.85	700,016
			Wet Slurce Gypsum Quantities	1,344,916.00 cy							0.00	0
			Stage 3 Disposal Life (Assume Dike & Slurce Ash & Gypsum)	4.80 yrs							0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	10,230.00 lf	0.200	55,841	61,461				7.96	61,461
			Geotextile For Underdrain	6,526.00 sq	0.021	17,262	22,861				2.86	22,861
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,072.00 ln	0.150	310.80	41,817				14.87	41,817
			Solid Outlet Pipe ADS Drain 6" Diameter	2,302.00 lf	0.200	460.40	6,330				7.96	6,330
			#57 Stone For Outlet Pipe Bedding (135 pd)	486.00 ln	0.150	72.90	984				14.67	984
			O & M			262,232	700,016					700,016
			Ph 2 Operational Cost			262,232	700,016					700,016
9	Ph 2 Operational Cost		18	450.22 cd	132,225	314,584	446,809					446,809
	O & M		Stage 4 (3 To 1 Side Slopes)	1.00 lot	375,000	314,584	446,809				0.00	446,809
			Wet Cast Gypsum Dike Fill	168,831.00 cy	375,000	314,584	446,809				2.65	446,809
			Wet Slurce Gypsum & Ash Quantities	702,654.00 cy							0.00	0
			Stage 4 Disposal Life (Assume Dike & Slurce Ash)	2.70 yrs							0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,605.00 lf	0.200	41,512	60,557				7.96	60,557
			Geotextile For Underdrain	5,388.00 sq	0.021	14,521	19,999				2.68	19,999
			#57 Stone For Outlet Pipe Bedding (135 pd)	1,540.00 ln	0.150	231.00	3,051				14.67	3,051
			Solid Outlet Pipe ADS Drain 6" Diameter	1,711.00 lf	0.200	342.20	4,653				7.96	4,653
			#57 Stone For Outlet Pipe Bedding (135 pd)	347.00 ln	0.150	52.05	700				14.67	700
			O & M			194,944	446,809					446,809
			Ph 2 Operational Cost			194,944	446,809					446,809
10	Ph 3 Operational Cost		19	5,872.35 hrs	194,944	325,344	565,669					565,669
	O & M		Stage 4 (3 To 1 Side Slopes)	1.00 lot	1,100,000	325,344	565,669				0.00	565,669
			Dry Stack Ash Quantities	677,613.00 cy	1,100,000	325,344	565,669				3.33	565,669
			Stage 4 Disposal Life (Dry Stack Ash)	1.20 yrs		771,271	1,921,536				0.00	1,921,536
			O & M			1,150,265	1,921,536					1,921,536
			Ph 3 Operational Cost			771,271	1,921,536					1,921,536
15	Dry Fly Ash Cover		20	21,977.800 hrs	21,977,800	21,977,800	21,977,800					21,977,800
	Capital		Dry Fly Ash Conversion Capital Cost	1.00 ls			21,977,800					21,977,800
			CAPITAL 12/20/04				21,977,800					21,977,800

Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
CONST ACILITY		25				hrs			21,977,800				21,977,800
	Construct Facilities	Capital				hrs			21,977,800				21,977,800
	2005-2016		Mobilize, Drug Test, Misc Other, & Demobilize Capital	1.00	10,926.52	10,926.52	342,000	184,000		184,000	0	528,000.00	528,000
			Construct Facilities			10,926.52	342,000	184,000		184,000			528,000
			XCONST FACILITY			10,926.52	342,000	184,000		184,000			528,000
NON MANUAL	Non-Manual												
	2005-2016	Capital					1,007,489					1,007,489.00	1,007,489
			Non Manual Capital	1.00	20,148.78	20,148.78	1,007,489						1,007,489
			Non-Manual			20,148.78	1,007,489						1,007,489
			XNON MANUAL			20,148.78	1,007,489						1,007,489

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Estimate Totals

Labor	19,670,695					
Material	1,358,322					
Subcontract	30,783,866					
Equipment	14,595,114					
Other	50,000					
	<u>66,462,997</u>	616,417,919	hrs			
Engineered Materials - Ph 2		100.000	%			C
Adjustment - Engr Materials		(100.000)	%			C
	66,462,997					
Environmental Costs		100.000	%			C
Adjustment Environmental		(100.000)	%			C
	66,462,997					
FPG Mech Engr - Phase 2	7,001	0.027	% @	42.00	A	167
FPG Elec Engr - Phase 2	7,001	0.027	% @	42.00	A	167
FPG Civil Engr - Phase 2	16,000	0.052	% @	42.00	A	391
Non-TVA Engr - Phase 2	231,997	0.633	% @	72.00	A	3,803
FPG Proj Contr Cost - Phase 2	3,001	0.004	% @	42.00	A	24
FPG Proj Sched - Phase 2	3,001	0.012	% @	42.00	A	71
FPG Cost Estimating - Phase 2	999	0.004	% @	42.00	A	24
FPG Engr Records - Phase 2	999	0.004	% @	42.00	A	24
	<u>317,103</u>					
Rounding						L
	66,780,000					
<b>Total</b>	<b>66,780,000</b>					

KINGSTON FOSSIL PLANT  
OPTION 3 - WET ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)

Project name KIF/0509303/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Plant Estimate # PCN # Requesting Engr. Option Revision Phase Estimate Type Estimate Accuracy Est. Issue Date Funding Type Unit

Ash KIF 0509303 KIF530 Dan Smith 3 0 2 Preliminary +/- 20% 12/20/2004 Capital N

Notes  
(Wet ash in dredge cell)Phase 1. Wet gypsum in Phase 2. Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475 800 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by 'Location/Activity/Outage Seq  
Detail' summary



Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
1	Erosion Controls/S P	Capital	Erect Silt Fence	1,000.00 lf	0.069	68.57 mh	1,994	502			317		2.81	3,813	
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.018	68.80 mh	1,953	5,772				175		7.91	7,911
			D50 9" Riprap	5,215.00 ln	0.320	1,668.80 mh	49,957	53,037				28,065		44.84	130,568
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 ln	0.086	192.36 mh	6,058	16,190				19,332		13.63	27,312
			Sig 1-6 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 FVEs)	4.00 ea	186.084	684.33 mh	20,750					10,850.04		10.85	43,443
			Cut Excavation For Placement Of 48" Dia Half-Round Pipe (43 bcy)	52.00 sy	0.400	20.80 mh	599					177		14.81	778
			Fill With 1032 Compaeted Crushed Stone	93.00 ln	1.107	37.20 mh	804					26.99		2.90	2,900
			30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	17,497	26,442				47,611		47.61	47,611
			Bedding For 30" CMP, 6" Thick	135.00 lf	0.500	67.50 mh	1,843					230		3.45	3,451
			30" Diameter CMP Stand Pipe (4Pipes @ 6 Slugs w/30" Per Slug)	720.00 lf	0.750	540.00 mh	16,623	19,038				22,779		22.78	37,940
			D50 9" Riprap Outlet For Metal Spillway	53.00 ln	0.320	16.96 mh	505					24.85		1.317	1,317
			Galvanized Compaeted Metal Anti-Step Collar	16.00 ea	18.000	288.00 mh	7,461	4,862				869.59		869.59	13,914
Erosion Controls/S P				4,201.35 hrs	125,853	150,687			42,029		42,029	316,589			
01				4,201.35 hrs	125,853	150,687			42,029		42,029	316,589			
318,569													318,569		
12	Seed/Mulch	Capital	See Mulch Disturbed Areas	26.00 ac		hrs			64,619			2,485.34	64,619		
			Capital			hrs			64,619				64,619	64,619	
13	South Access Road	Capital	1032 Crushed Stone Base, 6" Depth	3,520.00 tn	0.120	422.40 mh	13,739	31,950			4,147		49,636		
			Capital			hrs			31,950			4,147		49,636	
14	Perimeter Road	Capital	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 tn	0.120	826.20 mh	26,872	62,493			8,112		97,478		
			Capital			hrs			62,493			8,112		97,478	
15	Inlet Ditch/Swan Pond	Capital	6" Dia Pipe Beliefs	24.00 ea	1.500	36.00 mh	1,036	4,882			245		5,163		
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.200	94.80 mh	2,687	785			403		3,774	12,324	
			Crushed Stone, Bedding 6" Depth	16.00 ln	0.500	8.00 mh	230			27		2.61	410		
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 780)	520.00 lf	0.200	104.00 mh	2,936	861			442		3,419	4,461	
			Crushed Stone, Bedding 6" Depth	18.00 ln	0.500	9.00 mh	259			31		2.61	461		
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 782)	491.00 lf	0.200	98.20 mh	2,680	813			417		3,910	4,956	
			Crushed Stone, Bedding 6" Depth	17.00 ln	0.500	8.50 mh	245			29		2.61	405		
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 810)	1,282.00 lf	0.200	256.40 mh	6,998	2,122			1,089		7,996	10,208	
			Crushed Stone, Bedding 6" Depth	43.00 ln	0.500	21.50 mh	6,648	2,016			73		7,996	11,101	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.500	243.60 mh	6,848	2,016			1,034		7,996	9,996	
			Crushed Stone, Bedding 6" Depth	41.00 ln	0.500	20.50 mh	590	380			70		7,996	9,996	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 825)	1,180.00 lf	0.200	236.00 mh	6,441	1,953			1,002		7,996	9,996	
			Crushed Stone, Bedding 6" Depth	40.00 ln	0.500	20.00 mh	576	360			68		7,996	9,996	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 832)	1,180.00 lf	0.200	232.00 mh	6,332	1,950			985		7,996	9,996	
			Crushed Stone, Bedding 6" Depth	39.00 ln	0.500	19.50 mh	561	371			66		7,996	9,996	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 832)	21,180.00 lf	0.250	4,236.00 mh	126,746	38,095			38,095		7,466	151,227	
			Bedfill For 6" Dia Non-Perforated HDPE (17,658 bcy)	14,833.00 cy	0.250	3,708.25 mh	106,746	31,703			44,481		7,466	162,748	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 783)	21,824.00 lf	0.250	4,364.80 mh	125,646	37,646			46,610		7,996	159,962	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 783)	15,276.00 lf	0.250	3,819.00 mh	109,934	33,110			46,610		7,996	159,962	
			6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 783)	2,000.00 lf	0.200	400.00 mh	1,688	400.00			1,688		7,996	10,208	
			1081 Crushed Stone	378.00 ln	0.150	56.70 mh	1,632	3,310			462		14.67	5,456	
			Geotextile Women Nonplacement	1,556.00 sy	0.021	32.67 mh	913	3,151			109		2.99	4,173	
			6" Dia Perforated HDPE Permeable Underdrain (EL. 772)	3,780.00 lf	0.200	756.00 mh	20,688	6,273			3,479		7,996	30,719	
			Geotextile Women Nonplacement	7,116.00 sy	0.150	1,067.40 mh	3,092	9,499			913		14.67	10,593	
			6" Dia Perforated HDPE Permeable Underdrain (EL. 780)	2,448.00 lf	0.021	51.41 mh	1,730	5,969			206		2.68	7,095	
			1081 Crushed Stone	4,000.00 ln	0.150	600.00 mh	22,707	6,886			3,532		7,996	33,125	
			Geotextile Women Nonplacement	788.00 ln	0.200	117.90 mh	3,354	7,134			1,002		14.67	11,530	
			6" Dia Perforated HDPE Permeable Underdrain (EL. 792)	3,258.00 lf	0.021	68.56 mh	1,899	6,552			229		2.68	8,678	
			1081 Crushed Stone	742.00 ln	0.150	111.30 mh	3,204	6,735			3,333		14.67	10,865	
			Geotextile Women Nonplacement	3,053.00 sy	0.021	64.11 mh	2,145	6,182			214		2.68	8,107	
			6" Dia Perforated HDPE Permeable Underdrain (EL. 810)	6,410.00 lf	0.200	1,282.00 mh	34,989	10,610			5,443		14.67	51,042	
			1081 Crushed Stone	1,211.00 ln	0.150	181.65 mh	5,229	10,992			1,544		7,996	14,971	
			Geotextile Women Nonplacement	4,995.00 sy	0.021	105.99 mh	3,026	10,006			349		2.68	13,371	
			6" Dia Perforated HDPE Permeable Underdrain (EL. 817)	6,099.00 lf	0.200	1,219.80 mh	33,242	10,060			5,171		7,996	49,494	
			1081 Crushed Stone	1,151.00 ln	0.150	172.65 mh	4,970	10,447			1,460		14.67	16,886	
			Geotextile Women Nonplacement	4,137.00 sy	0.021	87.44 mh	2,760	8,552			331		2.68	12,703	



Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount			
19	Temp Slope Protect	Capital	Cut For Ditch (5.815 box)	6,978.00 cy	1,200.000	10,981	-	-	12,041	-	-	3.30	23,022		
			D50 9" Riprap	4,239.00 in	0.352	40,371	43,111	-	-	21,837	-	-	24.95	105,319	
			Seed Ditch	6,978.00 sq	-	2,989	5,494	3,593	-	-	427	-	0.51	6,280	
			Joint Matting	6,978.00 sq	0.012	83.74	48,575	3,593	-	-	34,304	-	1.19	140,204	
			Capital			1,765.86 hrs	53,741	48,575	3,593	-	34,304	-	-	140,204	
			Temp Slope Protect			1,765.86 hrs	53,741	48,575	3,593	-	34,304	-	-	140,204	
			08			1,765.86 hrs	53,741	48,575	3,593	-	34,304	-	-	140,204	
															140,204
															140,204
															140,204
19	Riprap Stilling Basin	Capital	Riprap D50 Size 9"	2,344.00 in	0.320	22,324	23,838	-	12,075	-	-	24.95	58,237		
			Cut For Basin (3.582 box)	4,300.00 cy	1,200.000	29,097	23,838	-	-	7,420	-	-	3.30	14,186	
			Capital			950.75 hrs	29,097	23,838	-	-	19,495	-	-	72,424	
			Riprap Stilling Basin			950.75 hrs	29,097	23,838	-	-	19,495	-	-	72,424	
			09			950.75 hrs	29,097	23,838	-	-	19,495	-	-	72,424	
														72,424	
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															72,424
10	Ph 2 Initial Constr	O & M	Wet Sluice Sedimented Gypsum Quantities	451,295.00 cy	-	-	-	-	-	-	-	0.00	0		
			Initial Disposal Life	1.40 yrs	-	-	-	-	-	-	-	-	0.00	0	
			Perforated Pipe ADS Drain Tube, 6" Diameter	1,370.00 lf	0.200	40,228	12,199	12,199	-	-	6,258	-	7.96	56,696	
			Geotextile For Underdrain	5,422.00 sq	0.021	3,604	12,437	16,471	-	-	2,688	-	-	16,471	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	1,409.00 lf	0.150	6,442	13,542	19,022	-	-	14,677	-	-	21,867	
			Solid Outlet Pipe ADS Drain 6" Diameter	1,658.00 lf	0.200	9,050	23,160	32,210	-	-	1,408	-	-	33,202	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	386.80 in	0.150	1,451	50,400	51,851	-	-	428	-	-	52,279	
			O & M			2,208.14 hrs	60,777	43,972	-	-	10,427	-	-	115,175	
			Ph 2 Initial Constr			2,208.14 hrs	60,777	43,972	-	-	10,427	-	-	115,175	
			10											115,175	
11	Rim Ditches	O & M	Cut (111,899 box)	134,278.00 cy	375.000	105,164	-	-	250,203	-	-	2.65	355,368		
			O & M			2,864.62 hrs	105,164	-	-	250,203	-	-	2.65	355,368	
			Rim Ditches			2,864.62 hrs	105,164	-	-	250,203	-	-	2.65	355,368	
			11											355,368	
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														355,368	
12	Ph 2 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0		
			Wet Cast Gypsum Dike Fill	255,189.00 cy	375.000	199,859	-	-	475,496	-	-	-	2.65	675,354	
			Wet Sluice Gypsum Quantities	1,334,496.00 cy	-	-	-	-	-	-	-	-	0.00	0	
			Stage 1 Disposal Life (Assumes Dikes & Sluice Gypsum)	4.90 yrs	-	-	-	-	-	-	-	-	0.00	0	
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,485.00 lf	0.200	62,746	19,026	19,026	-	-	9,781	-	7.96	91,533	
			Geotextile For Underdrain	9,579.00 sq	0.021	5,821	19,396	25,697	-	-	2,656	-	-	25,697	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,328.00 in	0.150	10,652	21,131	29,959	-	-	14,677	-	-	34,151	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,598.00 lf	0.200	14,116	41,280	47,952	-	-	2,956	-	-	20,592	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 in	0.150	2,263	78,600	80,863	-	-	666	-	-	81,529	
			O & M			8,885.07 hrs	294,656	66,569	-	-	491,756	-	-	855,005	
Ph 2 Operational Cost			8,885.07 hrs	294,656	66,569	-	-	491,756	-	-	855,005				
12											855,005				
13	Ph 2 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0		
			Wet Cast Gypsum Dike Fill	253,403.00 cy	375.000	200,292	-	-	480,801	-	-	-	2.65	697,053	
			Wet Sluice Gypsum Quantities	1,509,673.00 cy	-	-	-	-	-	-	-	-	0.00	0	
			Stage 2 Disposal Life (Assume Dike & Sluice Gypsum)	5.40 yrs	-	-	-	-	-	-	-	-	0.00	0	
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,085.00 lf	0.200	64,765	19,639	19,639	-	-	10,075	-	7.96	94,478	
			Geotextile For Underdrain	9,688.00 sq	0.021	5,902	20,022	26,566	-	-	2,656	-	-	26,566	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,403.00 in	0.150	10,376	21,811	30,645	-	-	14,677	-	-	35,251	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200	14,574	44,419	53,400	-	-	2,956	-	-	21,261	
			#57 Stone For Outlet Pipe Bedding (135 pcf)	541.00 in	0.150	2,336	81,150	83,486	-	-	690	-	-	84,176	
			O & M			9,171.26 hrs	304,146	70,801	-	-	507,589	-	-	882,536	
Ph 2 Operational Cost			9,171.26 hrs	304,146	70,801	-	-	507,589	-	-	882,536				
13											882,536				
14	Ph 3 Initial Constr	O & M	Dry Ash Stack	599,783.00 cy	1,100.000	1,134,475	-	-	760,816	-	-	3.39	1,695,291		
			Disposal Life (Assumes Dry Stack Ash)	1.20 yrs	-	-	-	-	-	-	-	-	0.00	0	
			O & M			37,294.89 hrs	1,134,475	-	-	760,816	-	-	3.39	1,695,291	
			14											1,695,291	
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														1,695,291	
														1,695,291	

Spreadsheet Report  
KIF0509303FLY&BOTTM ASH

Location	Activity	Outage Seq	Description	Release Quantity	Labor Productivity	Labor Quality	Labor Amount	Material Amount	Sub Amount	Epile Amount	Other Amount	Total Cost/Job	Total Amount
15	Ph. 3 Operational Cost	O & M	14 Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities O & M Ph. 3 Operational Cost	1.00 lot 1,349,160.00 cy 2.80 yrs	1,100,000 1,100,000	37,294.89 hrs 37,294.89 hrs	1,134,475 1,134,475			760,816 760,816			1,895,291 1,895,291
16	Ph. 3 Operational Cost	O & M	15 Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities O & M Ph. 3 Operational Cost	1.00 lot 1,504,826.00 cy 3.20 yrs	1,100,000 1,100,000	1,228.55 cd 88,309.86 hrs 88,309.86 hrs 88,309.96 hrs	2,686,305 2,686,305 2,686,305 2,686,305			1,801,523 1,801,523 1,801,523 1,801,523			4,487,828 4,487,828 4,487,828 4,487,828
17	Ph. 3 Operational Cost	O & M	16 Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities O & M Ph. 3 Operational Cost	1.00 lot 1,334,168.00 cy 2.80 yrs	1,100,000 1,100,000	1,388.02 cd 87,328.74 hrs 87,328.74 hrs 87,328.74 hrs	2,656,457 2,656,457 2,656,457 2,656,457			1,781,506 1,781,506 1,781,506 1,781,506			4,437,963 4,437,963 4,437,963 4,437,963
18	Ph. 2 Operational Cost	O & M	17 Stage 3 (3 To 1 Side Slopes) Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dry Stack & Gypsum)	1.00 lot 227,106.00 cy 1,344,916.00 cy 4.80 yrs	375,000 2,000 0.021 0.150 0.150	605.82 cd 2,048.00 mh 175.36 mh 310.80 mh 460.40 mh 69.90 mh 7,907.39 hrs 7,907.39 hrs	177,865 55,841 5,003 18,907 12,968 2,012 61,041 262,232 262,232 61,041			423,169 8,887 2,661 30,395 16,330 584 437,643 437,643 437,643			601,033 61,460 22,661 30,395 16,330 760,916 760,916 760,916
19	Ph. 2 Operational Cost	O & M	18 Stage 4 (3 To 1 Side Slopes) Wet Sluice Gypsum & Ash Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash)	1.00 lot 168,831.00 cy 702,654.00 cy 2.70 yrs	375,000 2,000 0.021 0.150 0.150	450.22 cd 1,621.00 mh 130.37 mh 231.00 mh 342.20 mh 52.05 mh 6,878.35 hrs 6,878.35 hrs	132,225 41,512 3,719 9,950 9,940 1,498 45,391 194,944 194,944 45,391			314,584 6,458 443 1,964 1,453 442 325,344 325,344 325,344			446,809 60,557 19,896 22,581 7,962 5,080 565,009 565,009 565,669
20	Ph. 3 Operational Cost	O & M	19 Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities O & M Ph. 3 Operational Cost	1.00 lot 577,813.00 cy 1.20 yrs	1,100,000 1,100,000	525.10 cd 37,807.40 hrs 37,807.40 hrs 37,807.40 hrs	1,150,265 1,150,265 1,150,265 1,150,265			771,271 771,271 771,271 771,271			1,921,536 1,921,536 1,921,536 1,921,536
25	Dry Fly Ash Corner	Capital	20 Dry Fly Ash Conversion Capital Cost	1.00 ls								21,977,800.00	21,977,800.00

Location	Activity	Outage Sig	Description	Task/Qt	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
CONST FACILITY		25				nrs hrs			21,977,800 21,977,800				21,977,800 21,977,800
	Construct Facilities	Capital											
NON MANUAL			Mobilize, Drug Test, Misc Other, & Demobilize	0.00 is	#####	0.00 mh	0			0	0	0.00	0
	Non-Manual	Capital		0.00 is	#####	0.00 mh	0						0

\$31.30/MH  
\$34.13/EA

\$4,782,503  
x 11%

we \$526,000

L=65% 342,000 192657

E=35% 184,000

\$391,157A

161,162

x 12.5%

20,145 MH

Estimate Totals

Labour	19,321,200	565,341,021	hrs							
Material	1,359,322									
Subcontract	30,783,866	422,403,407	hrs							
Equipment	14,415,114									
Other	50,000									
	64,929,508	64,929,508								
Engineered Materials - Ph 2		100,000 %								
Adjustment - Engr Materials		(100,000) %								
Environmental Costs		100,000 %								
Adjustment Environmental		(100,000) %								
FFG Mech Engr - Phase 2	19,609	0.068 %	@	42.00	A					395
FFG Elec Engr - Phase 2	16,607	0.058 %	@	42.00	A					395
FFG Civil Engr - Phase 2	30,281	0.123 %	@	42.00	A					721
Non-TVA Engr - Phase 2	1,013,480	2.405 %	@	72.00	A					14,076
FFG Proj Contr Cost - Phase 2	917	0.004 %	@	42.00	A					22
FFG Proj Contr Sched - Phase 2	2,753	0.004 %	@	42.00	A					22
FFG Cost Estimating - Phase 2	117	0.001 %	@	42.00	A					22
FFG Engr Records - Phase 2	917	0.004 %	@	42.00	A					22
	1,032,461									
Rounding		66,011,969								
		66,011,969								
Total		66,011,969								

KINGSTON FOSSIL PLANT  
OPTION 3 - WET ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)

DFA FACILITY  
year  
" 2016 "

KIF/0509303/FLY&BOTTM ASH

Project name  
Engineer DAN SMITH  
Estimator C. L. Toney  
Labor rate table KIF 40 2104  
Equipment rate table TVA Equipment  
Project Plant KIF  
Estimate # 0509303  
PCN # KIF530  
Requesting Engr Dan Smith  
Option 3  
Revision 0  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 12/20/2004  
Funding Type Capital  
Unit N

(We) ash in dredge cell/Phase 1. Wet gypsum in Phase 2. Phase 3 is dry stack ash

All cost are based in 2005 dollars. Additional notes are as follow.

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format  
Sorted by Location/Activity  
Detail summary





Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
76	Instl Dms/Swan Pond	Geotextile Woven Monofilament	4,589.00 sy	0.021	94.40 mh	2,263	9,137			315		11,714
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 632)	5,800.00 lf	0.200	1,160.00 mh	29,665	9,440			4,829		40,973
		1081 Crushed Stone	1,096.00 sy	0.150	184.40 mh	3,017	9,762			1,370		15,129
		Geotextile Woven Monofilament	4,511.00 sy	0.021	92.79 mh	2,224	8,961			309		11,515
		12" Dia Force Main HDPE Perimeter Underdrain (EL. 763)	2,580.00 lf	0.250	645.00 mh	14,763	12,868			2,688		30,349
		1081 Crushed Stone	575.00 ln	0.150	86.25 mh	2,066	5,132			719		7,937
		Submersible Pumping Station Equipment Package	1.00 ls	55,000	56.00 mh	1,905	5,000			205		7,110
		6" Diameter Catch Basin (Precast)	1.00 ea	59,000	60.00 mh	1,921	5,000			488		4,989
		Geotextile Woven Monofilament	2,293.00 sy	0.021	47.17 mh	1,131	4,565			157		5,853
		Gout Seal Storm Drain - 24" Diameter (Pump & Plug)	54.00 cy	1.000	54.00 mh	1,273	2,808			489		4,571
		Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ea	4,000	8.00 mh	1,250	2,756			78		4,434
		Gout Seal Storm Drain - 24" Diameter (Pump & Plug)	53.00 cy	1.000	53.00 mh	1,250	2,756			489		4,456
		Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ea	4,000	8.00 mh	1,196	2,684			78		4,344
		24" CMP Storm Drain	23.00 cy	1.000	23.00 mh	542	1,196			208		2,170
		Excavation For 24" Dia Pipe (25 bcy)	38.00 lf	4.000	152.00 mh	1,450	3,800			78		4,678
		Backfill For 24" Diameter CMP (17 bcy)	30.00 cy	0.200	6.00 mh	145	220			760		927
		Bedding For 24" Culvert	4.00 ln	0.500	2.00 mh	48	37			163		326
		36" CMP Storm Drain	72.00 lf	0.600	43.20 mh	1,058	2,664			260		3,982
		Excavation For 36" Dia Pipe (57 bcy)	61.00 cy	0.200	12.20 mh	392	203			734		934
		Backfill For 36" Diameter CMP (47 bcy)	57.00 cy	0.320	18.24 mh	441	443			150		594
		Bedding For 36" Culvert	9.00 ln	0.500	4.50 mh	109	84			15		206
		Anchor Trench - Excavate into Borrow Area (6,650 bcy)	10,360.00 cy	0.200	2,072.00 mh	50,216	7,344			25,950		76,168
		Upper & Lower LLDPE Geomembrane	110,688.00 sy	0.050	5,534.40 mh	132,676	243,514			13,836		390,026
		Sediment Trap (3,830 bcy)	4,356.00 cy	0.040	174.24 mh	4,880	4,492			937		9,372
		Instl Dms/Swan Pond			35,788.66 hrs	853,837	486,927			259,959		1,612,723
		05			12,900 yr	853,837	486,927			259,959		1,612,723
	Drg CellP1 Opr Cost		1.00 lot								0.00	0
	Elv. 810 To Elv. 844		622,416.00 cy	1,300,000	478.78 cd	974,301			648,026		3.09	1,922,377
	Bottom Ash Dike Fill		4,953,694.00 cy		1,810.28 cd	446,773		7,430,944		1,53	1.53	7,430,944
	Dredge		678,948.00 cy	375,000					1,240,101		2.49	1,686,874
	Wet Dip And Stack		12.90 yr								0.00	0
	Disposal Life (Assume Dike & Dredge Ash)				48,954.36 hrs	1,421,074		7,430,944				11,040,145
	Drg CellP1 Opr Cost										0.00	0
77			1.00 lot								0.00	0
	Base Layers		322,200.00 cy	0.040	12,888.00 mh	380,888			332,281		2.15	693,229
	Cut For Dredge Cell (289,500 bcy)		910,566.00 cy	1,300,000	700.43 cd	1,425,942			1,396,903		3.09	2,812,245
	Compacted Fly Ash Base (Fill)		28,111.00 sy	28,111.00	10.00 cd	7,140			4,000		0.04	11,140
	Proofroll Subgrade		242,407.00 cy	1,300,000	186.47 cd	379,453			369,219		3.09	748,672
	2.5" Thick Bottom Ash Layer		48,481.00 cy	1,300,000	37.29 cd	75,880			73,843		3.09	149,733
	0.5" Thick Fly Ash Filler Layer		16,820.00 lf					338,400			20.00	338,400
	18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)		281,111.00 sy	1,400,000	200.79 cd	99,112			32,127		0.47	131,239
	Ratio Top Fly Ash Layer		163,614.00 cy	1,300,000	125.86 cd	256,114			249,207		3.09	505,321
	Bottom Ash Dike Fill		41,400.00 lf	0.070	2,689.00 mh	66,466			12,078		3.44	142,445
	4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5		1,860.00 sy	0.200	369.00 mh	8,902			3,987		9.51	11,989
	Trenching For The Drain System (4" Dia Underdrains), 1,333 bcy		22,960.00 cy	800,000	28.70 cd	11,673			14,637		1.16	26,510
	Strip Existing 1" Soil Cover (Phase 1 Expansion), 19,133 bcy		2,073.00 cy	0.200	414.60 mh	10,029			5,183		7.34	15,212
	Anchor Trench Cut		1,971.00 cy	0.320	630.72 mh	15,237			15,391		15.90	30,558
	Anchor Trench Fill & Compact		39,111.00 cy	1,300,000	30.09 cd	61,223			59,571		3.09	120,794
	2.0" Thick Bottom Ash Blanket/Drain		18,556.00 cy	1,300,000	15.04 cd	30,612			29,737		3.52	206,722
	1.0" Thick Filler Drain Ash Layer		88,667.00 sy	0.050	2,933.35 mh	70,321			7,333		7.05	55,319
	Geomembrane		7,850.00 lf	0.200	1,570.00 mh	36,008			6,535		2.55	16,700
	Geotextile For Underdrain		6,542.00 sy	0.021	134.57 mh	3,226			449		2.55	16,700
	#67 Stone For Outlet Pipe Bedding (135 pct)		1,580.00 ln	0.150	238.50 mh	5,769			1,988		13.80	21,948
	Solid Outlet Pipe ADS Drain 6" Diameter		1,963.00 lf	0.200	392.60 mh	9,004			1,634		7.05	13,833
	#67 Stone For Outlet Pipe Bedding (135 pct)		397.00 ln	0.150	59.55 mh	1,441			496		13.80	5,480
	1081 Crushed Stone, Bedding 6" Depth		490.00 lf	0.200	96.00 mh	2,202			400		7.05	3,383
	6" Dia Perforated HDPE Drain (EL. 760)		16.00 ln	0.500	8.00 mh	194			150		23.12	317.00
	1081 Crushed Stone		2,400.00 lf	0.200	480.00 mh	11,098			1,998		7.05	16,913
	Geotextile Woven Monofilament		1,667.00 sy	0.021	34.40 mh	921			758		23.12	16,913
	Cut For Underdrain System		356.00 cy	0.200	71.20 mh	1,722			593		2.55	2,316
	Backfill For Underdrain System		267.00 cy	0.250	66.75 mh	1,615			785		8.99	2,400
	Centrifugation		1.00 ls					726,800		50,000	50,000	50,000
	OWOC For Construction Of Disposal Facility		1.00 ls			2,957,662	252,497	1,065,200	2,610,339	50,000	776,600.00	6,935,258
	PH 2&Ph 3 Base Const				106,279.60 hrs							1,119,245

2005-2010 DVM

CAPITAL  
(2015-2016)  
see Q1/100

14 cycles 2015-2020

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
8	Temp Slope Protect	Cut For Ditch (5.815 bcy) D50 g Riprap Seed Ditch June Mailing Temp Slope Protect	6,978.00 cy 4,239.00 ln 6,978.00 sy 6,978.00 sy	1,200.000 0.320 0.012	5.82 cd 1,358.46 mh 83.74 mh 1,765.86 hrs	9,228 39,926 419 45,161	42,390 3,489 5,373 47,763	1,065,200 3,489 3,489 3,489	11,804 21,409 419 33,632	50,000	2,610,339	6,935,298
9	Riprap Stilling Basin	Riprap D50 Size 6" Cut For Basin (3.562 bcy) Riprap Stilling Basin	2,344.00 ln 4,300.00 cy	0.320 1,200.000	750.08 mh 3.56 cd 960.75 hrs	18,760 5,666 24,446	23,440 23,440	-	11,838 7,274 19,112	-	23.05 3.01	54,038 12,960 66,998
10	Ph 2 Initial Constr	Wet Sluice Sedimented Gypsum Quantities Initial Disposal Life Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Initial Constr	451,295.00 cy 1.40 yrs 7,370.00 lf 6,142.00 sy 1,492.00 ln 1,958.00 lf 336.00 ln	0.200 0.021 0.150 0.200 0.150	1,474.00 mh 126.34 mh 233.80 mh 331.00 mh 50.40 mh 2,206.14 hrs	33,906 3,029 5,144 7,905 1,219 51,073	11,995 12,229 13,316 2,988 420 43,237	-	6,136 421 1,865 1,380 420 10,222	-	0.00 0.00 7.05 2.55 13.80 13.80	0 0 51,956 15,679 20,595 11,684 4,638 104,532 104,532
11	Rim Ditches	Cut (111,899 bcy) Rim Ditches	134,279.00 cy	375.000	358.08 cd 2,864.62 hrs	88,373 88,373	-	-	245,297 245,297	-	2.49	333,671 333,671
12	Ph 2 Operational Cost	Stage 1 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 1 Disposal Life (Assumes Dikes & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Operational Cost	1.00 lot 255,189.00 cy 1,334,496.00 cy 4.90 yrs 11,495.00 lf 9,579.00 sy 2,328.00 ln 2,586.00 lf 524.00 ln	375.000 375.000 0.200 0.021 0.150 0.200 0.150	690.50 cd - - 2,999.00 mh 197.04 mh 349.20 mh 517.20 mh 76.60 mh 8,885.07 hrs	18,748 - - 52,728 4,724 8,447 11,862 1,901 247,610	-	466,172 - - 9,970 687 2,910 2,159 693 482,117 482,117	-	0.00 2.49 0.00 0.00 7.05 2.55 13.80 13.80	0 634,121 0 81,005 24,453 32,135 18,224 7,293 797,170 797,170	
13	Ph 2 Operational Cost	Stage 2 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 2 Disposal Life (Assume Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Operational Cost	1.00 lot 263,403.00 cy 1,509,873.00 cy 5.40 yrs 11,865.00 lf 9,888.00 sy 2,493.00 ln 2,670.00 lf 541.00 ln	375.000 375.000 0.200 0.021 0.150 0.200 0.150	702.41 cd - - 2,973.00 mh 203.40 mh 360.45 mh 534.00 mh 81.15 mh 9,171.26 hrs	173,954 - - 54,425 4,676 8,719 12,247 1,893 255,585	-	481,178 - - 9,878 3,064 3,064 2,223 676 497,636 497,636	-	0.00 2.49 0.00 0.00 7.05 2.55 13.80 13.80	0 654,552 0 83,613 25,241 33,170 19,616 7,469 822,839 822,839	
14	Ph 3 Initial Constr	Dry Ash Stack Disposal Life (Assumes Dry Stack Ash) Ph 3 Initial Constr	568,793.00 cy 1.20 yrs	1,100.000	517.98 cd 37,294.89 hrs	953,340 953,340	-	-	745,896 745,896	-	2.98 0.00	1,699,238 1,699,238
15	Ph 3 Operational Cost	Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1,349,180.00 cy 1.00 lot	1,100.000	1,226.53 cd	2,257,399	-	-	1,766,199	-	2.98	4,023,586

Spreadsheet Report  
 KIF0509303/FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
B	Ph 3 Operational Cost DAM	Stage 1 Disposal Life (Assume Dike Stack) Ph 3 Operational Cost 15	2.80 yrs		88,309.96 hrs	2,257,399					0.00	4,023,598
B	Ph 3 Operational Cost 2017-2019 DAM	Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 2 Disposal Life (Assume Dry Stack) Ph 3 Operational Cost 16	1.00 lot 1,504,825.00 cy 3.20 yrs	1,100,000	1,388.02 cd 98,497.64 hrs 98,497.64 hrs	2,517,818 2,517,818 2,517,818			1,969,953 1,969,953 1,969,953		0.00	4,487,771
B	Ph 3 Operational Cost 2017-2019	Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack) Ph 3 Operational Cost 17	1.00 lot 1,334,189.00 cy 2.80 yrs	1,100,000	1,212.90 cd 87,328.73 hrs 87,328.73 hrs	2,232,317 2,232,317 2,232,317			1,746,575 1,746,575 1,746,575		0.00	3,978,891
B	Ph 3 Operational Cost 2017-2019	Stage 3 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Ash & Gypsum)	1.00 lot 227,106.00 cy 1,344,916.00 cy 4.80 yrs	375,000	605.62 cd 2,046.00 mh 175.39 mh 310.80 mh 460.40 mh 69.90 mh 7,907.39 hrs 7,907.39 hrs	149,456 46,925 4,204 7,518 10,559 1,691 220,383 220,383			414,871 8,516 585 2,590 1,916 583 429,061 429,061		0.00	564,337
B	Ph 3 Operational Cost 2017-2019	Perforated Pipe ADS Drain Tube, 6" Diameter, Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain, 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Operational Cost 18	10,230.00 lf 8,525.00 sf 2,972.00 tn 2,902.00 lf 486.00 tn	0.200 0.021 0.150 0.200 0.150							7.05 2.55 13.80 7.05 13.80	72,091 21,762 28,601 16,222 6,432 709,445 709,445
B	Ph 2 Operational Cost 2017-2019	Stage 4 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum & Ash Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash)	1.00 lot 166,831.00 cy 702,654.00 cy 2.70 yrs	375,000	450.22 cd 1,521.00 mh 130.37 mh 231.00 mh 342.20 mh 52.05 mh 5,878.35 hrs 5,878.35 hrs	111,113 34,884 3,125 5,588 7,846 1,259 163,818 163,818			308,416		0.00	419,529
B	Ph 2 Operational Cost 2017-2019	Perforated Pipe ADS Drain Tube, 6" Diameter, Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain, 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Operational Cost 19	7,905.00 lf 6,338.00 sf 1,540.00 tn 1,711.00 lf 347.00 tn	0.200 0.021 0.150 0.200 0.150							7.05 2.55 13.80 7.05 13.80	53,282 16,179 12,257 12,957 4,790 527,406 527,406
B	Ph 3 Operational Cost 2017-2019	Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Dry Stack Ash) Ph 3 Operational Cost 20	1.00 lot 577,613.00 cy 1.20 yrs	1,100,000	925.10 cd 37,807.40 hrs 37,807.40 hrs	966,609 966,609 966,609			756,148 756,148 756,148		0.00	1,722,757
B	Ph 3 Operational Cost 2017-2019	Dry Fly Ash Conversion Capital Cost Dry Fly Ash Converter 25	1.00 ls		hrs hrs						0.00	21,400,000
B	Construct Facilities 2005-2009	Mobilize, Drug Test, Misc Other, & Demobilize Construct Facilities XCONST FACILITY	1.00 ls		13,889.734 13,889.73 hrs 13,889.73 hrs	365,300 365,300 365,300			196,700 196,700 196,700		562,000.00	562,000
B	Non-Manual 2005-2009	Non-Manual Non-Manual	1.00 ls		38,311.00 mh 38,311.00 hrs	1,915,550 1,915,550					1,915,550.00	1,915,550

Location	Activity	Description	Taxeff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		ZNON MANUAL			38,311.00 hrs	1,915,550						1,915,550

Estimate Totals

Labor	17,676,821	637,542,355	hrs		
Material	1,335,600				
Subcontract	29,974,553				
Equipment	14,329,165	428,282,068	hrs		
Other	50,000				
	63,367,139	63,367,139			
Engineered Materials - Ph 2			100.000 %	C	
Adjustment - Engr Materials			(100.000) %	C	
Environmental Costs			100.000 %	C	
Adjustment Environmental			(100.000) %	C	
Demolition Costs			100.000 %	C	
Adjustment Demolition			(100.000) %	C	
Small Tools Expense	289,654		0.450 \$/hr	H	
Consumables & Expensibles	630,451		4.000 %	C	
Office Supplies & Expense	57,467		3.000 %	C	
Subcontract Fee	957,572	64,324,711		C	
Escalation - Craft Labor	709,257		4.500 %	C	
Escalation - Subcontract	809,313		2.700 %	C	
Escalation - Subcontract Fee	0,350		0.350 %	C	
Escalation - Perm Materials	1,700		1.700 %	C	
Escalation - HED Equipment	22,722		2.000 %	C	
Escalation - Tagged Equipment	20,374		0.034 \$/hr	H	
Escalation - Small Tools	31,523		0.200 %	C	
Escalation - Consumables	65,129		3.400 %	C	
Escalation - Non-Manual Labor	3,693		0.200 %	C	
Escalation - Office Supplies	1,062,146	65,068,860		C	
Partner Insurance (FY04)	530,305		3.000 %	C	
Partner Award Fee (FY04)	893,841		5.000 %	C	
	1,414,146	87,401,006			
FPG Mech Engr - Phase 2	18,090		0.068 % @ 42.00 A	A	431
FPG Elec Engr - Phase 2	18,098		0.068 % @ 42.00 A	A	431
FPG Civil Engr - Phase 2	32,991		0.123 % @ 42.00 A	A	785
Non-TVA Engr - Phase 2	1,103,840		2.405 % @ 72.00 A	A	15,331
FPG Proj Cntrl Cost - Phase 2	900		0.004 % @ 42.00 A	A	24
FPG Proj Cntrl Sched - Phase 2	2,999		0.011 % @ 42.00 A	A	71
FPG Cost Estimating - Phase 2	999		0.004 % @ 42.00 A	A	24
FPG Engr Records - Phase 2	1,178,995	68,580,001	0.004 % @ 42.00 A	A	24
Rounding				L	
	68,580,001				
<b>Total</b>		<b>68,560,001</b>			

317K

good for option 3 + 4 per Don Smith 12/17/04 @ 4:35 p

KINGSTON FOSSIL PLANT  
OPTION 4 - DRY ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)

Project name KIF/0509304/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash

Plant KIF

Estimate # 0509304

PCN # KIF500

Requesting Engr Dan Smith

Option 4

Revision 0

Phase 2

Estimate Type Preliminary

Estimate Accuracy +/- 20%

Est. Issue Date 12/20/2004

Funding Type Capital

Unit N

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Seq'  
Detail summary

Location	Activity	Usage Seq	Description	Takeoff Quantity	Unit	Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
1	Erosion Controls P	Capital	Erod Sill Fence	1,000.00	lf	0.008	8.87	1,994	502	317	-	-	2.81	2,813	
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00	sf	0.016	68.80	1,963	5,772	1,911	1.84	-	-	1.84	7,911
			D50 8" Riprap	5,215.00	ln	0.320	1,668.80	49,667	53,037	26,965	24.85	-	-	24.85	128,568
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00	ln	0.096	192.38	6,056	18,106	3,056	13.63	-	-	13.63	27,312
			Slu 1/6 CMP Mill Spillway (1/2 of 48" Dia Rise Stand Pipe @ 128 F/Ea)	4.00	ea	188.084	864.33	4.00	20,450	20,450	2,795	-	-	10,890.84	43,443
			Cul Excavation For Placement Of 48" Dia Half-Round Pipe @ 128 F/Ea	57.00	sf	0.400	20.80	589	604	1,177	14.91	-	-	14.91	778
			30" Dia 1032 Compacted Crushed Stone	30.00	sf	0.400	37.20	604	1,177	14.91	-	-	-	29.89	2,510
			30" Dia 1032 Compacted Crushed Stone	1,000.00	sf	0.600	600.00	1,033	2,842	3,889	47.61	-	-	47.61	4,511
			30" Dia 1032 Compacted Crushed Stone	133.00	sf	0.500	67.50	1,284	230	251	25.81	-	-	25.81	3,457
			30" Dia 1032 Compacted Crushed Stone	720.00	sf	0.750	540.00	18,038	2,279	52.70	-	-	-	52.70	37,940
			Galvanized Corrugated Metal Anti-Sweep Collar	53.00	ln	0.320	18.56	505	1,571	1,571	24.85	-	-	24.85	1,317
			Capital				18.00	ea	18.000	7,461	4,892	15.71	-	-	15.71
Erosion Controls P				4,201.35	hrs	42.029	125,853	150,687	42.029	-	-	42.029	318,569		
01				4,201.35	hrs	42.029	125,853	150,687	42.029	-	-	42.029	318,569		
12	Seed/Mulch	Capital	Seed/Mulch Disturbed Areas	26.00	ac	-	-	-	-	64,619	-	-	2,485.34	64,619	
			Seed/Mulch								64,619	-	-	64,619	
13	South Access Road	Capital	1032 Crushed Stone Base, 6" Depth	3,520.00	ln	0.120	422.40	13,739	31,950	-	-	-	14.16	49,636	
			Capital											40,636	
			South Access Road											49,636	
14	Perimeter Road	Capital	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,685.00	ln	0.120	802.20	26,872	62,493	-	-	-	14.16	97,478	
			Perimeter Road											97,478	
16	Drg CollP1 Opr Cost	O & M	Elv. 810 To Elev. 866	1.00	lot	-	-	-	-	-	-	-	0.00	0	
			Dry Ash Slick	5,476.070	sf	1,100.000	4,978.25	10,993,210	7,312,947	3.93	-	-	3.93	18,215,257	
			Wet Dip And Slick Bottom Ash Only	678,848.00	sf	375.000	1,810.26	531,859	1,264,903	2.85	-	-	2.85	1,796,563	
			Disposal Life (Assume Dike & Dredge Ash)	12.90	yr	-	-	-	-	-	-	-	-	-	0.00
			Haul Distance (Round Trip)	0.50	mile	-	-	-	-	-	-	-	-	-	0.00
			Drg CollP1 Opr Cost												20,011,819
17	Ph 2 Base Construct	Capital	Base Layers	1.00	lot	-	-	-	-	-	-	-	-	0.00	
			Compacted Fly Ash Base (Eli)	610,555.00	sf	1,300.000	700.43	1,695,157	1,414,641	3.42	-	-	-	3.42	3,110,796
			2" Compacted Subgrade	281,111.00	sf	28,111.100	10.00	8,497	4,080	0.05	-	-	-	0.05	12,577
			2" Thick Bottom Ash Layer	242,407.00	sf	1,300.000	186.47	451,540	376,804	3.42	-	-	-	3.42	828,153
			0.5" Thick Fly Ash Filter Layer	48,481.00	sf	1,300.000	37.29	90,308	75,320	3.42	-	-	-	3.42	165,628
			16" Dia Course Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	281,111.00	sf	1,400.000	200.76	117,943	32,770	0.54	-	-	-	0.54	347,537
			Bottom Ash Dike Filter	169,614.00	sf	1,300.000	126.66	304,715	254,191	3.42	-	-	-	3.42	558,966
			4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	1,440.00	lf	1,300.000	2,880.00	79,694	12,320	158.401	-	-	-	158.401	18,721
			Trenching For The Drain System (4" Dia Underdrains, 1,353 bcy)	22,950.00	sf	6.070	989.00	10,593	14,890	7.46	-	-	-	7.46	28,056
			Slope Existing 1" Soil Cover (Phase 1 Expansion), 19,133 bcy	2,073.00	sf	60.000	414.80	11,035	5,286	15.607	-	-	-	15.607	17,221
			Anchor Trench Out	1,971.00	sf	0.550	69.02	72,655	60,763	3.42	-	-	-	3.42	133,618
			2' 0" Thick Bottom Ash Blanked Drain	15,955.00	sf	1,300.000	38.09	98,428	30,382	3.42	-	-	-	3.42	103,611
			1.0" Thick Filter Drain Ash Layer	6,987.00	sf	1,300.000	2,993.36	131,282	43,282	7.46	-	-	-	7.46	222,421
			Geomembrane	7,950.00	lf	0.650	157.00	42,649	6,986	6.99	-	-	-	6.99	17,543
			Geotextile For Underdrain	6,542.00	sf	0.200	132.60	3,339	13,427	4.58	-	-	-	4.58	17,543
			#67 Stone For Outlet Pipe Bedding (135 pcf)	1,590.00	ln	0.150	238.50	6,965	14,432	2,027	14.67	-	-	14.67	23,323
			Solid Outlet Pipe ADS Drain 6" Diameter	1,953.00	lf	0.200	392.50	10,115	3,249	1,997	14.67	-	-	14.67	19,651
#67 Stone For Outlet Pipe Bedding (135 pcf)	397.00	ln	0.150	59.55	3,053	906	506	14.67	-	-	14.67	3,624			
6" Dia Non-Perforated Compacted Tubing Lateral Outlet Pipes (EL. 760)	480.00	ln	0.200	96.00	2,820	405	405	1.86	-	-	1.86	3,624			
1081 Crushed Stone, Bedding 6" Depth	16.00	ln	0.500	8.00	230	152	27	2.85	-	-	2.85	410			
6" Dia Perforated HOPE Drain (EL. 760)	2,400.00	lf	0.200	480.00	13,100	2,038	2,038	7.86	-	-	7.86	19,111			
1081 Crushed Stone	464.00	ln	0.500	227.00	6,534	4,317	773	25.61	-	-	25.61	11,625			

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
8	Temp Slops Protect	Capital	Geotextile Woven Monofilament	1,987.00 sq	0.021	38.40 mh	1,058	3,720	-	-	131	-	2.68	5,007	
			Cul For Underdrain System	350.00 cy	0.280	77.20 mh	4,850	-	-	-	-	605	-	7.46	2,655
			Backfill For Underdrain System	287.00 cy	0.280	68.75 mh	1,421	-	-	-	-	801	-	10.20	2,722
			Certification	1.00 ls	-	-	-	-	-	-	-	-	50,000	-	50,000
			QA/QC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	-	-	-	-	50,000	-	50,000
			Ph 2 Base Construct	-	-	-	-	-	-	-	-	-	-	-	-
			Capital	3,089,637	255,789	3,089,637	748,424	-	-	-	-	-	-	-	748,424
			83,391.80 hrs	2,323,808	1,093,960	2,323,808	50,000	-	-	-	-	-	-	-	6,813,995
			93,391.60 hrs	2,323,808	1,093,960	2,323,808	50,000	-	-	-	-	-	-	-	6,813,995
			07	3,089,637	255,789	3,089,637	748,424	-	-	-	-	-	-	-	748,424
9	Riprap Stilling Basin	Capital	Cul For Ditch (5,815 bcy)	5,878.00 cy	1,200,000	5.82 cd	10,881	-	-	-	12,041	-	3.30	23,022	
			D50 P Riprap	4,239.00 ln	0.320	1,356.48 mh	40,371	43,111	-	-	-	24,85	-	24.85	105,319
			Seed Ditch	6,878.00 sq	0.012	82.74 mh	2,389	5,684	-	-	-	427	-	8.280	8,280
			Iron Matting	-	-	-	-	-	-	-	-	-	-	-	-
			1,765.86 hrs	48,575	3,593	3,593	50,000	-	-	-	-	-	-	-	140,204
			1,765.86 hrs	48,575	3,593	3,593	50,000	-	-	-	-	-	-	-	140,204
			Temp Slope Protect	-	-	-	-	-	-	-	-	-	-	-	-
			Capital	53,741	48,575	53,741	48,575	-	-	-	-	-	-	-	140,204
			08	53,741	48,575	53,741	48,575	-	-	-	-	-	-	-	140,204
			09	53,741	48,575	53,741	48,575	-	-	-	-	-	-	-	140,204
0	Ph 2 Initial Constr	O & M	Riprap D50 Size 8"	2,344.00 ln	0.320	750.08 mh	22,324	23,638	-	-	12,075	-	24.85	56,237	
			Cul For Basin (1,592 bcy)	4,300.00 cy	1,200,000	3.58 cd	6,187	23,638	-	-	-	7,420	-	3.30	14,186
			Capital	29,081	23,638	29,081	23,638	-	-	-	-	-	-	-	72,424
			Riprap Stilling Basin	-	-	-	-	-	-	-	-	-	-	-	-
			950.75 hrs	23,638	19,485	19,485	50,000	-	-	-	-	-	-	-	72,424
			950.75 hrs	23,638	19,485	19,485	50,000	-	-	-	-	-	-	-	72,424
			Temp Slope Protect	-	-	-	-	-	-	-	-	-	-	-	-
			Capital	29,081	23,638	29,081	23,638	-	-	-	-	-	-	-	72,424
			09	29,081	23,638	29,081	23,638	-	-	-	-	-	-	-	72,424
			1	Rim Ditches	O & M	Wet Sluice Sedimented Gypsum Quantities	451,295.00 cy	-	-	-	-	-	-	-	-
Initial Cons. Disposal Life	1.40 Yrs	-				-	-	-	-	-	-	-	-	0.00	0
Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200				1,474.00 mh	40,229	12,198	-	-	-	6,258	-	7.96	58,686
Geotextile For Underdrain	5,142.00 sq	0.021				128.34 mh	3,604	12,437	-	-	-	430	-	2.68	15,471
#57 Stone For Underdrain Bedding (135 pc)	1,492.00 lf	0.160				242.72 mh	6,442	13,542	-	-	-	1,902	-	14.67	21,887
Solid Outlet Pipe ADS Drain 6" Diameter	1,858.00 lf	0.200				371.60 mh	9,550	21,444	-	-	-	1,408	-	7.96	13,202
#57 Stone For Outlet pipe Bedding (135 pc)	338.00 ln	0.150				50.70 mh	1,451	3,050	-	-	-	428	-	14.67	4,929
O & M	-	-				-	-	-	-	-	-	-	-	-	-
60,777	43,972	60,777				43,972	50,000	-	-	-	-	-	-	-	115,175
Ph 2 Initial Constr	-	-				-	-	-	-	-	-	-	-	-	-
Capital	60,777	43,972	60,777	43,972	-	-	-	-	-	-	-	115,175			
10	60,777	43,972	60,777	43,972	-	-	-	-	-	-	-	115,175			
2	Ph 2 Operational Cost	O & M	Cul (111,898 bcy)	134,270.00 cy	375,000	358.08 cd	105,164	-	-	-	250,203	-	2.65	355,368	
			O & M	-	-	-	-	-	-	-	-	-	-	-	-
			Rim Ditches	-	-	-	-	-	-	-	-	-	-	-	-
			Capital	105,164	105,164	105,164	105,164	-	-	-	-	-	-	-	355,368
			2,864.82 hrs	250,203	250,203	250,203	50,000	-	-	-	-	-	-	-	355,368
			2,864.82 hrs	250,203	250,203	250,203	50,000	-	-	-	-	-	-	-	355,368
			Temp Slope Protect	-	-	-	-	-	-	-	-	-	-	-	-
			Capital	105,164	105,164	105,164	105,164	-	-	-	-	-	-	-	355,368
			11	105,164	105,164	105,164	105,164	-	-	-	-	-	-	-	355,368
			3	Ph 2 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	-
Wet Sluice Gypsum Quantities	255,189.00 cy	-				-	-	-	-	-	-	-	-	-	-
Wet Sluice Gypsum Quantities	1,334,496.00 cy	-				-	-	-	-	-	-	-	-	-	-
Perforated Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf	0.200				2,299.00 mh	62,748	19,026	-	-	-	9,761	-	7.96	91,553
Geotextile For Underdrain	5,579.00 sq	0.021				117.16 mh	5,621	19,996	-	-	-	870	-	2.68	25,987
#57 Stone For Underdrain Bedding (135 pc)	2,328.00 lf	0.160				372.48 mh	10,652	21,131	-	-	-	1,396	-	14.67	34,151
Solid Outlet Pipe ADS Drain 6" Diameter	2,598.00 lf	0.200				519.60 mh	14,116	4,280	-	-	-	2,139	-	7.96	20,982
#57 Stone For Outlet pipe Bedding (135 pc)	524.00 ln	0.150				78.60 mh	2,283	4,756	-	-	-	688	-	14.67	7,867
O & M	-	-				-	-	-	-	-	-	-	-	-	-
491,759	68,589	491,759				68,589	50,000	-	-	-	-	-	-	-	655,005
Ph 2 Operational Cost	-	-	-	-	-	-	-	-	-	-	-	-			
Capital	491,759	68,589	491,759	68,589	-	-	-	-	-	-	-	655,005			
12	491,759	68,589	491,759	68,589	-	-	-	-	-	-	-	655,005			
3	Ph 2 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	-	0.00	0	
			Wet Sluice Gypsum Quantities	283,403.00 cy	-	-	-	-	-	-	-	-	-	-	-
			Wet Sluice Gypsum Quantities	1,509,673.00 cy	-	-	-	-	-	-	-	-	-	-	-
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,665.00 lf	0.200	2,331.00 mh	64,765	19,639	-	-	-	10,076	-	7.96	94,479
			Geotextile For Underdrain	5,888.00 sq	0.021	123.55 mh	5,922	20,022	-	-	-	892	-	2.68	26,516
			#57 Stone For Underdrain Bedding (135 pc)	2,403.00 lf	0.160	384.48 mh	10,718	21,811	-	-	-	1,487	-	14.67	35,251
			Solid Outlet Pipe ADS Drain 6" Diameter	2,870.00 lf	0.200	574.00 mh	14,574	4,374	-	-	-	2,267	-	7.96	21,261
			#57 Stone For Outlet pipe Bedding (135 pc)	641.00 ln	0.150	96.15 mh	3,236	4,911	-	-	-	690	-	14.67	17,936
			O & M	-	-	-	-	-	-	-	-	-	-	-	-
			507,889	68,589	507,889	68,589	50,000	-	-	-	-	-	-	-	682,538
Ph 2 Operational Cost	-	-	-	-	-	-	-	-	-	-	-	-			
Capital	507,889	68,589	507,889	68,589	-	-	-	-	-	-	-	682,538			
13	507,889	68,589	507,889	68,589	-	-	-	-	-	-	-	682,538			



Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
4	Ph.3 Initial Constr	O & M	Dry Slack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack)	677,412.00 cy 1.40 yrs	1,100,000	9,171.26 hrs 9,171.26 hrs	304,146 304,146	70,801 70,801		507,589 507,589		3.33 0.00	862,538 882,536
5	Ph.3 Operational Cost	O & M	Dry Slack Ash Quantities Haul Distance (Round Trip)	1,348,160.00 cy 2.80 yrs 0.50 mile	1,100,000	88,309.96 hrs 88,309.96 hrs	2,686,305 2,686,305	1,801,523 1,801,523		904,530 904,530		0.00 0.00	2,253,301 2,253,301
6	Ph.3 Operational Cost	O & M	Dry Slack Ash Quantities Haul Distance (Round Trip)	1,348,160.00 cy 3.20 yrs 0.50 mile	1,100,000	98,497.64 hrs 98,497.64 hrs	2,996,204 2,996,204	2,009,352 2,009,352		904,530 904,530		0.00 0.00	4,487,628 4,487,628
7	Ph.2 Operational Cost	O & M	Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities	227,106.00 cy 1,344,916.00 cy 4.80 yrs	375,000	605.62 cd 2,046.00 mth	177,955 55,941	423,169 8,687		423,169 8,687		2.65 0.00	601,033 81,460
8	Ph.3 Operational Cost	O & M	Perforated Pipe ADS Drain Tubes, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pct)	10,230.00 lf 8,526.00 sq 2,072.00 lf 2,302.00 lf 488.00 lf	0.200 0.021 0.150 0.200 0.150	175.96 mth 310.60 mth 460.40 mth 66.80 mth 7,907.39 hrs	5,093 8,947 12,950 2,012 262,232	17,262 16,807 1,955 4,230 61,041		8,687 2,942 1,955 594 437,043		7.96 2.69 14.67 7.96 14.67	81,460 22,661 30,385 6,838 760,916
9	Ph.2 Operational Cost	O & M	Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Gypsum)	1,344,916.00 cy 2.80 yrs 0.50 mile	1,100,000	1,212.90 cd 87,328.74 hrs 87,328.74 hrs	2,686,457 2,656,457 2,656,457	1,781,506 1,781,506 1,781,506		1,781,506 1,781,506 1,781,506		0.00 0.00 0.00	4,437,963 4,437,963 4,437,963
10	Ph.3 Operational Cost	O & M	Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities	169,631.00 cy 702,654.00 cy 2.70 yrs	375,000	450.22 cd 1,521.00 mth 130.37 mth 231.00 mth 322.20 mth 52.05 mth 5,878.35 hrs 5,878.35 hrs	132,425 41,512 3,119 8,950 1,486 194,944 194,944	1,858 12,658 443 1,984 442 45,361 45,361		314,594 6,455 443 1,984 442 325,344 325,344		0.00 0.00 0.00 7.96 2.69 14.67 14.67	446,809 60,557 22,591 13,634 5,080 565,669 565,669

Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
5	O & M		Stage 4 (3 To 1 Side Slopes)	1.00 lot								0.00	0	
			Dry Stack Ash Quantities	577,613.00 cu yd	1,100,000	525.10 cu yd	1,150,065				771,271		3.33	1,921,336
			Stage 4 Disposal Life (Assume Dike & Dry Stack Ash)	1.20 yrs									0.00	0
5	Dry Fly Ash Conver	Capital	PH 3 Operation Cost			37,807.40 hrs	1,150,065			771,271			1,921,336	
			20			37,807.40 hrs	1,150,065			771,271			1,921,336	
			Dry Fly Ash Conversion Capital Cost	1.00 ls				25,675,000					25,675,000.00	25,675,000
CONST ACILITY	Construct Facilities	Capital	Dry Fly Ash Conver			hrs							25,675,000	
			25			hrs							25,675,000	
						hrs								25,675,000
NON MANUAL	Non-Manual	Capital	Mobilize, Drug Test, Misc Other, & Demobilize	1.00 ls	7,720.660	7,720.66 mth	238,800			128,500		0	367,300	
			Capital			7,720.66 hrs	238,800			128,500				367,300
			Construct Facilities			7,720.66 hrs	238,800			128,500				367,300
NON MANUAL	Non-Manual	Capital	XCONST FACILITY			7,720.66 hrs	238,800			128,500			367,300	
NON MANUAL	Non-Manual	Capital	Non Manual	1.00 ls	13,662.120	13,662.12 mth	683,106					683,106.00	683,106	
			Capital			13,662.12 hrs	683,106							683,106
			Non-Manual			13,662.12 hrs	683,106							683,106
NON MANUAL	Non-Manual	Capital	ZNON MANUAL			13,662.12 hrs	683,106						683,106	

35 34,669  
19,105,984



Spreadsheet Report  
KIF/0509304/FLY&BOTTM ASH

KINGSTON FOSSIL PLANT  
OPTION 4 - DRY ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)

Project name KIF/0509304/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Plant Ash  
Estimate # KIF 0509304  
PCN # KIF530  
Requesting Engr Dan Smith  
Option 4  
Revision 0  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 12/20/2004  
Funding Type Capital  
Unit N

Notes  
All cost are based in 2005 dollars. Additional notes are as follow.

- (1) Closure costs not included.
- (2) Liner is not required for this option.
- (3) Bottom ash columns are subject to change with final design.
- (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Seq'  
'Detail' summary

Spreadsheet Report  
KIF050304/FLYBOTTIM ASH

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labo Productivity	Labo Quantity	Labo Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
1	Erosion Controls/S P	Capital	Erect Sill Fence Geotextile (Nonwoven) Erosion Protection Channel D50 9" Riprap 3" Stone, 1" Thick To Prevent Erosion (Assume 105pcf) Cut Excavation For Placement Of 48" Dia Half-Round Pipe @ 128 Files) Sug 1-6 CMP Mill Spillway (1/2 of 48" Dia Half-Round Pipe) 43 bcy. Cut Excavation For Placement Of 48" Dia Half-Round Pipe @ 128 Files) Fill With 1032 Compacted/Crushed Stone 30" Diameter CMP Culvert Bedding For 30" CMP, 6" Thick 30" Diameter CMP Stand Pipe (4 Pipes @ 8 Stages w/30" Per Stage) D50 9" Riprap Outlet For Metal Spillway Galvanized Corrugated Metal Anti-Sleep Collar Erosion Controls/S P 01	1,000.00 lf 4,300.00 bcy 5,215.00 ln 2,004.00 ln 4.00 ea 52.00 cy 93.00 ln 1,000.00 lf 135.00 ln 720.00 lf 53.00 ln 18.00 ea	0.683 0.016 0.323 0.098 166.004 0.400 0.400 0.600 0.500 0.750 0.320 16.000	68.87 mh 69.80 mh 1,699.99 mh 182.36 mh 664.33 mh 20.80 mh 37.20 mh 600.00 mh 67.50 mh 540.00 mh 18.96 mh 256.00 mh 4,201.35 hrs 4,201.35 hrs	1.684 1.683 49.667 9.656 20,450 999 1,107 17,487 1,943 19,639 4,882 7,481 125,653 150,867 125,853 125,853	502 5,772 53,037 18,190 20,198 604 26,344 230 2,278 1,571 150,687 150,867 150,867 150,687	317 175 26,865 3,066 2,795 177 3,662 230 2,278 1,571 42,029 43,029 42,029	-	-	2.813 7.911 129,568 27,312 43,443 776 2,610 47,611 3,457 37,940 1,317 318,569 318,569 318,569 318,569	
2	Seed/Mulch	Capital	Seed/Mulch Disturbed Areas Seed/Mulch 02	28.00 ac		hrs hrs hrs	84,619 64,619 64,619		84,619 64,619 64,619			2,485.34 64,619 64,619 64,619	64,619 64,619 64,619
3	South Access Road	Capital	1032 Crushed Stone Base, 6" Depth Capital South Access Road 03	3,520.00 ln	0.120	422.40 mh 422.40 hrs 422.40 hrs 422.40 hrs	13,739 13,739 13,739 13,739	31,850 31,850 31,850 31,850		4,147 4,147 4,147 4,147		14.16	48,835 48,835 48,835 48,835
4	Perimeter Road	Capital	1032 Roller Compacted Crushed Stone Base, 6" Depth Capital Perimeter Road 04	8,895.00 ln	0.120	826.20 mh 826.20 hrs 826.20 hrs 826.20 hrs	26,872 26,872 26,872 26,872	62,493 62,493 62,493 62,493		8,112 8,112 8,112 8,112		14.16	97,478 97,478 97,478 97,478
5	Drp Call/P1 Opr Cost	O & M	Elv. 810 To Elev. 866 Dry Ash Stack Weir Dip And Stack Bottom Ash Overlay Disposal Life (Assume Dike & Dredge Ash) Haul Distance (Round Trip) O & M Drp Call/P1 Opr Cost 05	1.00 lot 5,476.0700 cy 676,848.00 cy 12.90 yr 0.50 mile	1,100.000 375.000	4,878.25 cd 1,810.28 cd	10,933.210 531,659			7,312,087 1,264,953		0.00 3.33 2.89 0.00	0 18,216,267 1,796,563 0
6	Ph 2 Base Construct	Capital	Base Layers Compacted Fly Ash Base (Fill) Proofroll Subgrade 2.5" Thick Bottom Ash Layer 0.5" Thick Fly Ash Filler Layer 18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy) Bottom Ash Dike Bottom Ash Dike Fill 4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5 Trenching For The Drain System (4" Dia Underdrains), 1,533 bcy Strip Existing 1" Soil Cover (Phase 1 Expansion), 18,133 bcy Anchor Trench Fill Anchor Trench Fill & Compact 2.0" Thick Bottom Ash Blanket Drain 1.0" Thick Filler Drain Ash Layer Geomembrane Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) 8" Dia Non-Fwd HDPE Conspicuous Tubing/Lateral Outlet Pipes (EL. 760) 1031 Crushed Stone, Bedding 6" Depth 8" Dia Perforated HOPE Drain (EL. 760) 1091 Crushed Stone	1.00 lot 910,559.00 cy 281,111.00 sy 242,407.00 cy 48,481.00 cy 18,920.00 lf 281,111.00 sy 163,614.00 cy 41,500.00 lf 22,660.00 cy 2,073.00 cy 39,111.00 cy 59,657.00 sy 7,650.00 lf 6,542.00 sy 1,593.00 ln 1,963.00 ln 397.00 ln 481.00 lf 2,400.00 lf 454.00 ln	1,300.000 29,111.100 1,300.000 1,300.000 1,400.000 1,300.000 0.670 800.000 1,300.000 0.320 1,300.000 1,300.000 0.050 0.200 0.150 0.150 0.150 0.500 0.200 0.500	709.43 cd 19.00 cd 188.47 cd 37.29 cd 202.79 cd 125.96 cd 2,896.00 mh 28.70 cd 414.60 mh 30.99 cd 74.855 36,428 2,933.35 mh 42,949 3,839 13,457 19,715 352.69 mh 1,714 98.00 mh 8.00 mh 480.00 mh 227.00 mh	1,698,157 6,537 4,515,99 96,309 117,543 394,773 70,984 14,128 11,955 19,158 74,855 36,428 65,062 42,949 3,839 13,457 19,715 352.69 1,714 98.00 8.00 480.00 227.00	1,414,841 4,080 376,004 75,320 34,537 32,720 12,320 14,930 5,936 15,607 30,881 7,480 6,666 6,666 2,927 1,697 589 405 230 13,100 6,534	3.42 0.05 3.42 3.42 0.54 3.42 3.78 7.46 1.27 8.31 17.13 3.42 3.79 2.68 14.67 14.67 7.86 7.86 25.61 2.93 4.317	3,110,796 12,577 828,153 165,629 347,637 150,712 156,401 13,721 29,056 17,221 33,763 65,811 222,424 67,508 17,543 23,305 15,631 5,822 3,822 19,111 11,625			

Spreadsheet Report  
KIF0509304/FLY&BOTTM ASH

Location	Activity	Outlay Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Materials Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount			
8	Temp Slope Protect	Capital	Geotextile Woven Monofilament	1,867.00 sq	0.021	38.40 mh	1,066	3,780	-	-	131	-	2.68	5,007		
			Cul For Underdrain System	355.00 cy	0.200	71.20 mh	2,050	695	7,120	-	-	605	-	7.96	2,655	
			Bedfill For Underdrain System	287.00 cy	0.250	66.75 mh	1,921	668	2,722	-	-	801	-	10.20	2,722	
			Geotextile	1.00 ls	-	-	-	-	-	-	746,424	-	50,000	50,000.00	50,000	
			QA/QC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	-	-	746,424	-	50,000	746,423.60	746,423.60	
			Capital	3,089,637	3,089,637	256,766	2,323,608	6,813,995	-	-	-	-	-	-	6,813,995	
			Ph 2 Base Construct	3,089,637	3,089,637	256,766	2,323,608	6,813,995	-	-	-	-	-	-	6,813,995	
			07	93,391.60 hrs	93,391.60 hrs	1,093,960	30,000	50,000	50,000	-	-	-	-	-	-	50,000
			2,323,608	2,323,608	50,000	50,000	50,000	-	-	-	-	-	-	-	-	50,000
			07	1,093,960	1,093,960	30,000	50,000	50,000	-	-	-	-	-	-	-	50,000
8	Temp Slope Protect	Capital	Cul For Ditch (5,815 bcy)	6,978.00 cy	1,200.000	5.82 cd	19,981	12,041	-	12,041	-	3.30	23,022			
			60" Riprap	4,239.00 ln	0.320	1,356.48 mh	40,371	43,111	-	21,637	-	24.65	105,319			
			Spread Ditch	6,978.00 sq	-	-	-	-	3,593	-	0.51	3,593	3,593			
			Julie Manning	6,978.00 sq	0.012	83.74 mh	2,389	5,464	427	427	1.19	6,280	6,280			
			Temp Slope Protect	1,765.86 hrs	-	1,765.86 hrs	53,741	48,575	3,583	34,304	-	140,204	140,204			
			08	1,765.86 hrs	-	1,765.86 hrs	53,741	48,575	3,583	34,304	-	140,204	140,204			
19	Riprap Stilling Basin	Capital	Riprap 650 Size 9"	750.08 mh	0.320	240.00 mh	22,324	23,638	-	12,075	-	24.85	56,237			
			Cul For Basin (3,592 bcy)	2,344.00 ln	1,200.000	3.58 cd	6,167	7,420	-	19,465	-	3.30	14,186			
			Capital	4,300.00 cy	-	950.75 hrs	29,091	23,838	-	19,485	-	72,424	72,424			
			09	950.75 hrs	-	950.75 hrs	29,091	23,838	-	19,485	-	72,424	72,424			
10	Ph 2 Initial Constr	O & M	Wet Sluice Sedimented Gypsum Quantities	451,295.00 cy	-	-	-	-	-	-	-	0.00	0			
			Initial Cons. Disposal Life	1.40 yrs	-	-	-	-	-	-	-	0.00	0			
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	40,228	12,199	-	6,258	-	7.96	56,696			
			Geotextile For Underdrain	6,142.00 sq	0.021	128.34 mh	3,604	12,437	-	2,688	-	16,471	16,471			
			#57 Stone For Outlet Pipe Bedding (135 pcf)	1,492.00 ln	0.150	223.80 mh	6,442	13,506	-	1,900	-	14,667	14,667			
			Solid Outlet Pipe ADS Drain 6" Diameter	1,658.00 lf	0.200	331.60 mh	9,050	2,744	-	438	-	7.96	13,202			
			#57 Stone For Outlet Pipe Bedding (135 pcf)	336.00 ln	0.150	50.40 mh	1,451	3,050	-	10,437	-	14,671	14,671			
			O & M	2,206.14 hrs	-	2,206.14 hrs	60,777	43,972	-	10,427	-	115,175	115,175			
			10	2,206.14 hrs	-	2,206.14 hrs	60,777	43,972	-	10,427	-	115,175	115,175			
11	Rim Ditches	O & M	Cul (11,869 bcy)	134,278.00 cy	375.000	358.08 cd	105,164	250,203	-	250,203	-	2.65	355,388			
			O & M	2,864.62 hrs	-	2,864.62 hrs	105,164	250,203	-	250,203	-	355,388	355,388			
			11	2,864.62 hrs	-	2,864.62 hrs	105,164	250,203	-	250,203	-	355,388	355,388			
12	Ph 2 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0			
			Wet Sluice Gypsum Dike Fill	285,189.00 cy	375.000	699.50 cd	196,959	475,436	-	475,436	-	2.65	575,554			
			1,334,496.00 cy	-	-	-	-	-	-	-	-	0.00	0			
			Wet Sluice Gypsum Quantities	4.90 yrs	-	-	-	-	-	-	-	0.00	0			
			Perforated Pipe ADS Drain Tube, 6" Diameter	1,495.00 lf	0.200	299.00 mh	8,276	19,028	-	9,761	-	7.96	31,533			
			Geotextile For Underdrain	9,679.00 sq	0.021	203.31 mh	5,821	19,396	-	2,688	-	23,091	23,091			
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,328.00 ln	0.150	349.20 mh	10,052	21,131	-	14,667	-	54,151	54,151			
			Solid Outlet Pipe ADS Drain 6" Diameter	2,328.00 lf	0.200	467.20 mh	14,118	4,280	-	2,198	-	7.96	20,992			
			#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 ln	0.150	78.60 mh	2,263	4,756	-	669	-	14.67	855,095			
			O & M	8,885.07 hrs	-	8,885.07 hrs	294,656	68,549	-	491,759	-	855,095	855,095			
			12	8,885.07 hrs	-	8,885.07 hrs	294,656	68,549	-	491,759	-	855,095	855,095			
13	Ph 2 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0			
			Wet Sluice Gypsum Dike Fill	263,403.00 cy	375.000	702.41 cd	206,292	480,861	-	480,861	-	2.65	597,093			
			1,509,673.00 cy	-	-	-	-	-	-	-	-	0.00	0			
			Wet Sluice Gypsum Quantities	5.40 yrs	-	-	-	-	-	-	-	0.00	0			
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,895.00 lf	0.200	2,373.00 mh	64,795	19,639	-	10,075	-	7.96	84,479			
			Geotextile For Underdrain	9,695.00 sq	0.021	203.40 mh	5,802	20,022	-	2,688	-	26,910	26,910			
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,405.00 ln	0.150	360.45 mh	10,376	21,811	-	14,667	-	54,151	54,151			
			Solid Outlet Pipe ADS Drain 6" Diameter	2,405.00 lf	0.200	534.00 mh	14,574	4,419	-	2,267	-	7.96	21,261			
			#57 Stone For Outlet Pipe Bedding (135 pcf)	541.00 ln	0.150	81.15 mh	2,336	4,911	-	600	-	14.67	7,936			
			O & M	8,171.26 hrs	-	8,171.26 hrs	304,146	70,607	-	507,699	-	882,539	882,539			
			13	8,171.26 hrs	-	8,171.26 hrs	304,146	70,607	-	507,699	-	882,539	882,539			

Spreadsheet Report  
KIF:0509304/FLY&BOTM ASH

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
4	Ph 3 Initial Constr	O & M	13 Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack) O & M Ph 3 Initial Constr	677,412.00 cy 1.40 yrs	1,100,000	9,171.26 hrs 9,171.26 hrs	304,146 507,589	70,801 70,801	-	507,888 507,589	-	3.33 0.00	882,536 882,536
5	Ph 3 Operational Cost	O & M	14 Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack) O & M Ph 3 Operational Cost	1,349,160.00 cy 2.80 yrs 0.50 mile	1,100,000	815.63 cd 44,339.70 hrs 44,339.70 hrs	1,348,771 1,348,771 1,348,771	-	-	904,530 904,530 904,530	-	3.33 0.00 0.00	2,253,301 2,253,301 2,253,301
6	Ph 3 Operational Cost	O & M	15 Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack) O & M Ph 3 Operational Cost	1,349,160.00 cy 2.80 yrs 0.50 mile	1,100,000	815.63 cd 44,339.70 hrs 44,339.70 hrs	1,348,771 1,348,771 1,348,771	-	-	904,530 904,530 904,530	-	3.33 0.00 0.00	2,253,301 2,253,301 2,253,301
7	Ph 2 Operational Cost	O & M	16 Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf)	227,108.00 cy 1,344,916.00 cy 4.80 yrs	375,000	605.62 cd 2,048.00 mh 175.38 mh 310.80 mh 480.40 mh 89.90 mh 7,907.39 hrs 7,907.39 hrs	177,665 56,941 5,003 8,947 12,566 2,012 262,232 262,232	-	-	423,160 8,687 2,008,352 2,008,352 2,008,352 2,008,352 437,643 437,643	-	2.65 0.00 7.96 2.65 14.67 14.67	601,093 8,687 5,005,556 5,005,556 5,005,556 5,005,556 760,918 760,918
8	Ph 3 Operational Cost	O & M	17 Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1,334,198.00 cy 2.80 yrs 0.50 mile	1,100,000	1,212.80 cd 87,328.74 hrs 87,328.74 hrs	2,656,457 2,656,457 2,656,457	-	-	1,781,506 1,781,506 1,781,506	-	0.00 3.33 0.00	4,437,963 4,437,963 4,437,963
9	Ph 2 Operational Cost	O & M	18 Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf)	702,654.00 cy 2.70 yrs	375,000	450.22 cd 1,521.00 mh 130.37 mh 231.00 mh 342.20 mh 52.05 mh 5,878.35 hrs 5,878.35 hrs	132,225 41,512 3,719 6,650 9,340 1,468 194,944 194,944	-	-	314,584 8,458 443 1,964 2,852 442 325,344 325,344	-	0.00 7.96 2.66 14.67 14.67	448,809 60,557 2,266 22,831 15,937 7,967 565,669 565,669
20	Ph 3 Operational Cost	O & M	19 Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf)	702,654.00 cy 2.70 yrs	375,000	450.22 cd 1,521.00 mh 130.37 mh 231.00 mh 342.20 mh 52.05 mh 5,878.35 hrs 5,878.35 hrs	132,225 41,512 3,719 6,650 9,340 1,468 194,944 194,944	-	-	314,584 8,458 443 1,964 2,852 442 325,344 325,344	-	0.00 7.96 2.66 14.67 14.67	448,809 60,557 2,266 22,831 15,937 7,967 565,669 565,669

Spreadsheet Report  
KIF/0509304/FLY&BOT/IM ASH

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		O & M	Stage 4 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Dry Stack Ash Quantities	577,613.00 CF	1,100,000	526.10 cd	1,150,065			771,271		3.33	1,921,336
			Stage 4 Disposal Life (Assume Dike & Dry Stack Ash)	1.20 yrs								0.00	0
			O & M			37,807.40 hrs	1,150,065			771,271			1,921,336
			PH 3 Operentent Cost			37,807.40 hrs	1,150,065			771,271			1,921,336
5	Dry Fly Ash Conver												
		Capital	Dry Fly Ash Conversion Capital Cost	1.00 ls					25,675,000			25,675,000.00	25,675,000
			Capital						25,675,000				25,675,000
			Dry Fly Ash Conver						25,675,000				25,675,000
			25						25,675,000				25,675,000
CONST	Construct Facilities												
		Capital	Mobilize, Drug Test, Misc Other, & Demobilize	0.00 ls	#####	0.00 mh	0			0		0.00	0
NON MANUAL	Non-Manual												
		Capital	Non Manual	0.00 ls	#####	0.00 mh	0					0.00	0



Estimate Totals

\$30.93/MT  
\$33.02/MT  
\$3,338,933

X 11%

we \$367,300

L=65% \$238,800

E=35% \$128,500

109,309 HRS  
x 0.125

13,664 MTS

Labor	26,833,523	607,670,173	hrs	
Material	864,118			
Subcontract	26,837,162	614,617,004	hrs	
Equipment	20,298,793			
Other	50,000			
	74,884,596	74,884,596		
Engineered Materials - Ph 2		100,000 %		C
Adjustment - Engr Materials		(100,000) %		C
Environmental Costs		100,000 %		C
Adjustment Environmental		(100,000) %		C
FFG Mech Engr - Phase 2	17,438	0.048 % @ 42.00	A	415
FFG Elec Engr - Phase 2	17,438	0.048 % @ 42.00	A	415
FFG Civil Engr - Phase 2	30,032	0.082 % @ 42.00	A	715
Non-TVA Engr - Phase 2	1,113,259	1.782 % @ 72.00	A	15,492
FFG Proj Chrlf Cost - Phase 2	969	0.003 % @ 42.00	A	63
FFG Proj Chrlf Sched - Phase 2	2,008	0.003 % @ 42.00	A	63
FFG Cost Estimating - Phase 2	969	0.003 % @ 42.00	A	23
FFG Engr Records - Phase 2	362	0.003 % @ 42.00	A	23
	1,163,979			
Rounding		76,068,575		L
		76,068,575		
<b>Total</b>		<b>76,068,575</b>		

KINGSTON FOSSIL PLANT  
OPTION 4 - DRY ASH IN POND & GYPSUM IN POND  
(WITHOUT BUFFER OPTION)

Project name KIF0509304/FLY&BOTTIM ASH  
 Engineer DAN SMITH  
 Estimator C. L. Toney  
 Labor rate table KIF 40 2004  
 Equipment rate table TVA Equipment

Project Plant Ash  
 Estimate # 0509304  
 PCN # KIFS30  
 Requesting Engr Dan Smith  
 Option 4  
 Revision 0  
 Phase 2  
 Estimate Type Preliminary  
 Estimate Accuracy +/- 20%  
 Est. Issue Date 12/20/2004  
 Funding Type Capital  
 Unit N

All cost are based in 2005 dollars. Additional notes are as follow:  
 (1) Closure costs not included.  
 (2) Liner is not required for this option.  
 (3) Bottom ash columns are subject to change with final design.  
 (4) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.  
 (5) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.  
 (6) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity  
 Detail summary



Spreadsheet Report  
KIF7050930/FLY&BOTTOM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
8	Ph 2 Base Construct 1A April - 2005-2009	QA/QC For Construction Of Disposal Facility Ph 2 Base Construct 07	1.00 ls		93,391.60 hrs 93,391.60 hrs	2,898,334 2,596,334	282,497 252,497	726,800 1,065,200	2,278,047 2,278,047	50,000 50,000	726,800.00	726,800.00 6,242,078 6,242,078
	Temp Slope Protect	Cut For Ditch (5.815 bcy) D50 9" Riprap Seed Ditch Jute Matting Temp Slope Protect 08	6,978.00 cy 4,239.00 tn 6,978.00 sy 6,978.00 sy	1,200.000 0.920 0.012	5.82 cd 1,356.48 mh 83.74 mh 1,765.86 hrs 1,765.86 hrs	9,228 39,926 2,007 45,161 45,161	42,390 3,489 5,373 47,763 47,763	- - 3,489 3,489 3,489	11,804 21,409 419 33,632 33,632	- - - - -	3.01 23.05 1.12	21,032 97,724 3,489 190,045 130,045
9	Riprap Stilling Basin 2005	Riprap, D50 Size 9" Cut For Basin (3.592 bcy) Riprap Stilling Basin 09	2,344.00 tn 4,300.00 cy	0.320 1,200.000	750.08 mh 3.58 cd 950.75 hrs 950.75 hrs	19,780 5,693 24,446 24,446	23,440 23,440	- -	11,858 7,274 19,112 19,112	- -	23.05 3.01	54,038 12,960 66,998 66,998
0	Ph 2 Initial Constr 2009-2009	Wet Sluice Sedimented Gypsum Quantities Initial Cons. Disposal Life Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) Ph 2 Initial Constr 10	451,295.00 cy 1.40 yrs 7,370.00 lf 6,142.00 sy 1,492.00 tn 1,658.00 lf 336.00 tn	0.200 0.021 0.150 0.200 0.150	1,474.00 mh 126.34 mh 223.80 mh 331.60 mh 500.40 mh 2,206.14 hrs 2,206.14 hrs	33,806 3,029 5,414 7,605 12,219 51,073 51,073	11,995 12,229 13,316 2,698 2,999 43,237 43,237	- - - - - - -	6,136 421 1,865 420 10,222 10,222	- - - - - -	0.00 0.00 7.05 13.80 7.05 13.80	0 0 51,936 15,679 20,595 11,664 4,638 104,532 104,532
1	Rim Ditches	Cut (111,896 bcy) Rim Ditches 11	134,279.00 cy	375.000	358.08 cd 2,864.62 hrs 2,864.62 hrs	86,373 88,373 88,373	- -	- -	245,297 245,297 245,297	- -	2.49	333,671 333,671 333,671
2	Ph 2 Operational Cost 2009-2009	Stage 1 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 1 Disposal Life (3 To 1 Side Slopes) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) Ph 2 Operational Cost 12	1.00 lot 255,189.00 cy 1,334,496.00 cy 4.90 yrs 11,455.00 lf 9,579.00 sy 2,328.00 tn 2,586.00 lf 524.00 tn	375.000 375.000	680.50 cd - - 2,298.00 mh 197.04 mh 349.20 mh 517.20 mh 76.60 mh 8,885.07 hrs 8,885.07 hrs	187,948 - - 52,728 4,724 8,447 11,862 1,801 247,610 247,610	- - - 18,708 19,072 20,777 4,209 4,877 67,443 67,443	- - - 9,570 657 2,910 2,153 665 482,117 482,117	- - - - - - - - - -	0.00 2.49 0.00 0.00 7.05 2.55 13.80 7.05 13.80	0 634,121 0 0 81,005 24,453 32,135 16,224 7,233 797,170 797,170	
3	Ph 2 Operational Cost 2007-2009	Stage 2 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 2 Disposal Life (Assume Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) Ph 2 Operational Cost 13	1.00 lot 263,403.00 cy 1,509,673.00 cy 5.40 yrs 11,865.00 lf 9,885.00 sy 2,493.00 tn 2,670.00 lf 541.00 tn	375.000 375.000	702.41 cd - - 2,373.00 mh 203.40 mh 588.45 mh 534.00 mh 61.15 mh 9,171.26 hrs 9,171.26 hrs	173,954 - - 54,425 4,876 8,719 12,247 1,683 255,585 255,585	- - - 19,310 19,687 21,447 4,345 4,828 69,618 69,618	- - - 9,678 678 3,004 2,223 676 497,636 497,636	- - - - - - - -	0.00 2.49 0.00 0.00 7.05 2.55 13.80 7.05 13.80	0 654,532 0 0 83,613 25,241 33,170 19,616 7,468 822,839 822,839	
4	Ph 3 Initial Constr 2007-2009	Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack) Ph 3 Initial Constr 14	677,112.00 cy 1.40 yrs	1,100.000	615.93 cd - - 44,338.70 hrs 44,338.70 hrs	1,133,421 - - 1,133,421 1,133,421	- - - - -	- - - - -	886,794 - - 886,794 886,794	- - - - -	2.98 0.00	2,020,215 0 2,020,215 2,020,215

Spreadsheet Report  
KIF0509304FLY&BOTTM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
A 2007-2009	Ph 3 Operational Cost	Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 1 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) Ph 3 Operational Cost	1.00 lot 1,349,180.00 cy 2.80 yrs 0.50 mile	1,100,000	1,226.53 cd	2,257,399	-	-	1,766,199	-	0.00	4,023,598
	Ph 3 Operational Cost	Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 2 Disposal Life (Assume Dry Stack) Haul Distance (Round Trip) Ph 3 Operational Cost	1.00 lot 1,504,825.00 cy 3.20 yrs 0.50 mile	1,100,000	1,368.02 cd	2,517,818	-	-	1,969,953	-	0.00	4,487,771
	Ph 2 Operational Cost	Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Operational Cost	227,106.00 cy 1,344,916.00 cy 4.80 yrs 10,230.00 lf 8,525.00 sf 2,072.00 lf 2,302.00 lf 466.00 ln	375,000 0.200 0.021 0.150 0.200 0.150	605.62 cd 2,046.00 mh 175.96 mh 310.80 mh 460.40 mh 66.90 mh 7,907.39 hrs	149,466 46,925 4,204 7,518 10,959 1,691 220,363	-	414,871	-	2.49	564,337	
B 2007-2009	Ph 3 Operational Cost	Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) Ph 3 Operational Cost	1.00 lot 1,334,189.00 cy 2.80 yrs 0.50 mile	1,100,000	1,212.90 cd	2,232,317	-	-	1,746,575	-	0.00	3,978,891
	Ph 2 Operational Cost	Stage 4 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pcf) Ph 2 Operational Cost	1.00 lot 169,831.00 cy 702,654.00 cy 2.70 yrs 7,605.00 lf 6,338.00 sf 1,340.00 ln 1,711.00 lf 347.00 ln	375,000 0.200 0.021 0.150 0.200 0.150	450.22 cd 1,521.00 mh 130.37 mh 231.00 mh 342.20 mh 52.05 mh 5,878.35 hrs	111,113 34,884 3,125 5,868 7,849 1,259 163,818	-	308,416	-	0.00	419,529	
	Ph 3 Operational Cost	Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Assume Dike & Dry Stack Ash) Ph 3 Operational Cost	1.00 lot 577,613.00 cy 1.20 yrs	1,100,000	525.10 cd	966,441	-	-	756,148	-	0.00	1,722,589
CONST FACILITY	Dry Fly Ash Conveyor	Dry Fly Ash Conversion Capital Cost Dry Fly Ash Conveyor	1.00 ls	-	-	-	-	25,000,000	-	-	25,000,000.00	25,000,000
	Construct Facilities	Mobilize, Drug Test, Misc Other, & Demobilize Construct Facilities	1.00 ls	11,482,501	11,482.50 mh 11,482.50 hrs	292,000	-	-	157,000	-	449,000.00	449,000

Spreadsheet Report  
KIF0509304/FLY&BOT/IM ASH

Time Company

Location	Activity	Description	Takeoff Quantity	Takeoff Productivity	Takeoff Quantity	Takeoff Productivity	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
ION MANUAL	Non-Manual 2005-2009	XCONST FACILITY	1.00 ls	16,452,000	16,452.00 mhr	16,452.00 hrs	292,000		157,000			449,000
		Non-Manual			16,452.00 mhr	16,452.00 hrs	822,600				822,600.00	822,600
		Non-Manual			16,452.00 mhr	16,452.00 hrs	822,600				822,600.00	822,600
		ZNON MANUAL			16,452.00 mhr	16,452.00 hrs	822,600				822,600.00	822,600



**Spreadsheet Report**  
**KIF/0509305/FLY&BOTTM ASH**  
**KINGSTON FOSSIL PLANT**  
**OPTION 5 - WET ASH IN POND & GYPSUM ON PENINSULA**  
**(WITH BUFFER OPTION)**

Project name KIF/0509305/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Ash  
 KIF  
 0509305  
 Estimate # KIF530  
 PCN # Dan Smith  
 Requesting Engr 5  
 Option 0  
 Revision 2  
 Phase Preliminary  
 Estimate Accuracy +/- 20%  
 Est. Issue Date 12/20/2004  
 Funding Type Capital  
 Unit N

Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow;

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,800 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Seq'  
 Detail summary





Spreadsheet Report  
KIF70509305/FLY&BOTTM ASH

Location	Activity	Usage Seq	Description	Takeoff Quantity	Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
06	Capital		1081 Crushed Stone	378.00 ln	0.150	56.70 mh	1,632	3,431	482			14.67	5,545	
			Geotextile Woven Monofilament	1,556.00 sy	0.021	32.01 mh	913	3,151	169				2.68	4,173
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,790.00 lf	0.000	758.00 mh	20,888	6,273	3,218				7.96	30,179
			1081 Crushed Stone	716.00 ln	0.150	107.40 mh	3,092	6,499	913				14.67	10,503
			Geotextile Woven Monofilament	2,948.00 sy	0.021	60.64 mh	1,730	5,669	206				2.68	7,989
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,180.00 lf	0.000	832.00 mh	22,707	6,696	3,532				7.96	33,125
			1081 Crushed Stone	786.00 ln	0.150	117.90 mh	3,894	7,134	1,002				14.67	11,530
			Geotextile Woven Monofilament	3,236.00 sy	0.021	66.56 mh	1,899	6,652	226				2.60	8,678
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	3,925.00 lf	0.000	785.00 mh	21,425	6,497	3,393				7.96	31,254
			1081 Crushed Stone	742.00 ln	0.150	111.30 mh	3,204	6,735	946				14.67	10,885
			Geotextile Woven Monofilament	3,053.00 sy	0.021	62.80 mh	1,792	6,182	214				2.68	8,187
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	6,410.00 lf	0.000	1,282.00 mh	34,989	10,610	5,443				7.96	51,042
			1081 Crushed Stone	1,211.00 ln	0.150	181.86 mh	5,228	10,992	1,544				14.67	17,765
			Geotextile Woven Monofilament	4,988.00 sy	0.021	102.56 mh	2,926	10,666	349				2.68	13,371
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	6,090.00 lf	0.000	1,218.00 mh	33,242	10,080	5,171				7.96	48,494
			1081 Crushed Stone	4,737.00 sy	0.021	97.44 mh	2,780	9,562	331				2.68	16,885
			Geotextile Woven Monofilament	5,900.00 lf	0.000	1,180.00 mh	32,205	9,765	5,019				14.67	46,991
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	1,115.00 ln	0.150	167.25 mh	4,814	10,121	1,422				7.96	16,357
			1081 Crushed Stone	4,989.00 sy	0.021	94.40 mh	2,693	9,948	321				2.68	12,306
			Geotextile Woven Monofilament	5,800.00 lf	0.000	1,180.00 mh	31,659	9,800	4,925				14.67	45,185
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	1,096.00 ln	0.150	164.40 mh	4,732	9,948	1,397				7.96	16,078
			1081 Crushed Stone	4,511.00 sy	0.021	92.79 mh	2,647	9,134	316				2.68	12,097
			Geotextile Woven Monofilament	2,590.00 lf	0.000	645.00 mh	17,604	13,087	2,741				14.67	33,432
			12" Dia Force Main HDPE Perimeter Underdrain (EL. 763)	575.00 ln	0.250	68.25 mh	2,483	5,219	733				12.96	8,435
			1081 Crushed Stone	1.00 ls	56.000	58.00 mh	1,810	3,051	209				14.67	7,561
			Submersible Pumping Station Equipment Package	1.00 ea	60.000	60.00 mh	1,810	3,051	209				7.560	8,435
			60" Diameter Catch Basin (Precast)	2,293.00 sy	0.021	47.17 mh	1,346	4,643	160				5,338	5,338
			Geotextile Woven Monofilament	54.00 sy	1.000	54.00 mh	1,515	2,856	499				2.68	6,149
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	1.000	2.00 mh	304	1,02	80				243.02	486
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	53.00 sy	1.000	53.00 mh	1,487	2,803	490				90.19	4,780
			Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ea	1.000	2.00 mh	304	1,02	80				243.02	486
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	23.00 sy	1.000	23.00 mh	645	1,216	212				90.19	2,074
			Seal Weld 1/4" Thick A-36 Steel Plate	38.00 lf	4.000	18.24 mh	498	1,773	68				243.02	486
			24" CMP Storm Drain	30.00 sy	0.200	6.00 mh	173	77	77				8.31	249
			Excavation For 24" Dia Pipe (65 bcy)	21.00 sy	0.320	6.72 mh	193	102	166				17.13	369
			Backfill For 24" Diameter CMP (17 bcy)	4.00 ln	0.500	2.00 mh	58	38	7				25.61	102
			Bedding For 24" Culvert	72.00 lf	0.600	43.20 mh	1,259	2,709	265				59.80	4,233
			36" CMP Storm Drain	81.00 sy	0.200	16.20 mh	466	831	207				8.31	673
			Excavation For 36" Dia Pipe (67 bcy)	57.00 sy	0.320	18.24 mh	525	86	451				17.13	1,976
			Backfill For 36" Diameter CMP (47 bcy)	9.00 ln	0.500	4.50 mh	130	86	15				25.61	230
			Bedding For 36" Culvert	10,380.00 sy	0.200	2,076.00 mh	59,780	157,885	26,469				8.31	98,229
			Anchor Trench - Excavate into Borrow Area (6,650 bcy)	110,680.00 sy	0.050	5,534.40 mh	1,691,078	5,807	14,113				3.79	419,551
			Upper & Lower LLOPE Geomembrane	4,356.00 sy	0.040	174.24 mh	5,078	247,653	4,582				2.39	10,389
			Sediment Trap (3,630 bcy)			35,789.66 hrs	1,016,066	495,205	12,324				7,266	753
			Capital			35,789.66 hrs	1,016,066	495,205	12,324				265,158	1,788,753
Instl Dms/Swan Pond												1,788,753		
05														
06	O & M		Elev. 810 To Elev. 866	1.00 lot								0.00	0	
			Bottom Ash Dike Fill	622,416.00 cy	1,300,000	478.78 cd	1,159,419					956,986	2,126,405	
			Dredge	4,853,654.00 cy								7,631,580	3,42	7,631,580
			Wet Dip And Stack	978,848.00 cy	375,000	1,810.23 cd	531,659					1,264,903	1,798,563	
			Disposal Life (Assume Dike & Dredge Ash)	12.90 yr									0.00	0
			O & M											
			Drg CellP1 Opr Cost											
			Gypsum											
			Sik											
			Peninsula											
07	Capital		Clear And Grub	1.00 lot								0.00	0	
			Clear And Grub	90.00 ac	72,000	6,480.00 mh	193,775					160,944	394,719	
			Strip 1 ft Vegetation And Topsoil - Spoil At Stockpile	129,000.00 cy	0.020	2,580.00 mh	79,580						82,238	161,818





Spreadsheet Report  
KJF0509305/FLY&BOT/IM ASH

stimate Company

Location	Activity	Outage Set	Description	Task/Qty	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount					
18	Temp Slope Protect	Capital	Geomembrane	35,960.00 sy	0.050	1,848.00 mh	52,720	82,694	-	-	-	-	3.79	140,126				
			Perforated Pipe ADS Drain Tube, 6" Diameter	4,945.00 lf	0.200	989.20 mh	26,998	8,186	-	-	-	-	-	7.96	39,394			
			Geotextile For Underdrain	4,121.00 sy	0.021	84.77 mh	2,418	8,344	-	-	-	-	-	2.68	11,051			
			#57 Stone For Outlet pipe Bedding (135 pct)	1,001.00 ln	0.150	150.15 mh	4,322	9,086	-	-	-	-	-	14.67	14,684			
			Solid Outlet Pipe ADS Drain 6" Diameter	1,238.00 lf	0.200	247.20 mh	6,747	2,046	-	-	-	-	-	7.96	9,842			
			#57 Stone For Outlet pipe Bedding (135 pct)	250.00 ln	0.150	37.50 mh	1,079	2,269	-	-	-	-	-	14.67	3,667			
			6" Dia Non-Perf HDPE Comagated Tubing Lateral Outlet Pipes (EL. 760)	302.00 lf	0.200	60.40 mh	1,648	600	-	-	-	-	-	7.96	2,405			
			1081 Crushed Stone, Bedding 6" Depth	10.00 ln	0.500	5.00 mh	144	95	-	-	-	-	-	23.61	256			
			1081 Crushed Stone, Bedding 6" Depth	1,512.00 lf	0.200	302.40 mh	8,253	2,503	-	-	-	-	-	7.96	12,040			
			1081 Crushed Stone	286.00 ln	0.500	143.00 mh	4,116	2,720	-	-	-	-	-	25.81	7,323			
			Geotextile Woven Monofilament	1,176.00 sy	0.021	24.19 mh	690	2,381	-	-	-	-	-	2.68	3,154			
			Cut For Underdrain System	224.00 cy	0.200	44.80 mh	1,280	383	-	-	-	-	-	7.46	1,670			
			Backfill For Underdrain System	168.00 cy	0.250	42.00 mh	1,209	504	-	-	-	-	-	10.20	1,713			
			Certification	1.00 ls	-	-	-	-	-	-	-	-	-	31,500	31,500			
			QVQC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	-	-	-	-	-	470,247	470,247			
			Capital	-	-	-	-	-	-	-	-	-	-	31,500	6,204,488			
			Ph 2 Base Construct	-	-	-	-	-	-	-	-	-	-	31,500	6,204,488			
17	-	-	-	-	-	-	-	-	-	-	-	-	-					
19	Temp Slope Protect	Capital	Cut For Ditch (5.815 bcy)	6,978.00 cy	1,200.000	5.82 cd	10,981	-	-	-	-	-	3.30	23,022				
			D50 9" Riprap	4,235.00 ln	0.320	1,356.48 mh	40,371	43,111	-	-	-	-	-	24.85	105,319			
			Seed Ditch	6,978.00 sy	0.012	83.74 mh	2,389	5,464	-	-	-	-	-	1.19	8,200			
			Jute Matting	6,978.00 sy	0.012	83.74 mh	53,741	48,575	-	-	-	-	-	3.563	140,204			
			Capital	-	-	-	-	-	-	-	-	-	-	-	140,204			
			Temp Slope Protect	-	-	-	-	-	-	-	-	-	-	-	140,204			
			18	-	-	-	-	-	-	-	-	-	-	-	-			
			20	Riprap Stilling Basin	Capital	Riprap D50 Size 9"	2,344.00 ln	0.320	750.08 mh	22,324	23,630	-	-	-	-	24.85	58,237	
						Cut For Basin (3,582 bcy)	4,300.00 cy	1,200.000	3.58 cd	6,767	7,420	-	-	-	-	-	3.30	14,186
						Capital	-	-	-	-	-	-	-	-	-	-	-	72,424
Riprap Stilling Basin	-	-				-	-	-	-	-	-	-	-	-	72,424			
19	-	-				-	-	-	-	-	-	-	-	-	-			
20	Ph 2 Initial Constr	O & M				Dredge Ash	451,295.00 cy	-	-	-	-	-	-	-	-	1.57	709,588	
						Initial Disposal Life	0.90 yrs	-	-	-	-	-	-	-	-	-	0.00	0
						Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	40,229	12,189	-	-	-	-	-	7.96	58,686
						Geotextile For Underdrain	6,142.00 sy	0.021	126.34 mh	3,604	12,437	-	-	-	-	-	2.66	18,471
						#57 Stone For Outlet pipe Bedding (135 pct)	1,482.00 ln	0.150	223.80 mh	8,442	13,542	-	-	-	-	-	14.67	21,867
			Solid Outlet Pipe ADS Drain 6" Diameter	1,658.00 lf	0.200	331.60 mh	9,050	2,744	-	-	-	-	-	7.96	13,202			
			#57 Stone For Outlet pipe Bedding (135 pct)	336.00 ln	0.150	50.40 mh	1,451	3,050	-	-	-	-	-	14.67	14,939			
			O & M	-	-	-	-	-	-	-	-	-	-	-	824,763			
			Ph 2 Initial Constr	-	-	-	-	-	-	-	-	-	-	-	824,763			
			20	-	-	-	-	-	-	-	-	-	-	-	-			
22	Ph 2 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	-	0.00	0				
			Compacted Fly Ash Dike Fill (50% F.A. & 50% B.A.)	255,189.00 cy	1,300.000	186.30 cd	475,359	-	-	-	-	-	-	3.42	871,621			
			Dredge Ash	1,334,496.00 cy	-	-	-	-	-	-	-	-	-	1.57	2,098,277			
			Operational Cost	-	-	-	-	-	-	-	-	-	-	0.00	0			
			Stage 1 Disposal Life (Assume Dike & Dredge Ast)	3.30 yrs	-	-	-	-	-	-	-	-	-	-	9,613			
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,485.00 lf	0.200	2,299.00 mh	62,746	19,026	-	-	-	-	-	7.96	91,533			
			Geotextile For Underdrain	9,579.00 sy	0.021	197.04 mh	6,621	19,396	-	-	-	-	-	2.66	25,987			
			#57 Stone For Outlet pipe Bedding (135 pct)	2,328.00 ln	0.150	349.20 mh	10,052	21,131	-	-	-	-	-	14.67	34,151			
			Solid Outlet Pipe ADS Drain 6" Diameter	2,586.00 lf	0.200	517.20 mh	14,116	4,280	-	-	-	-	-	7.96	20,592			
			#57 Stone For Outlet Pipe Bedding (135 pct)	524.00 ln	0.150	78.60 mh	2,283	4,758	-	-	-	-	-	14.67	7,687			
22	-	-	-	-	-	-	-	-	-	-	-	-						





**KINGSTON FOSSIL PLANT  
OPTION 5 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)**

Project name KIF0509305FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project  
Plant  
Estimate #  
PCN #  
Requesting Engr  
Option  
Revision  
Phase  
Estimate Type  
Estimate Accuracy  
Est. Issue Date  
Funding Type  
Unit

Ash  
KIF  
0509305  
KIF530  
Dan Smith  
5  
0  
2  
Preliminary  
+/- 20%  
12/20/2004  
Capital  
N

Notes  
Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2, Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity/Outage Seq  
Detail summary



Spreadsheet Report  
KIF/0509305/FLY&BOTM ASH

Location	Activity	Outage Eq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
Erosion Control/S P	Capital	1,000.00 lf	Erect Silt Fence	0.069	68.57 mh	1,984	502	317	2,813	2.81		2.81	2,813		
		4,300.00 sq	Geotextile (Nonwoven) Erosion Protection Channel	0.016	68.80 mh	1,983	512	175	7,911	1.84			1.84	7,911	
		5,215.00 lf	D50 3' Filter Pipe	0.320	1,668.80 mh	49,687	53,037	26,955	123,560	24.85			24.85	123,560	
		2,004.00 sq	3' Stone, 1" Thick To Prevent Erosion (Assume 105 PCF)	0.096	192.38 mh	6,056	18,190	3,056	21,312	10.60			10.60	21,312	
		4.00 ea	Sign To Chip Mill Spillway (12" x 48" Dia Round Pipe @ 128 FIEs)	166.084	664.33 mh	20,450	20,150	2,795	43,443	10.80			10.80	43,443	
		50.00 cy	Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43' by	0.400	20.80 mh	599	177	177	776	14.81				14.81	776
		1,000.00 lf	Fill With 1032 Compacted Crushed Stone	0.400	37.20 mh	504	504	504	2,510	26.95				26.95	2,510
		30' Diameter Chip Culvert	0.600	60.00 mh	1,487	26,442	3,692	47,611	47.61					47.61	47,611
		30' Diameter Chip Stand Pipe (6" Pipes @ 6 Slices w/30' PVC Stage)	0.500	67.50 mh	1,543	2,300	3,300	3,457	25.61					25.61	25,610
		D50 3' Filter Pipe For Metal Spillway	0.750	540.00 mh	16,623	19,038	2,279	37,940	52.70					52.70	37,940
		Galvanized Corrugated Metal Anti-Sleep Collar	0.320	16.96 mh	505	539	1,317	1,317	24.85					24.85	2,485
		Capital			4,892	1,571	13,914	13,914	869.59					869.59	318,569
		Erosion Control/S P			4,201.35 hrs	42,029	42,029	318,569						318,569	
		01			4,201.35 hrs	42,029	42,029	318,569						318,569	
		Seed/Mulch	Capital	26.00 sq	Seed/Mulch Disturbed Areas		hrs	64,619	2,485.34	64,619	64,619			2,485.34	64,619
Capital					hrs	64,619	64,619	64,619					64,619		
South Access Road	Capital	3,520.00 ln	1032 Crushed Stone Base 6" Depth	0.120	422.40 mh	13,739	31,950	4,147	49,836	14.16		14.16	49,836		
		Capital			hrs	422.40 hrs	4,147	49,836	4,147				49,836		
03			422.40 hrs	4,147	49,836	4,147						49,836			
Perimeter Road	Capital	6,985.00 ln	1032 Roller Compacted Crushed Stone Base 6" Depth	0.120	826.20 mh	26,872	62,493	8,112	97,478	14.16		14.16	97,478		
		Capital			hrs	826.20 hrs	8,112	97,478	8,112				97,478		
04			826.20 hrs	8,112	97,478	8,112						97,478			
Inlet Dms/Swan Pond	Capital	24.00 sq	6" Dia Pipe Ballards	1.500	36.00 mh	1,039	4,882	245	255.78			255.78	6,163		
		Capital			hrs	36.00 hrs	12,324	12,324	2,054.00				2,054.00	12,324	
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 772)	Capital	474.00 lf	PVC Monitoring Wells	0.200	84.80 mh	2,857	785	403	7.96			7.96	3,774		
		Capital			hrs	84.80 hrs	2,857	785	403				3,774		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 780)	Capital	500.00 lf	Crushed Stone, Bedding 6" Depth	0.350	16.00 mh	230	152	27	25.61			25.61	410		
		Capital			hrs	16.00 hrs	851	104.00	442				442		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 792)	Capital	474.00 lf	Crushed Stone, Bedding 6" Depth	0.500	9.00 mh	259	171	31	25.61			25.61	461		
		Capital			hrs	9.00 hrs	171	31	25.61				25.61		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 810)	Capital	474.00 lf	Crushed Stone, Bedding 6" Depth	0.500	8.50 mh	245	162	29	25.61			25.61	435		
		Capital			hrs	8.50 hrs	162	29	25.61				25.61		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 817)	Capital	1,245.00 lf	Crushed Stone, Bedding 6" Depth	0.200	256.40 mh	6,999	2,122	1,069	7.96			7.96	10,208		
		Capital			hrs	256.40 hrs	6,999	2,122	1,069				7.96		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 825)	Capital	1,245.00 lf	Crushed Stone, Bedding 6" Depth	0.500	21.50 mh	619	408	73	25.61			25.61	1,059		
		Capital			hrs	21.50 hrs	619	408	73				25.61		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 822)	Capital	1,180.00 lf	Crushed Stone, Bedding 6" Depth	0.200	20.50 mh	590	390	70	25.61			25.61	1,024		
		Capital			hrs	20.50 hrs	590	390	70				25.61		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 822)	Capital	1,180.00 lf	Crushed Stone, Bedding 6" Depth	0.500	20.00 mh	576	360	68	25.61			25.61	999		
		Capital			hrs	20.00 hrs	576	360	68				25.61		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 822)	Capital	1,180.00 lf	Crushed Stone, Bedding 6" Depth	0.500	232.00 mh	6,332	1,920	985	25.61			25.61	999		
		Capital			hrs	232.00 hrs	6,332	1,920	985				25.61		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 822)	Capital	1,180.00 lf	Crushed Stone, Bedding 6" Depth	0.500	18.50 mh	551	371	65	25.61			25.61	150,082		
		Capital			hrs	18.50 hrs	551	371	65				25.61		
6" Dia Non-Per HDPE Corrugated Tubing Lateral Outlet Pipes (EL 822)	Capital	21,189.00 cy	Bedfill For 6" Dia Non-Perforated HDPE (17,659' by)	0.200	4,238.00 mh	121,995	36,025	36,025	10.20			10.20	151,227		
		Capital			hrs	4,238.00 hrs	121,995	36,025	36,025				10.20		
6" Dia Non-Perforated HDPE (12.30' by)	Capital	14,853.00 cy	Bedfill For 6" Dia Non-Perforated HDPE (12.30' by)	0.250	4,984.80 mh	106,746	31,103	31,103	7.46			7.46	166,749		
		Capital			hrs	4,984.80 hrs	106,746	31,103	31,103				7.46		
6" Dia Perforated HDPE (18.166' by)	Capital	2,152.00 cy	Bedfill For 6" Dia Perforated HDPE (18.166' by)	0.250	3,919.00 mh	109,834	45,810	45,810	10.20			10.20	158,754		
		Capital			hrs	3,919.00 hrs	109,834	45,810	45,810				10.20		
6" Dia Perforated HDPE Perimeter Underdrain (EL 763)	Capital	2,000.00 lf	6" Dia Perforated HDPE Perimeter Underdrain (EL 763)	0.200	400.00 mh	1,091	330	1,698	7.96			7.96	19,926		
		Capital			hrs	400.00 hrs	1,091	330	1,698				7.96		
1081 Crushed Stone	Capital	378.00 ln	1081 Crushed Stone	0.150	56.70 mh	1,632	343	402	14.67			14.67	5,545		
		Capital			hrs	56.70 hrs	1,632	343	402				14.67		
Geotextile Woven Monofilament	Capital	1,555.00 sq	Geotextile Woven Monofilament	0.021	32.01 mh	831	169	109	2.68			2.68	4,173		
		Capital			hrs	32.01 hrs	831	169	109				2.68		
6" Dia Perforated HDPE Perimeter Underdrain (EL 772)	Capital	3,790.00 lf	6" Dia Perforated HDPE Perimeter Underdrain (EL 772)	0.200	758.00 mh	20,686	6,273	3,218	7.96			7.96	30,176		
		Capital			hrs	758.00 hrs	20,686	6,273	3,218				7.96		
1081 Crushed Stone	Capital	2,465.00 sq	1081 Crushed Stone	0.150	107.40 mh	3,092	613	913	14.67			14.67	10,503		
		Capital			hrs	107.40 hrs	3,092	613	913				14.67		
6" Dia Perforated HDPE Perimeter Underdrain (EL 760)	Capital	4,180.00 lf	6" Dia Perforated HDPE Perimeter Underdrain (EL 760)	0.200	60.64 mh	1,730	206	206	2.68			2.68	7,905		
		Capital			hrs	60.64 hrs	1,730	206	206				2.68		
1081 Crushed Stone	Capital	3,235.00 sq	1081 Crushed Stone	0.200	632.00 mh	6,896	3,532	3,532	7.96			7.96	33,125		
		Capital			hrs	632.00 hrs	6,896	3,532	3,532				7.96		
Geotextile Woven Monofilament	Capital	782.00 ln	Geotextile Woven Monofilament	0.021	117.00 mh	3,394	713	1,002	14.67			14.67	11,530		
		Capital			hrs	117.00 hrs	3,394	713	1,002				14.67		
6" Dia Perforated HDPE Perimeter Underdrain (EL 792)	Capital	3,922.00 lf	6" Dia Perforated HDPE Perimeter Underdrain (EL 792)	0.200	785.00 mh	21,425	6,497	3,333	2.68			2.68	6,678		
		Capital			hrs	785.00 hrs	21,425	6,497	3,333				2.68		
1081 Crushed Stone	Capital	3,053.00 sq	1081 Crushed Stone	0.021	1,382.00 mh	34,689	10,610	5,443	7.96			7.96	51,042		
		Capital			hrs	1,382.00 hrs	34,689	10,610	5,443				7.96		
6" Dia Perforated HDPE Perimeter Underdrain (EL 610)	Capital	1,211.00 lf	6" Dia Perforated HDPE Perimeter Underdrain (EL 610)	0.200	181.65 mh	5,229	1,544	1,544	14.67			14.67	17,785		
		Capital			hrs	181.65 hrs	5,229	1,544	1,544				14.67		
Geotextile Woven Monofilament	Capital	4,968.00 sq	Geotextile Woven Monofilament	0.021	109.65 mh	2,926	10,996	349	2.68			2.68	13,371		
		Capital			hrs	109.65 hrs	2,926	10,996	349				2.68		
6" Dia Perforated HDPE Perimeter Underdrain (EL 617)	Capital	1,151.00 lf	6" Dia Perforated HDPE Perimeter Underdrain (EL 617)	0.021	172.65 mh	4,670	1,468	1,468	7.96			7.96	48,494		
		Capital			hrs	172.65 hrs	4,670	1,468	1,468				7.96		
1081 Crushed Stone	Capital	4,737.00 sq	1081 Crushed Stone	0.021	97.44 mh	2,760	9,552	331	14.67			14.67	16,885		
		Capital			hrs	97.44 hrs	2,760	9,552	331				14.67		

Spreadsheet Report  
KIF/0509305/FLY&BOTTOM ASH

Location	Activity	Change Set	Description	Takeoff Quantity	Unit	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount				
6	Capital		6" Dia Perforated HDPE Perimeter Underdrain (EL. 925)	5,900.00 lf	lf	0.200	1,180.00 mh	32,205	9,765	-	-	-	7.96	46,981				
			1061 Crushed Stone	1,115.00 ln	ln	0.150	167.25 mh	4,814	10,121	14,67	-	-	-	14.67	12,306			
			Geotextile Woven Monofilament	4,589.00 sy	sy	0.021	94.40 mh	2,693	9,281	9,281	-	-	-	7.96	46,985			
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,600.00 lf	lf	0.200	1,190.00 mh	31,669	9,608	14,67	-	-	-	14.67	12,078			
			1061 Crushed Stone	1,066.00 ln	ln	0.150	164.40 mh	4,732	9,948	9,948	-	-	-	2.66	33,432			
			Geotextile Woven Monofilament	4,511.00 sy	sy	0.021	92.79 mh	2,647	9,134	9,134	-	-	-	12.96	8,335			
			12" Dia Force Main HDPE Perimeter Underdrain (EL. 783)	2,880.00 lf	lf	0.150	645.00 mh	17,804	13,087	14,87	-	-	-	7.661	5,336			
			1061 Crushed Stone	575.00 ln	ln	0.150	86.25 mh	2,483	5,219	5,219	-	-	-	7,560.57	6,149			
			Submersible Pumping Station Equipment Package	1.00 ea	ea	56,000	56,000 mh	2,268	5,085	2,268	-	-	-	5,336.36	5,336			
			60" Diameter Catch Basin (Precast)	2.00 ea	ea	1,810	3,620 mh	1,810	3,620	1,810	-	-	-	90.19	4,070			
			Geotextile Woven Monofilament	2,293.00 sy	sy	1,000	54.00 mh	1,315	2,865	2,865	-	-	-	2.68	4,970			
			Groul Seal Storm Drain - 24" Diameter (Pump & Plug)	54.00 sy	sy	1,000	54.00 mh	1,315	2,865	2,865	-	-	-	243.02	496			
			Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ea	ea	1,000	6.00 mh	304	608	608	-	-	-	90.19	4,760			
			Groul Seal Storm Drain - 24" Diameter (Pump & Plug)	53.00 sy	sy	1,000	53.00 mh	304	608	608	-	-	-	243.02	496			
			Seal Weld 1/4" Thick A-36 Steel Plate	23.00 sy	sy	1,000	23.00 mh	304	608	608	-	-	-	20.74	2,074			
			Groul Seal Storm Drain - 24" Diameter (Pump & Plug)	38.00 lf	lf	400	9.00 mh	304	608	608	-	-	-	243.02	496			
			24" CMP Storm Drain	30.00 sy	sy	0.200	6.00 mh	173	346	346	-	-	-	17.13	360			
			Excavation For 24" Dia Pipe (87 bcy)	21.00 sy	sy	0.320	6.72 mh	68	136	136	-	-	-	25.61	102			
			Backfill For 24" Diameter CMP (17 bcy)	4.00 ln	ln	0.500	2.00 mh	1,238	2,476	2,476	-	-	-	59.80	4,233			
			36" CMP Storm Drain	81.00 sy	sy	0.200	16.20 mh	495	990	990	-	-	-	8.31	207			
			Backfill For 36" Diameter CMP (17 bcy)	57.00 lf	lf	0.320	18.24 mh	168	336	336	-	-	-	25.61	102			
			Excavation For 36" Dia Pipe (87 bcy)	9.00 ln	ln	0.500	4.50 mh	59	118	118	-	-	-	15	30			
			Backfill For 36" Diameter CMP (17 bcy)	10,890.00 sy	sy	0.200	2,016.00 mh	59,750	247,653	247,653	-	-	-	3.79	419,951			
			Upper & Lower LLDPE Geomembrane	110,890.00 sy	sy	0.050	5,544.50 mh	5,807	11,614	11,614	-	-	-	2.39	10,395			
			Sediment Trap (3,630 bcy)	4,356.00 cy	cy	0.040	174.24 mh	5,807	11,614	11,614	-	-	-	2.39	10,395			
Inset Drms/Swan Pond			1,016,086	35,769.66 hrs	1,016,086	495,205	495,205	-	-	-	1,788,753	1,788,753						
05				35,789.66 hrs	1,016,086	495,205	495,205	-	-	-	1,788,753	1,788,753						
6	O & M	Dig CallP1 Opr Cost	Elv. 810 To Elv. 866	1.00 lot	lot	1,159,419	478.78 cd	1,159,419	-	-	-	-	0.00	0				
			Bottom Ash Dike Fill	822,416.00 cy	cy	1,300.000	478.78 cd	1,159,419	-	-	-	-	965,986	-	2,126,405			
			Dredge	4,853,854.00 cy	cy	375.000	1,810.26 cd	51,959	-	-	-	-	1,284,903	-	1,796,863			
			Wet Dip And Stack												0.00	0		
			Disposal Life (Assume Dike & Dredge Ash)												11,554,547	11,554,547		
			O & M												11,554,547	11,554,547		
			Dig CallP1 Opr Cost												11,554,547	11,554,547		
			06												11,554,547	11,554,547		
			17	Capital	Gypsum Sbk Peninsulas	Clear And Grub	1.00 lot	lot	193,775	6,480.00 mh	193,775	-	-	-	-	-	0.00	0
						Clear And Grub	90.00 ac	ac	78,380	2,590.00 mh	82,238	-	-	-	-	160,944	-	354,719
						Strip 11 Vegetation And Topsoil - Spot At Stockpile	129,000.00 cy	cy	0.020	8,060.00 hrs	273,155	-	-	-	-	243,181	-	161,618
						Capital												516,336
Gypsum Sbk Peninsulas															516,336	516,336		
07															516,336	516,336		
18	Capital	Erosion Controls				Erect Silt Fence (Trench Bottom Of Fence, 10% Hay Bales)	4,900.00 lf	lf	0.096	335.99 mh	9,099	2,462	-	-	-	-	2.61	13,764
						Cut For Stormwater Runoff Pond (2,000 bcy)	2,400.00 sy	sy	600.000	3.00 cd	3,099	-	-	-	-	2,595	-	5,724
						Clearout Stormwater Runoff Pond (2,300 bcy)	2,750.00 sy	sy	393.333	7.20 cd	2,750	-	-	-	-	2,380	-	6,189
						Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00 sy	sy	1,894.000	7.95 cd	22,757	-	-	-	-	24,725	-	47,492
						Riprap For Stormwater Runoff Pond	4,300.00 ln	ln	25,995	860.00 mh	19,441	-	-	-	-	20,41	-	87,767
						Pipe Bedding	20.00 ln	ln	0.500	10.00 mh	34	-	-	-	-	25.03	-	521
			72" Dia CMP For Outlet Structure	6.00 lf	lf	2,000	12.00 mh	37	-	-	-	-	376.24	-	2,257			
			48" Dia CMP For Riser For Outlet Structure	7.00 lf	lf	1,061	7.84 mh	214	-	-	-	-	185.1	-	1,195			
			48" Dia CMP Outlet Pipe (Principle Spillway)	150.00 lf	lf	0.620	63.00 mh	210	-	-	-	-	70.37	-	10,556			
			Cul Hiss In Riser	3.00 ea	ea	1,000	3.00 mh	74	-	-	-	-	25.82	-	80			
			Anti-Sump Collars (Assume Concrete)	7.00 ea	ea	10,000	40.00 mh	1,375	-	-	-	-	555.30	-	2,221			
			Capital												3,347.60	3,347.60		
19	Capital	Roads	Bottom Ash (South Access Road)	2,400.00 cy	cy	1,904.000	1.26 cd	3,052	-	-	-	-	-	2.57	6,170			
			Crushed Stone Base (South Access Road)	2,900.00 ln	ln	11,919	348.00 mh	11,919	-	-	-	-	3,417	-	41,055			
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 ln	ln	0.120	40.80 mh	1,327	-	-	-	-	401	-	4,814			
			Capital												6,935	6,935		
			Roads												6,935	6,935		
			201,219												201,219	201,219		
			51,777												51,777	51,777		
			86,962												86,962	86,962		
			2,763.38 hrs												2,763.38 hrs	2,763.38 hrs		
			62,480												62,480	62,480		
			51,777												51,777	51,777		
			201,219												201,219	201,219		

Spreadsheet Report  
KIF0509305/FLY8BOTT/ASH

Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Fencing					479.56 hrs	15,698	29,409		6,935			52,042
	Capital												
			New Fencing (Including Grounding)	200.00 lf					4,311			21.05	4,211
			Personal Swinging Gate	1.00 ea					370			368.72	370
			Sliding Gate, 20 Ft Wide, With Motorized Operator	1.00 ea					17,458			17,458.00	17,459
			Capital						22,039				22,039
			Fencing						22,039				22,039
									22,039				22,039
1	Seed/Mulch												
	Capital												
			Seed/Mulch Disturbed Areas	25.00 ac					62,134			2,465.34	62,134
			Capital						62,134				62,134
			Seed/Mulch						62,134				62,134
2	Borrow Area Develop												
	Capital												
			Disc Future Borrow Area (Assumed For Compacted Clay Material)	20.00 ac	6,000	3.33 cd	1,958		47,719			142.10	2,642
			Seed/Fertilize / Lime Future Borrow Area	20.00 ac		53.33 hrs	1,958		47,719			2,385.93	50,560
			Capital						47,719				47,719
			Borrow Area Develop						47,719				47,719
									47,719				47,719
3	Gypsum Disp Facility												
	Capital												
			Disposal Facility Construction	1.00 lot								0.00	0
			Out And Fill Balance (189,719 bcy)	227,663.00 cy	2,800,000	61.31 cd	244,655		244,655			2.24	510,463
			Cliff & Spoil Scaled Cut For Future 1 Ft Clay Layer In Final Cover	1,904,000 cy	1,904,000	76.16 cd	166,178		166,178			2.50	392,707
			Riprap For Ditch	23,300.00 cy	0.200	4,700.00 mh	139,981		139,981			20.41	479,697
			Ditch For Riprap (24" wide x 2' deep)	15,000.00 cy	0.015	320.03 mh	10,911		10,911			3.25	23,816
			Geotextile (If Riprap is Used)	2,000,000 cy	1,904,000	1.26 cd	3,652		3,652			1.87	35,443
			Perimeter Road Surfacing - Bottom Ash	400,000 cy	0.120	348.00 mh	11,319		11,319			14.16	41,068
			Perimeter Road Surfacing - Crushed Stone	400,000 cy	1,200,000	335.00 cd	1,020,048		1,020,048			5.23	2,128,285
			Compacted Clay Liner, 6" Lifts (335,000 bcy)	168,000.00 ln	0.086	16,128.00 mh	507,684		507,684			13.20	2,217,010
			Geotextile For Underdrain Pipes	6,400.00 cy	0.011	59.65 mh	1,723		1,723			7.95	9,535
			8" Dia HDPE SDR17 Perforated Pipe	6,400.00 cy	0.200	1,280.00 mh	34,335		34,335			13.10	50,862
			8" Dia HDPE Standard Fittings	85.00 ea	7,000	10.67 cd	34,373		34,373			555.85	47,306
			Concrete Anchors For Underdrain Piping	70.00 ac		10.00 cd	8,497		8,497			170.67	12,559
			Proctor Subgrade									4.080	5,825,662
			Capital										5,825,662
			Gypsum Disp Facility										5,825,662
14	Gyp. On Peninsula Cat												
	Capital												
			Allowance For Kerf, Geologic Features	1.00 ls					246,480			246,480.00	246,480
			Addition Geotechnical Investigation	1.00 ls					102,700			102,700.00	102,700
			Capital						246,480				246,480
			O & M										
			Out For Underdrain System	4,407.00 cy	0.200	881.40 mh	25,872		25,872			7.46	32,864
			6" Dia Perforated HDPE Perimeter Underdrains	59,491.00 lf	0.250	11,898.20 mh	324,733		324,733			5.42	473,718
			Fill For Underdrain System	3,525.00 cy	0.150	490.60 mh	14,128		14,128			10.20	35,939
			108 L Crushed Stone at Depth (110 ped)	551.00 cy	0.200	1,102.00 mh	4,060		4,060			14.67	47,959
			Out For Lateral Outlet Pipes	7,436.00 lf	0.250	1,487.20 mh	40,690		40,690			7.46	41,169
			8" Dia Non-Perforated HDPE Lateral Outlet Pipes	441.00 cy	0.250	1,102.50 mh	3,174		3,174			7.95	59,212
			Fill For Lateral Outlet Pipes	408.00 in	0.150	61.35 mh	1,766		1,766			13.20	4,458
			108 L Crushed Stone at Depth (110 ped)									14.67	5,000
			Gypsum Disposal Stack (Wet Sludge)	5,535,653.00 cy	375,000	2,608.63 cd	782,065		782,065			2.55	2,676,517
			Wet Cast Gypsum Gypsum Dike	1,011,347.00 cy	375,000	305.53 cd	89,733		89,733			2.95	303,221
			Out Rim Ditches	114,576.00 cy									0
			O & M										0
			Gyp On Peninsula Cat										3,644,075
			Capital										3,993,255
			Life Of Gypsum Disposal Stack	20.00 yrs									3,993,255
15	Construction Parking												
	Capital												
			Sill Fence	1,000.00 lf	0.020	20.00 mh	526		526			0.85	849
			Out And Fill Balance (500 bcy)	600.00 cy	2,800,000	0.21 cd	646		646			2.24	1,345
			Out & Spoil Additional Material	400.00 cy	1,904,000	0.21 cd	646		646			2.50	1,001
			Crushed Stone Base	1,400.00 ln	0.120	168.00 mh	5,864		5,864			14.16	19,821
			Capital										23,013
			Construction Parking										23,013

Spreadsheet Report  
KIP-0090305/FLY&BOT/TH ASH

Location	Activity	Outage Set	Description	Measure Quantity	Labo Productivity	Labo Quantity	Labo Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
7	Ph 2 Base Construct					220.30 hrs	7,093	13,028		2,892			23,013
	Capital			1.00 lot								0.00	0
			Base Layers	322,200.00 cy	0.040	12,888.00 mh	428,595			338,937			788,432
			Cut For Drainage Coll (288,500 bcy)	573,850.00 cy	1,300,000	441.77 cd	1,066,579			861,233		3.42	1,958,812
			Compacted Fly Ash Base (Fill)	177,100.00 sy	28,111,100	6.30 cd	5,353			2,570		0.06	7,923
			Precast Sloped Ash Layer	152,117.00 sy	1,300,000	117.47 cd	284,471			237,281		3.42	521,752
			0.5" Thick Fly Ash Filter Layer	30,543.00 sy	1,300,000	23.49 cd	56,895			47,952		3.42	347,537
			18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	16,920.00 lf					317,537			20.84	94,849
			Bottom Ash Dike Fill	177,100.00 sy	1,400,000	126.50 cd	74,324			20,046		0.35	94,849
			1.0" Layer Of Bottom Ash	163,514.00 sy	1,300,000	125.96 cd	394,775			254,191		3.42	506,696
			Geosynthetic Clay Liner	183,280.00 sy	1,300,000	48.99 cd	113,971	440,312		94,095		3.24	598,391
			4" Diameter Perforated PVC Pipes (Underdrains) SDR 17.5	28,092.00 lf	0.076	4,764.78 mh	135,928			12,150		3.78	98,533
			Trenching For The Drain System (4" Dia Underdrains) 968 bcy	1,160.00 sy	0.200	1,825.74 mh	49,859			7,752		2.46	8,850
			Strip Extending 1' Soil Cover (Phase 1 Expansion), 18,133 bcy	22,800.00 sy	800,000	232.00 mh	6,678			14,930		1.27	29,058
			Anchor Trench Cut	1,906.00 sy	0.200	28.70 cd	3,333			3,333		8.31	10,849
			Anchor Trench Fill & Compact	1,242.00 sy	0.320	7.919 mh	11,411			8,938		3.42	84,179
			2.0" Thick Bottom Ash Blanket Drain	24,840.00 sy	1,300,000	18.95 cd	45,989			38,630		3.42	42,090
			1.0" Thick Filter Drain Ash Layer	12,320.00 sy	1,300,000	9.48 cd	22,949			4,712		3.78	140,128
			Geomembrane	36,980.00 sy	0.050	1,848.00 mh	52,720	82,694		1,196		7.66	38,389
			Perforated Pipe ADS Drain Tube, 6" Diameter	4,121.00 sy	0.021	84.77 mh	29,988	6,344		4,712		2.68	11,051
			Geotextile For Underdrain	1,001.00 lf	0.150	4,322 mh	2,418	9,888		1,930		9.842	9,842
			#57 Stone For Outlet Pipe Bedding (135 pcf)	1,238.00 lf	0.200	150.15 mh	6,747	2,048		1,930		7.96	9,842
			Solid Outlet Pipe ADS Drain 6" Diameter	250.00 lf	0.150	37.50 mh	1,079	2,859		258		14.67	3,667
			#57 Stone For Outlet Pipe Bedding (135 pcf)	302.00 lf	0.200	60.40 mh	1,648	509		17		7.96	2,405
			8" Dia Perforated HDPE Compacted Tubing Lateral Outlet Pipes (EL. 780)	10.00 lf	0.500	5.00 mh	144	85		124		26.61	256
			10# Crushed Stone, Bedding 6" Depth	1,512.00 lf	0.200	302.40 mh	8,293	2,593		1,284		7.96	12,040
			8" Dia Perforated HDPE Drain (EL. 780)	288.00 lf	0.500	144.00 mh	416	2,720		82		26.61	7,323
			10# Crushed Stone	1,176.00 sy	0.021	24.19 mh	690	4,981		82		3.154	3,154
			Geotextile Woven Monofilament	224.00 sy	0.200	44.80 mh	1,280	381		381		7.46	1,670
			Cut For Underdrain System	166.00 sy	0.250	42.00 mh	1,209	504		504		10.20	31,500
			Backfill For Underdrain System	1.00 ls									470,247
			Certification	1.00 ls									31,500
			QA/QC For Construction Of Disposal Facility										470,247
			Capital										31,500
			Ph 2 Base Construct										31,500
8	Temp Slope Protect					83,395.31 hrs	2,743,686	602,078		2,009,441			6,204,488
	Capital												6,204,488
			Cut For Ditch (5,815 bcy)	5,978.00 sy	1,200,000	5.82 cd	10,881			12,041		3.30	23,022
			D50 3" Riprap	4,239.00 lf	0.360	1,356.48 mh	40,371	43,111		21,637		24.85	106,318
			Seed Ditch	6,976.00 sy						3,593		0.51	3,593
			Julie Matting	6,976.00 sy	0.012	83.74 mh	2,389	5,664		427		1.19	6,280
			Temp Slope Protect										34,304
			Capital										34,304
18	Temp Slope Protect					1,765.86 hrs	53,741	48,575		3,583			140,204
	Capital												140,204
			Riprap D50 Size 3"	2,344.00 lf	0.320	750.08 mh	22,324	23,638		12,075		24.85	58,217
			Cut For Basin (3,562 bcy)	4,300.00 sy	1,200,000	3.58 cd	6,767	7,420		7,420		3.30	14,199
			Riprap Stilling Basin										72,424
			Capital										72,424
19	Ph 2 Initial Constr					950.75 hrs	29,091	23,838		19,495			72,424
	O & M												72,424
			Dredge Ash	457,285.00 sy								1.57	709,588
			Initial Disposal Life	0.90 yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,310.00 lf	0.200	1,474.00 mh	40,229	12,199		6,253		7.96	56,686
			Geotextile For Underdrain	6,142.00 sy	0.021	126.34 mh	3,904	12,437		1,902		2.68	16,471
			#57 Stone For Outlet Pipe Bedding (135 pcf)	1,482.00 lf	0.150	233.60 mh	6,442	13,542		1,902		14.67	21,667
			Solid Outlet Pipe ADS Drain 6" Diameter	1,699.00 lf	0.200	331.60 mh	9,950	2,744		428		7.96	13,202
			#57 Stone For Outlet Pipe Bedding (135 pcf)	338.00 lf	0.150	50.40 mh	1,451	3,050		428		14.67	4,929
			O & M										824,793
			Ph 2 Initial Constr										824,793
20	Ph 2 Initial Constr					2,206.14 hrs	60,777	43,972		19,495			824,763
	O & M												824,763
			Dredge Ash	11,495.00 lf	0.200	2,298.00 mh	62,746	19,029		9,781		7.96	91,533
			Capital										91,533
22	Ph 2 Operational Cost					1.00 lot						0.00	0
	O & M												0
			Stage 1 (3 To 1 Side Slopes)										87,182
			Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	255,189.00 cy	1,300,000	196.30 cd	475,959			395,482		3.42	2,098,277
			Dredge Ash	1,334,486.00 cy						2,098,277		1.57	2,098,277
			Capital										0
			Stage 1 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf	0.200	2,298.00 mh	62,746	19,029		9,781		7.96	91,533

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labo Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount			
3	Ph 2 Operational Cost	O & M	Geotextile For Underdrain	9,570.00 sq	0.021	197.04 mh	6,621	13,395	670	-	-	-	6.99	25,697		
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,325.00 ln	6.150	349.20 mh	10,052	21,131	2,895	14,977	-	-	-	14.97	35,157	
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,695.00 lf	0.200	517.20 mh	14,116	4,280	2,196	7,990	-	-	-	14.07	20,662	
			O & M	524.00 ln	0.150	78.60 mh	2,263	688	4,756	688	-	-	-	14.07	3,148,748	
			Ph 2 Operational Cost	17,574.59 hrs		17,574.59 hrs	66,569	2,098,277	412,725	-	-	-	-	-	3,148,748	
			22		17,574.59 hrs		66,569	2,098,277	412,725	-	-	-	-	-	3,148,748	
4	Ph 2 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot	1,300.000	202.82 cd	490,659	-	409,223	-	-	0.00	0			
			Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	263,403.00 cy										890,692		
			Dredge Ash	1,509,673.00 cy										2,373,715		
			Stage 2 Disposal Life (Assume Dike & Dredge Ash)	3.70 yrs										0		
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,865.00 lf	0.200	2,373.00 mh	64,765	19,639	10,075	-	-	-	-	7.96	54,479	
			Geotextile For Underdrain	3,403.00 sq	0.021	203.40 mh	5,602	20,022	692	-	-	-	-	2.98	26,516	
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,670.00 lf	0.150	360.45 mh	10,376	2,834	3,984	-	-	-	-	14.67	35,251	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200	534.00 mh	14,574	4,911	2,267	-	-	-	-	7.96	21,261	
			#57 Stone For Outlet Pipe Bedding (135 pd)	541.00 ln	0.150	81.15 mh	2,336	890	890	-	-	-	-	14.67	7,936	
			O & M	18,140.47 hrs		18,140.47 hrs	70,801	2,373,715	426,011	-	-	-	-	-	3,459,041	
Ph 2 Operational Cost	18,140.47 hrs		18,140.47 hrs	70,801	2,373,715	426,011	-	-	-	-	-	3,459,041				
23																
5	Ph 2 Operational Cost	O & M	Stage 3 (3 To 1 Side Slopes)	1.00 lot	1,300.000	174.70 cd	423,048	-	352,632	-	-	0.00	0			
			Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	227,106.00 cy										775,679		
			Dredge Ash	1,344,916.00 cy										2,114,661		
			Stage 3 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs										0		
			Perforated Pipe ADS Drain Tube, 6" Diameter	10,230.00 lf	0.200	2,046.00 mh	56,841	18,932	9,897	-	-	-	-	7.96	81,460	
			Geotextile For Underdrain	8,625.00 sq	0.021	175.36 mh	3,003	17,893	597	-	-	-	-	2.98	22,861	
			#57 Stone For Outlet Pipe Bedding (135 pd)	2,072.00 ln	0.150	310.80 mh	9,007	2,642	2,642	-	-	-	-	14.67	30,395	
			Solid Outlet Pipe ADS Drain 6" Diameter	2,302.00 lf	0.200	460.40 mh	12,566	3,810	1,655	-	-	-	-	7.96	18,330	
			#57 Stone For Outlet Pipe Bedding (135 pd)	486.00 ln	0.150	69.90 mh	2,012	694	694	-	-	-	-	14.67	6,836	
			O & M	15,640.64 hrs		15,640.64 hrs	61,041	2,114,661	387,306	-	-	-	-	-	3,050,423	
Ph 2 Operational Cost	15,640.64 hrs		15,640.64 hrs	61,041	2,114,661	387,306	-	-	-	-	-	3,050,423				
24																
CONST FACILITY	Construct Facilities	Capital														
NON MANUAL	Non-Manual	Capital														

Spreadsheet Report  
KIF/050305/FLY&BOTTM ASH

#32.47/MH  
#40.49/EH  
6,585,846  
x 11%  
me 724,400  
L=65% #470,900  
E=35% #253,500

225,124  
x 125  
28,140 md

Estimate Totals

Labor	11,323,685	348,777,347	hrs	
Material	3,650,722			
Subcontract	10,377,633	263,783,715	hrs	
Equipment	10,377,633			
Other	31,500			
	41,621,143	41,621,143		
Engineered Materials - Ph. 2		100,000 %		C
Adjustment - Engr Materials		(100,000) %		C
	41,621,143	100,000 %		C
Environmental Costs		100,000 %		C
Adjustment Environmental		(100,000) %		C
	41,621,143			
FFG Civil Engr - Phase 2	32,302	0.221 % @	42.00 A	
Non-TVA Engr - Phase 2	697,263	2.339 % @	72.00 A	
FFG Proj Chlrl Cost - Phase 2	873	0.006 % @	42.00 A	
FFG Proj Chlrl Sched - Phase 2	2,619	0.018 % @	42.00 A	
FFG Cost Estimating - Phase 2	875	0.006 % @	42.00 A	
FFG Engr Records - Phase 2	873	0.006 % @	42.00 A	
Phase 2 Other/Other Org	624,805			L
	42,245,948			
Rounding		42,245,948		
		42,245,948		
<b>Total</b>		<b>42,245,948</b>		

769  
8,156  
21  
62  
21  
21

**KINGSTON FOSSIL PLANT  
OPTION 5 - WET ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)**

Project name KIF/0509305/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project  
Plant  
Estimate #  
PCN #  
Requesting Engr  
Option  
Revision  
Phase  
Estimate Type  
Estimate Accuracy  
Est. Issue Date  
Funding Type  
Unit

Ash  
KIF  
0509305  
KIF530  
Dan Smith  
5  
0  
2  
Preliminary  
4/-20%  
12/20/2004  
Capital  
N

Notes

Wet ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2. Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow;

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,350 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by Location/Activity  
Detail summary

*Handwritten:* ADD LOW CAPITAL WITH  
 11/17/06 SUB=2.1% E=2.2%

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
11	Erosion Controls/S P	Erect Silt Fence	1,000.00 lf	0.069	66.57 mh	1,675	494	-	311	-	-	2,480	
		Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.015	68.80 mh	1,649	5,676	-	172	-	-	7,497	
		D50 9" Riprap	5,215.00 tn	0.320	1,669.80 mh	41,937	52,150	-	26,338	-	-	120,225	
		3" Stone, 1 1/2" Thick To Prevent Erosion (Assumes 105pcf)	2,004.00 tn	0.095	192.38 mh	3,069	17,886	-	3,005	-	-	25,951	
		Sig 1-6 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 PIEs)	4.00 ea	166.084	664.33 mh	17,185	15,860	-	2,740	-	-	9,846.25	
		Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 bcy	52.00 cy	0.400	20.80 mh	593	593	-	173	-	-	13,011	
		Fill With 1032 Compacted/Crushed Stone	37.20 mh	0.400	990	781	990	-	587	-	-	24,822	
		30" Diameter CMP Culvert	1,000.00 lf	0.600	500.00 mh	14,955	26,000	-	3,610	-	-	44,304	
		Bedding For 30" CMP, 6" Thick	195.00 tn	0.500	67.50 mh	1,633	2,282	-	225	-	-	3,121	
		D50 9" Riprap Outlet For Metal Spillway	730.00 lf	0.750	540.00 mh	13,959	16,720	-	2,235	-	-	34,923	
		Galvanized Corrugated Metal Anti-Sweep Collar	16.00 ea	16.000	16.00 mh	424	530	-	268	-	-	23,035	
Erosion Controls S P					6,270	4,800	-	1,540	-	-	786.12		
					4,201.35 hrs	105,759	148,168	-	41,205	-	-	295,132	
												41,205	
12	Seed/Mulch	Seed/Mulch Disturbed Areas	26.00 ac		0.00 hrs	0	-	62,920	-	-	-	62,920	
		Seed/Mulch			0.00 hrs	0	-	62,920	-	-	-	62,920	
13	South Access Road	1032 Crushed Stone Base, 6" Depth	3,520.00 tn	0.120	422.40 mh	11,545	31,416	-	4,066	-	-	47,027	
		Perimeter Road			422.40 hrs	11,545	31,416	-	4,066	-	-	47,027	
					422.40 hrs	11,545	31,416	-	4,066	-	-	47,027	
14	Perimeter Road	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 tn	0.120	826.20 mh	22,582	61,449	-	7,853	-	-	91,983	
		Perimeter Road			826.20 hrs	22,582	61,449	-	7,853	-	-	91,983	
					826.20 hrs	22,582	61,449	-	7,853	-	-	91,983	
15	Inst Dms/Swan Pond	6" Dia Pipe Bollards	24.00 ea	1.500	36.00 mh	871	4,800	-	240	-	-	5,911	
		PVC Monitoring Wells	6.00 ea					-					12,000
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.200	94.80 mh	2,174	771	-	395	-	-	3,340	
		Crushed Stone, Bedding 6" Depth	16.00 tn	0.500	8.00 mh	194	150	-	27	-	-	23.12	
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 780)	520.00 lf	0.200	104.00 mh	2,385	849	-	433	-	-	3,664	
		Crushed Stone, Bedding 6" Depth	18.00 tn	0.500	9.00 mh	218	168	-	30	-	-	23.12	
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 782)	491.00 lf	0.200	98.20 mh	2,252	799	-	409	-	-	3,469	
		Crushed Stone, Bedding 6" Depth	17.00 tn	0.500	8.50 mh	206	159	-	28	-	-	23.12	
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 810)	1,282.00 lf	0.200	256.40 mh	5,881	2,088	-	1,067	-	-	7,055	
		Crushed Stone, Bedding 5" Depth	43.00 tn	0.500	21.50 mh	420	402	-	72	-	-	23.12	
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.200	243.60 mh	5,587	1,982	-	1,014	-	-	7,055	
		Crushed Stone, Bedding 6" Depth	41.00 tn	0.500	20.50 mh	466	383	-	68	-	-	23.12	
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 825)	1,180.00 lf	0.200	236.00 mh	5,413	1,920	-	982	-	-	7,055	
		Crushed Stone, Bedding 6" Depth	40.00 tn	0.500	20.00 mh	484	374	-	67	-	-	23.12	
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 832)	1,160.00 lf	0.200	232.00 mh	5,321	1,898	-	966	-	-	7,055	
		Crushed Stone, Bedding 6" Depth	39.00 tn	0.500	19.50 mh	472	365	-	65	-	-	23.12	
		Crushed Stone, Bedding 6" Depth	39.00 tn	0.500	19.50 mh	472	365	-	65	-	-	23.12	
		Cut For 6" Dia Non-Perforated HDPE (17,658 bcy)	21,190.00 cy	0.200	4,238.00 mh	102,517	35,318	-	35,318	-	-	6.51	137,636
		Backfill For 6" Dia Non-Perforated HDPE (12,361 bcy)	14,833.00 cy	0.250	3,709.25 mh	89,703	43,909	-	43,909	-	-	8.99	133,312
		Cut For 6" Dia Perforated HDPE (18,186 bcy)	21,824.00 cy	0.200	4,364.80 mh	105,585	36,375	-	36,375	-	-	6.51	141,960
		Backfill For 6" Dia Perforated HDPE (12,730 bcy)	15,276.00 cy	0.250	3,819.00 mh	92,362	44,911	-	44,911	-	-	8.99	137,263
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 793)	2,000.00 lf	0.200	400.00 mh	9,174	3,255	-	1,595	-	-	7.05	14,094
		Geotextile Woven Monofilament	278.00 tn	0.160	56.70 mh	1,372	3,374	-	13.80	-	-	5.218	5,218
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 777)	1,950.00 sy	0.021	32.01 mh	767	3,058	-	107	-	-	2.55	3,872
		Geotextile Woven Monofilament	3,750.00 lf	0.200	750.00 mh	17,385	6,168	-	3,155	-	-	7.05	26,708
		1081 Crushed Stone	716.00 tn	0.150	107.40 mh	2,588	6,930	-	885	-	-	13.80	9,683
Geotextile Woven Monofilament	2,948.00 sy	0.021	60.64 mh	1,454	5,869	-	202	-	-	2.55	7,525		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,160.00 lf	0.200	832.00 mh	19,082	6,770	-	3,463	-	-	7.05	29,316		
1081 Crushed Stone	788.00 tn	0.150	117.90 mh	2,852	7,015	-	963	-	-	13.80	10,850		
Geotextile Woven Monofilament	3,236.00 sy	0.021	66.56 mh	1,596	6,443	-	222	-	-	2.55	8,281		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	3,925.00 lf	0.200	785.00 mh	18,004	6,388	-	3,268	-	-	7.05	27,659		
1081 Crushed Stone	442.00 tn	0.150	66.30 mh	1,692	6,622	-	928	-	-	13.80	10,242		
Geotextile Woven Monofilament	3,053.00 sy	0.021	63.80 mh	1,506	6,079	-	209	-	-	2.55	7,793		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	6,410.00 lf	0.200	1,282.00 mh	29,403	10,432	-	5,336	-	-	7.05	45,171		
1081 Crushed Stone	1,211.00 tn	0.150	181.65 mh	4,384	10,908	-	1,514	-	-	13.80	16,716		
Geotextile Woven Monofilament	4,990.00 sy	0.021	102.56 mh	2,459	9,827	-	342	-	-	2.55	12,729		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	6,090.00 lf	0.200	1,218.00 mh	27,955	9,911	-	5,070	-	-	7.05	42,916		
1081 Crushed Stone	473.00 tn	0.150	70.95 mh	1,774	4,476	-	1,439	-	-	13.80	15,888		
Geotextile Woven Monofilament	5,900.00 lf	0.021	118.00 mh	2,336	9,431	-	325	-	-	2.55	12,692		
6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	5,900.00 lf	0.200	1,180.00 mh	27,683	9,802	-	4,912	-	-	7.05	41,977		
1081 Crushed Stone	1,115.00 tn	0.150	167.25 mh	4,046	9,851	-	1,394	-	-	13.80	15,391		



Location	Activity	Description	Takeoff Quantity	Labo Productivity	Labor Quantity	Labor Amount	Mach's Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
26	Instl Dms/Swan Pond	Geotextile Woven Monofilament	4,589.00 sy	0.021	94.40 mh	2,283	9,137	-	315	-	2.55	11,714	
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200	1,160.00 mh	26,805	9,440	-	4,829	-	7.05	40,873	
		108" Crushed Stone	1,096.00 tn	0.150	164.40 mh	3,977	7,922	-	1,370	-	13.80	15,129	
		Geotextile Woven Monofilament	4,511.00 sy	0.021	92.79 mh	2,224	8,981	-	309	-	2.55	11,515	
		12" Dia Force Main HDPE Perimeter Underdrain (EL. 763)	2,580.00 lf	0.250	645.00 mh	14,793	12,866	-	2,688	-	11.76	30,349	
		1681 Crushed Stone	575.00 tn	0.150	86.25 mh	2,086	5,132	-	719	-	13.80	7,937	
		Submersible Pumping Station Equipment Package	1.00 ea	56.000	56.00 mh	1,995	5,000	-	205	-	7,059.00	7,110	
		Geotextile Woven Monofilament	2,293.00 sy	0.021	47.17 mh	1,131	4,565	-	157	-	4,959.02	4,983	
		60" Diameter Catch Basin (Precast)	54.00 mh	1.000	54.00 mh	1,273	2,808	-	489	-	84.84	4,571	
		GROUT Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000	8.00 mh	256	78	-	217.09	-	217.09	434	
		GROUT Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000	8.00 mh	256	78	-	217.09	-	217.09	434	
		GROUT Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000	8.00 mh	256	78	-	217.09	-	217.09	434	
		Seal Weild 1/4" Thick A-36 Steel Plate	23.00 cy	1.000	23.00 mh	542	208	-	84.64	-	84.64	1,947	
		GROUT Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000	8.00 mh	256	78	-	217.09	-	217.09	434	
		Seal Weild 1/4" Thick A-36 Steel Plate	38.00 lf	0.488	18.24 mh	418	760	-	87	-	32.77	1,245	
		Excavation For 24" Diameter CMP (17' boy)	30.00 cy	0.200	6.00 mh	145	163	-	75	-	15.50	326	
		Bedding For 24" Culvert	21.00 cy	0.320	6.72 mh	163	37	-	163	-	23.12	92	
		36" CMP Storm Drain	72.00 lf	0.600	43.20 mh	1,058	203	-	290	-	56.30	3,982	
		Excavation For 36" Dia Pipe (67' boy)	81.00 cy	0.200	16.20 mh	392	443	-	15	-	15.50	884	
		Backfill For 36" Diameters CMP (47' boy)	9.00 tn	0.500	4.50 mh	109	84	-	15	-	23.12	208	
		Anchor Trench - Escalate into Borrow Area (8,650 bcy)	10,380.00 cy	0.200	2,076.00 mh	50,218	25,950	-	25,950	-	7.34	76,188	
		Upper & Lower LDPE Geomembrane	110,688.00 sy	0.050	5,534.40 mh	132,676	243,514	-	13,936	-	3.52	390,026	
		Sediment Trap (3,630 bcy)	4,356.00 cy	0.040	174.24 mh	4,880	4,880	-	4,932	-	9.372	45,512	
		Instl Dms/Swan Pond	05		35,789.66 hrs	853,837	486,927	12,000	259,959	12,000	259,959	1,612,723	1,612,723
		Drg CellP1 Opr Cost				853,837	486,927	12,000	259,959	12,000	259,959	1,612,723	1,612,723
		27	Drg CellP1 Opr Cost	Elv. 810 To Elev. 866	1.00 lot								0.00
Bottom Ash Dike Fill	622,416.00 cy			1,300.000	478.78 cd	974,301	-	948,026	-	3.08	1,922,327	3	
Dredge	4,853,654.00 cy								7,430,944	-	1.53	7,430,944	1M
Wet Dip And Stack	678,848.00 cy			375.000	1,810.26 cd	446,773	-	1,240,101	-	2.49	1,866,874	1M	
Disposal Life (Assume Dike & Dredge Ash)	12.90 yr										0.00	0	
Drg CellP1 Opr Cost						1,421,074	7,430,944	12,000	2,188,127	7,430,944	2,188,127	11,040,145	11,040,145
Gypsum Silt Peninsulas						1,421,074	7,430,944	12,000	2,188,127	7,430,944	2,188,127	11,040,145	11,040,145
Clear And Grub	1.00 lot										0.00	0	
Clear And Grub	90.00 ac			72.000	6,480.00 mh	162,836	-	157,788	-	3,562.48	-	320,624	
Strip 1ft Vegetation And Topsoil - Spoil At Stockpile	123,000.00 cy			0.020	2,460.00 mh	66,706	-	80,625	-	-	-	147,331	
Gypsum Silt Peninsulas						229,542	238,413	0	238,413	-	467,955	467,955	
Drg CellP1 Opr Cost						229,542	238,413	0	238,413	-	467,955	467,955	
28	Erosion Controls	Erect Silt Fence (Trench Bottom Of Fence, 10% Hay Bales)	4,900.00 lf	0.069	335.99 mh	8,209	2,421	-	1,523	-	2.48	12,153	
		Cut For Stormwater Runoff Pond (2,000 bcy)	2,400.00 cy	800.000	3.00 cd	2,688	-	2,475	-	5,164	-	5,164	
		Cleanout Stormwater Runoff Pond (2,300 bcy)	2,760.00 cy	363.333	7.20 cd	3,926	-	2,304	-	2.00	5,530		
		Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00 cy	1,904.000	7.96 cd	19,124	-	24,240	-	3.01	43,363		
		Riprap For Stormwater Runoff Pond	4,300.00 tn	0.200	860.00 mh	21,959	-	18,079	-	19.21	82,588		
		Pipe Bedding	20.00 tn	0.500	10.00 mh	242	-	38	-	23.54	471		
		72" Dia. CMP For Outlet Structure	6.00 lf	2.000	12.00 mh	283	-	69	-	361.90	2,171		
		48" Dia. CMP For Riser For Outlet Structure	150.00 lf	0.620	93.00 mh	180	-	44	-	163.40	1,144		
		48" Dia. CMP Outlet Pipe (Principle Spillway)	3.00 ea	10.000	30.00 mh	713	-	7,280	-	25.86	10,005		
		Cut Holes In Riser	4.00 cy	10.000	40.00 mh	1,087	-	103	-	498.70	1,999		
		Composite Concrete For Riser Base (Assume 7' x 7' x 2')	7.00 ea	75.000	525.00 mh	14,273	-	1,346	-	206.10	1,999		
		Anti-Sleep Collars (Assume Concrete)				73,077	61,438	-	50,762	-	185,274	185,274	
		Erosion Controls				73,077	61,438	-	50,762	-	185,274	185,274	
		Bottom Ash (South Access Road)	2,400.00 cy	1,804.000	1.26 cd	2,685	-	3,657	-	5,622	-	5,622	
		Crushed Stone Base (South Access Road)	2,900.00 tn	0.120	348.00 mh	9,512	-	3,350	-	13.36	35,744		
		Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 tn	0.120	40.80 mh	1,115	-	393	-	13.36	4,542		
		Roads				13,192	28,917	-	6,799	-	48,988	48,988	
		Drg CellP1 Opr Cost				13,192	28,917	-	6,799	-	48,988	48,988	
29	Fencing	New Fencing (Including Grounding)	200.00 lf					4,100	-	-	20.50	4,100	
		Personnel Swinggate	1.00 ea					360	-	-	360.00	360	

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Main Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
11	Fencing 2008	Sliding Gate, 20 Ft Wide, With Motorized Operator Fencing 10	1.00 ea		0.00 hrs	0	0	17,000			17,000.00	17,000
	Seed/Mulch 2008	Seed/Mulch Disturbed Areas Seed/Mulch 11	25.00 ac		0.00 hrs	0	0	60,500			2,420.00	60,500
12	Borrow Area Develop 2008	Disc Future Borrow Area (Assumed For Compacted Clay Material) Seed / Fertilize / Lime Future Borrow Area Borrow Area Develop 12	20.00 ac 20.00 ac	6.000	3.33 cd 53.33 hrs	1,645 1,645	0	46,464 46,464	867		125.60 2,323.20	2,512 48,976
13	Gypsum Dip Facility 2008	<b>Disposal Facility Construction</b> Cut And Fill Balance (189,719 bcy) Cut & Spoil Select Cut For Future 1 Ft Clay Layer In Final Cover Rearop For Ditch Ditch For Rearop (24' wide x 2' deep) Gravelite (If Rearop Is Used) Perimeter Road Surfacing - Bottom Ash Perimeter Road Surfacing - Crushed Stone Compacted Clay Liner, 6" Thick (339,000 bcy) Drainage Layer (1 Ft Thick For Liner, No. 57 Stone) Geotextile For Underdrain Pipe 8" Dia. HDPE SDR 17 Perforated Pipe 8" Dia. HDPE Standard Frings Concrete Anchors For Underdrain Piping Proofroll Subgrade Gypsum Dip Facility 13	1.00 lot 227,663.00 cy 145,001.00 cy 23,500.00 in 7,300.00 lf 2,400.00 cy 2,400.00 cy 2,900.00 in 400,800.00 cy 166,000.00 in 5,700.00 sf 6,400.00 lf 85.00 ea 70.00 ac	2,800,000 1,904,000 0.200 0.044 0.015 1,804,000 0.120 1,200,000 0.095 0.011 0.200 0.200 12,500 7,000	81.31 cd 76.16 cd 4,700.00 mh 320.03 mh 292.50 mh 1.26 cd 348.00 mh 338.00 cd 18,128.00 mh 59.85 mh 1,448 29,357 10,000 mh 1,092.50 mh 10.00 cd 66,392.74 hrs 66,392.74 hrs	205,693 139,646 117,547 9,169 7,076 2,555 9,512 697,102 426,634 7,481 29,357 209 28,895 1,440 1,841,961 1,841,961	235,000 25,594 25,883 1,425,000 7,481 400 9,988 1,742,761 1,742,761	260,996 192,675 98,695 12,651 3,057 3,350 1,086,800 252,000 200 5,333 2,724 4,000 1,922,873 1,922,873	0	0.00 2.05 2.29 19.21 2.99 1.73 2.34 13.36 4.78 12.54 1.60 7.05 12.17 159.14	0 466,189 332,320 451,352 21,621 33,644 5,622 38,744 1,943,690 2,106,634 9,129 45,108 41,907 3,507,595 5,507,595	
14	Gyp On Peninsulas Cst OAM 2008	Cut For Underdrain System 6" Dia Perforated HDPE Perimeter Underdrains Fill For Underdrain System 1081 Crushed Stone, 6" Depth (110 pcf) Cut For Lateral Outlet Pipes 6" Dia Non-Perforated HDPE Lateral Outlet Pipes Fill For Lateral Outlet Pipes 1081 Crushed Stone, 6" Depth (110 pcf) Gypsum Disposal Stack (Wet Sludge) Wet Cast Gypsum Gypsum Dike Cut Rim Ditches 14	4,407.00 cy 59,491.00 lf 3,925.00 cy 3,272.00 in 551.00 cy 7,436.00 lf 409.00 cy 5,535,853.00 cy 1,011,347.00 cy 114,575.00 cy 20.00 yds 1.00 ls 1.00 lb	0.200 0.200 0.250 0.200 0.200 0.250 0.150 375,000 375,000 375,000 20.00 yds 1.00 ls	881.40 mh 11,868.20 mh 881.25 mh 489.80 mh 1,102.00 mh 1,487.20 mh 110.25 mh 61.35 mh 2,666.93 cd 305.53 cd	21,321 272,885 21,917 11,872 2,656 34,709 2,657 1,484 665,691 75,406	96,822 9,984 25,209 12,102 3,650	7,345 49,526 10,364 4,000 918 6,190 1,297 511 1,847,502 209,303	6.51 7.05 8.99 13.80 6.51 7.05 8.99 13.80 2.49 2.49	28,666 419,233 10,681 45,185 3,584 42,101 3,683 5,645 284,708 240,000 100,000 3,726,151 3,728,151		
15	Construction Parking 2008	Silt Fence Cut And Fill Balance (500 bcy) Cut & Spoil Additional Material Crushed Stone Base Construction Parking 15	1,000.00 lf 900.00 cy 400.00 cy 1,400.00 in	0.020 2,800,000 1,900,000 0.120	20.00 mh 0.21 cd 0.21 cd 166.00 mh 220.30 hrs 220.30 hrs	442 542 385 4,592 5,961 5,961	315		867 532 1,617 2,835 2,835		0.76 2.05 2.29 13.36	757 1,229 917 18,704 21,666 21,606
17	Ph 2 Base Construct 2008	<b>Base Layers</b> Cut For Dredge Cell (288,500 bcy) Compacted Fly Ash Base (Fill) Proofroll Subgrade 2.5" Thick Bottom Ash Layer 0.5" Thick Fly Ash Filter Layer 18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy) Roto Till Fly Ash Layer Bottom Ash Dike Fill 17	1.00 lot 322,200.00 cy 573,950.00 cy 177,100.00 sf 152,717.00 sf 30,543.00 cy 16,920.00 lf 177,100.00 sf 163,814.00 cy	0.040 1,300,000 28,111,100 1,900,000 1,900,000 1,400,000 1,400,000 1,300,000	12,888.00 mh 441.27 cd 6.30 cd 117.47 cd 23.49 cd 126.50 cd 125.86 cd	360,928 897,965 4,499 239,056 47,811 67,410 256,114		332,291 973,748 2,520 232,609 46,521 20,240 249,207		0.00 2.15 3.09 0.04 3.09 20.00 3.09	893,220 1,771,714 7,018 47,165 94,332 336,400 1,926,680 505,321	

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount			
8 <i>2015-2019</i>	PH 2 Base Construct	1.0 Layer Of Bottom Ash	61,087.00 cy	1,300.000	46.99 cd	95,623	-	-	95,044	-	3.09	189,667			
		Asymmetric Clay Liner	183,280.00 sq	0.026	4,764.76 mh	114,226	432,952	-	-	11,912	-	3.05	559,089		
		4. Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	26,682.00 lf	0.070	1,825.74 mh	41,873	40,258	-	-	7,609	-	3.44	89,740		
		Slip Existing 1" Soil Cover (Phase 1 Expansion), 19'133 boy	1,156.00 cy	0.200	232.00 mh	5,612	1,933	-	-	1,933	-	6.51	7,546		
		Trench Existing 1" Soil Cover (Phase 1 Expansion), 19'133 boy	22,950.00 cy	800.000	28.70 cd	11,873	14,637	-	-	14,637	-	1.16	26,510		
		Anchor Trench Cut	1,306.00 cy	0.200	261.20 mh	5,319	9,342	-	-	3,205	-	7.34	9,583		
		Anchor Trench Fill & Compact	1,242.00 cy	0.320	397.44 mh	38,570	37,530	-	-	37,530	-	3.09	19,256		
		2.0" Thick Bottom Ash Blanket Drain	24,640.00 cy	1,300.000	18.95 cd	19,285	16,765	-	-	4,620	-	3.09	38,050		
		1.0" Thick Filler Drain Ash Layer	12,320.00 cy	1,300.000	9.48 cd	10,285	8,050	-	-	4,620	-	3.05	30,234		
		Geomembrane	36,950.00 sq	0.050	1,848.00 mh	44,302	81,312	-	-	4,118	-	2.55	34,654		
		Perforated Pipe ADS Drain Tube, 6" Diameter	4,121.00 sq	0.021	84.77 mh	2,032	8,205	-	-	1,251	-	13.80	10,520		
		Geotextile For Underdrain	1,001.00 ln	0.200	150.15 mh	3,632	8,934	-	-	1,029	-	7.05	13,817		
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,236.00 lf	0.200	247.20 mh	5,670	2,012	-	-	313	-	7.05	3,451		
		Solid Outlet Pipe ADS Drain 6" Diameter	256.00 lf	0.150	37.50 mh	907	2,231	-	-	251	-	23.12	2,125		
		#57 Stone For Outlet Pipe Bedding (135 pcf)	392.00 lf	0.200	60.40 mh	1,385	492	-	-	17	-	7.05	231		
		#57 Stone For Outlet Pipe Bedding (135 pcf)	10.00 tn	0.500	3.00 mh	121	6,936	-	-	1,259	-	7.05	10,655		
		6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL 760)	1,512.00 lf	0.200	302.40 mh	2,481	2,674	-	-	478	-	23.12	5,611		
1081 Crushed Stone, Bedding 5" Depth	285.00 tn	0.500	143.00 mh	3,499	580	-	-	81	-	2.55	3,002				
6" Dia Perforated HDPE Drain (EL 760)	1,176.00 sq	0.021	24.19 mh	580	2,341	-	-	373	-	6.51	1,457				
1081 Crushed Stone	224.00 cy	0.200	44.80 mh	1,084	1,884	-	-	484	-	8.99	1,510				
Geotextile Woven Monofilament	168.00 cy	0.250	42.00 mh	1,016	1,016	-	-	-	-	31.500	13,500				
Cut For Underdrain System	1.00 ls	-	-	-	-	-	-	457,884	-	-	457,884				
Backfill For Underdrain System	1.00 ls	-	-	-	-	-	-	796,284	-	-	796,284				
OUOC For Construction Of Disposal Facility	1.00 ls	-	-	-	-	-	-	592,014	-	-	592,014				
PH 2 Base Construct					2,305,618	2,305,618	592,014	796,284	1,970,040	31,500	5,695,456	5,695,456			
17					83,395.31 hrs	83,395.31 hrs	592,014	796,284	1,970,040	31,500	5,695,456	5,695,456			
9	Temp Slope Protect	Cut For Ditch (5.815 boy)	6,978.00 cy	1,200.000	5.82 cd	9,228	-	-	11,804	-	3.01	21,032			
		D30 9" Riprap	4,239.00 ln	0.320	1,356.48 mh	33,926	42,390	-	-	21,409	-	23.05	97,724		
		Seed Ditch	6,978.00 sq	-	-	-	-	-	-	3,489	-	0.50	3,489		
		Temp Slope Protect	6,978.00 sq	0.012	83.74 mh	2,007	4,763	-	-	419	-	1.12	7,799		
		18					1,765.86 hrs	1,765.86 hrs	47,763	3,489	33,632	130,045	130,045		
							1,765.86 hrs	1,765.86 hrs	47,763	3,489	33,632	130,045	130,045		
		9	Riprap Stilling Basin	Riprap D50 Size 9"	2,344.00 tn	0.320	750.00 mh	18,760	23,440	-	-	11,898	-	23.05	54,038
				Cut For Basin (3.562 boy)	4,300.00 cy	1,200.000	3.56 cd	5,666	24,448	-	-	7,214	-	3.01	12,980
				Riprap Stilling Basin	1,334,496.00 cy	-	-	-	-	-	-	19,112	-	66,998	66,998
				19					24,448	23,440	19,112	19,112	-	66,998	66,998
10	PH 2 Initial Constr	Dredge Ash	451,295.00 cy	-	-	-	-	-	690,933	-	1.53	690,933			
		Initial Disposal Life	0.90 yrs	-	-	-	-	-	-	-	-	0.00	0		
		Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	33,906	11,995	-	-	6,136	-	7.05	51,936		
		Geotextile For Underdrain	6,142.00 sq	0.021	125.34 mh	3,029	12,225	-	-	421	-	2.55	15,679		
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,492.00 tn	0.150	223.80 mh	5,414	13,316	-	-	1,895	-	13.80	20,565		
		Solid Outlet Pipe ADS Drain 6" Diameter	1,658.00 lf	0.200	331.60 mh	7,665	2,698	-	-	1,300	-	7.05	11,684		
		#57 Stone For Outlet Pipe Bedding (135 pcf)	336.00 tn	0.150	50.40 mh	1,219	2,966	-	-	420	-	13.80	4,638		
		PH 2 Initial Constr					51,073	43,237	690,933	10,222	-	-	795,465		
		20					2,206.14 hrs	2,206.14 hrs	43,237	690,933	10,222	-	795,465		
		12	PH 2 Operational Cost	Stage 1 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0	
Compacted Fly Ash, Dike FTL (50% F.A. & 50% B.A.)	255,189.00 cy			1,300.000	196.30 cd	389,461	-	-	-	388,688	-	3.09	788,149		
Dredge Ash	1,334,496.00 cy			-	-	-	-	-	-	2,043,113	-	1.53	2,043,113		
Stage 1 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs			-	-	-	-	-	-	-	-	0.00	0		
Perforated Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf			0.200	2,299.00 mh	52,728	19,708	-	-	9,270	-	7.05	81,005		
Geotextile For Underdrain	9,570.00 sq			0.021	197.04 mh	4,724	19,072	-	-	657	-	2.55	24,453		
#57 Stone For Outlet Pipe Bedding (135 pcf)	2,328.00 tn			0.150	349.20 mh	8,447	20,771	-	-	2,910	-	13.80	32,135		
Solid Outlet Pipe ADS Drain 6" Diameter	2,596.00 lf			0.200	517.20 mh	11,092	4,209	-	-	1,163	-	7.05	16,224		
#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 tn			0.150	78.60 mh	1,801	4,677	-	-	655	-	13.80	7,233		
PH 2 Operational Cost							479,423	67,443	2,043,113	404,833	-	-	2,994,312		
22					17,574.59 hrs	17,574.59 hrs	67,443	2,043,113	404,833	-	2,994,312				
13	PH 2 Operational Cost	Stage 2 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	-	-	0.00	0			
		Compacted Fly Ash, Dike FTL (50% F.A. & 50% B.A.)	269,493.00 cy	1,300.000	202.62 cd	412,319	-	-	-	401,198	-	3.09	813,518		
		Dredge Ash	1,509,673.00 cy	-	-	-	-	-	-	2,311,309	-	1.53	2,311,309		
		Stage 2 Disposal Life (Assume Dike & Dredge Ash)	3.70 yrs	-	-	-	-	-	-	-	-	0.00	0		

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount		
DAM	Ph 2 Operational Cost 2017-2009	Perforated Pipe ADS Drain Tube, 6" Diameter	11,805.00 lf	0.200	2,372.00 mh	54,425	19,310	-	9,878	-	7.05	83,613		
		Geotextile For Underdrain	9,888.00 sy	0.021	203.40 mh	4,876	19,667	-	678	-	2.95	25,241		
		#57 Stone For Outlet Pipe Bedding (135 pcf)	2,400.00 tn	0.150	360.45 mh	8,719	21,447	-	3,004	-	13.80	39,370		
		Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200	534.00 mh	12,247	4,345	-	2,223	-	7.05	18,816		
		Ph 2 Operational Cost	541.00 tn	0.150	81.15 mh	1,963	4,828	-	676	-	13.80	7,468		
							494,549	69,618	2,311,309	417,658	-	-	3,293,135	
							494,549	69,618	2,311,309	417,658	-	-	3,293,135	
CONST FACILITY	Ph 2 Operational Cost	Stage 3 (3 To 1 Side Slopes)	1.00 lot								0.00	0		
		Compacted Fly Ash Dike Fill (50% F. A. & 50% B. A.)	227,106.00 cy	1.300,000	174.70 cd	355,501	-	345,914	-	3.09	-	701,415		
		Dredge Ash	1,344,916.00 cy						2,059,066		1.93	2,059,066		
		Stage 3 Disposal Life (Assume Dike & Dredge Ash)	3.30 yrs								0.00	0		
		Perforated Pipe ADS Drain Tube, 6" Diameter	10,230.00 lf	0.200	2,046.00 mh	46,925	16,649	-	8,516	-	7.05	72,091		
		Geotextile For Underdrain	8,525.00 sy	0.021	175.36 mh	4,204	16,973	-	565	-	2.95	21,762		
		#57 Stone For Outlet Pipe Bedding (135 pcf)	2,072.00 tn	0.150	310.80 mh	7,318	18,493	-	2,580	-	13.80	28,601		
		Solid Outlet Pipe ADS Drain 6" Diameter	2,302.00 lf	0.200	460.40 mh	10,559	3,747	-	1,916	-	7.05	16,222		
		Ph 2 Operational Cost	468.00 tn	0.150	69.90 mh	1,691	4,159	-	363	-	13.80	5,432		
							426,399	60,021	2,059,066	360,104	-	-	2,905,590	
					426,399	60,021	2,059,066	360,104	-	-	2,905,590			
NON MANUAL	Non-Manual	Mobilize, Drug Test, Misc Other, & Demobilize	1.00 ls	17,489.953	17,489.95 mh	478,700	-	-	257,700	-	736,400.00	736,400		
		Construct Facilities			17,489.95 hrs	478,700	-	-	257,700	-	-	736,400		
					17,489.95 hrs	478,700	-	-	257,700	-	736,400			
NON MANUAL	Non-Manual	Non-Manual	1.00 ls	33,245.000	33,245.00 mh	1,662,250	-	-	-	-	1,662,250.00	1,662,250		
		zNON MANUAL			33,245.00 hrs	1,662,250	-	-	-	-	-	1,662,250		



**KINGSTON FOSSIL PLANT  
OPTION 6 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)**

KIF0509306FLY&BOTM ASH

DAN SMITH

C. L. Toney

KIF 4Q 2004

TVA Equipment

Ash

KIF

0500303

KIF530

Dan Smith

8

0

2

Preliminary

4/- 20%

12/20/2004

Capital

N

Notes  
Dry ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2. Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow;

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (Incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required

Report format

Sorted by 'Location/Activity/Outage Seq'  
Detail' summary

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
Capital	Erosion Controls P		Erect Sill Fence	1,000.00 lf	0.069	68.57 mh	1,994	502	317			2.61	2,813	
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sq	0.016	68.80 mh	1,993	5,772	175	7,911			1.84	7,911
			D50 9" Riprap	5,215.00 ln	0.320	1,688.80 mh	49,997	53,037	26,965	128,569			24.65	128,569
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 ln	0.096	192.38 mh	6,056	16,190	3,066	27,312			13.63	27,312
			Sig 1-6 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 Ft/Ea)	4.00 ea	186.084	64.33 mh	20,450	2,795	10,860.64	43,443			10,860.64	43,443
			Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 box	52.00 cy	0.400	20.80 mh	599	177	14,511	778			14.51	778
			Fill With 1032 Compacted/Crushed Stone	63.00 ln	1.107	37.20 mh	804	599	26,999	2,510			26.99	26,999
			30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	17,487	3,962	47,611	47,611			47.61	47,611
			Bedding For 30" CMP, 6" Thick	135.00 ln	0.500	97.50 mh	1,943	230	3,457	3,457			25.61	3,457
			30" Diameter CMP Stand Pipe (4Pipes @ 6 Stages w/30" Per Stage)	720.00 lf	0.750	540.00 mh	16,923	19,038	2,278	37,940			52.70	37,940
D50 9" Riprap Outlet For Metal Spillway	53.00 ln	0.320	16.96 mh	505	539	1,317	1,317			24.85	1,317			
Galvanized Compacted Metal Anti-Seep Collar	16.00 ea	16.000	256.00 mh	7,481	4,882	869.59	316,569			869.59	316,569			
Erosion Controls P			4,201.35 hrs	125,853	150,687	42,029	316,569					316,569		
01			4,201.35 hrs	125,853	150,687	42,029	316,569					316,569		
Seed/Mulch														
Capital	Seed/Mulch Disturbed Areas		26.00 ac				64,619				2,465.34	64,619		
Capital	Seed/Mulch						64,619					64,619		
02							64,619					64,619		
Capital	1032 Crushed Stone Base, 6" Depth		3,520.00 ln	0.120	422.40 mh	13,739	31,850	4,137			14.16	46,836		
Capital	South Access Road						31,850	4,137				46,836		
03							31,850	4,137				46,836		
Capital	1032 Roller Compacted Crushed Stone Base, 6" Depth		6,885.00 ln	0.120	826.20 mh	26,872	62,493	8,112			14.16	97,478		
Capital	Perimeter Road						62,493	8,112				97,478		
04							62,493	8,112				97,478		
O & M	Drq Call/P1 Opr Cost		1.00 lot	1,100.000	4,978.25 cd	10,903.210					0.00	10,903.210		
			5,275.000.00 cy	319.869	1,019.85 cd	531.859					0.00	531.859		
			12.90 yd								0.00			
			0.50 mile								0.00			
O & M	Drq Call/P1 Opr Cost													
Capital	Clear And Grub		1.00 lot								0.00	0		
Capital	Clear And Grub		90.00 ac											
Capital	Strip 1 If Vegetation And Topsoil - Spoil At Stockpile		128,000.00 cy	0.020	6,480.00 mh	193,775	160,944	16,138			3,841.32	354,719		
Capital	Gypsum Silt Penetrants										1.25	16,138		
07														
Capital	Erect Sill Fence (Trench Bottom Of Fence, 10% Hay Bales)		4,900.00 lf	0.069	335.98 mh	9,769	2,482	1,954			2.51	13,764		
Capital	Cut For Stormwater Runoff Pond (2,000 bcy)		2,400.00 cy	800.000	3.00 cd	3,199	2,535	2,399			2.39	5,724		
Capital	Fill For Stormwater Runoff Pond (2,300 bcy)		2,750.00 cy	393.333	7.20 cd	3,639	2,950	6,189			2.24	6,189		
Capital	Riprap For Stormwater Runoff Pond (12,000 bcy)		14,400.00 cy	1,904.000	7.56 cd	22,757	24,745	47,482			3.30	47,482		
Capital	Pipe Bedding		4,300.00 ln	0.200	860.00 mh	25,995	43,731	19,441			20.41	87,767		
Capital	72" Dia CMP For Culvert Structure		20.00 ln	0.500	10.00 mh	289	34	26.03			26.03	521		
Capital	48" Dia CMP For Riser For Outlet Structure		6.00 lf	2.000	12.00 mh	337	1,951	376.24			376.24	2,267		
Capital	Cut, Holes In Riser		150.00 lf	0.620	93.00 mh	214	734	170.64			70.37	1,195		
Capital	Composite Concrete For Riser Base (Assume 7' x 7' x 2')		3.00 ea	1,000	3.00 mh	74	10,000	592			29.92	10,592		
Capital	Anti-Seep Collars (Assume Concrete)		4.00 cy	10,000	40.00 mh	1,294	16,984	555.30			555.30	20,221		
Capital	Erosion Controls		7.00 ea	75,000	2,763.38 hrs	88,992	62,480	51,777			3,447.80	201,216		

Location	Activity	Outlay Tag	Description (U)	Takeoff Quantity	Labor Productivity	Labor Quantity	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost/Unit	Total Amount
		08				2,763.38 hrs	62,480		51,777			201,219
	Roads	Capital	Bottom Ash (South Access Road)	2,400.00 cy	1,904.000	1.26 cd	3,652		3,118		2.57	6,170
			Crushed Stone Base (South Access Road)	2,900.00 ln	0.120	348.00 mh	26,323		3,417		14.16	41,056
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 ln	0.120	40.80 mh	3,086		401		14.16	4,914
			Roads			479.56 hrs	29,409		6,935			52,042
		09				479.56 hrs	29,409		6,935			52,042
	Fencing	Capital	New Fencing (Including Grounding)	200.00 lf				4,211			21.05	4,211
			Personal Swingline Gate	1.00 ea				370			369.72	370
			Sliding Gate, 20 Ft Wide, With Motorized Operator	1.00 ea				17,459			17,459.00	17,459
			Fencing					22,039				22,039
		10						22,039				22,039
	Seed/Mulch	Capital	Seed/Mulch Disturbed Areas	25.00 ac				62,134			2,485.34	62,134
			Seed/Mulch					62,134				62,134
	Borrow Area Develop	Capital	Disc Future Borrow Area (Assumed For Compacted Clay Material)	20.00 ac		3.33 cd	1,959		854		142.10	2,842
			Seed / Fertilizer / Lime Future Borrow Area	20.00 ac				47,719			2,385.93	47,719
			Borrow Area Develop			53.33 hrs	1,959		664			50,560
		12				53.33 hrs	1,959		664			50,560
	Gypsum Disp Facility	Capital	Disposal Facility Construction	1.00 lot							0.00	0
			Call And Fill Balance (189,719 bcy)	227,653.00 cy	2,800.000	81.31 cd	244,655		265,808		2.24	510,463
			Call & Soil Select Call For Future 1 Ft Clay Layer in Final Cover	145,031.00 cy	1,904.000	76.16 cd	199,178		196,528		2.50	392,707
			Riprap For Ditch (24 Wide x 2' deep)	23,300.00 ln	0.200	4,700.00 mh	239,995		100,781		20.41	479,657
			Ditch For Eriopon (24 Wide x 2' deep)	19,500.00 cy	0.044	320.03 mh	10,911		12,904		3.26	23,916
			Geotextile (If Eriopon Is Used)	19,500.00 cy	0.015	292.50 mh	8,420		995		1.82	35,443
			Perimeter Road Surfacing - Bottom Ash	2,400.00 cy	1,904.000	1.26 cd	3,652		3,118		2.57	6,170
			Perimeter Road Surfacing - Crushed Stone	2,900.00 cy	0.120	348.00 mh	26,323		3,417		14.16	41,056
			Compacted Clay Liner, 6" Lills (339,000 bcy)	406,800.00 ln	1,200.000	339.00 cd	1,452,270		1,068,239		13.20	2,126,295
			Geotextile For Underdrain Pipe	168,000.00 ln	0.096	16,228.00 mh	80,954		257,040		15.20	2,173,016
			8" Dia. HDPE SDR17 Perforated Pipe	5,700.00 cy	0.011	59.85 mh	7,008		203		1.67	9,345
			8" Dia. HDPE Standard Fittings	6,400.00 lf	0.200	1,280.00 mh	34,935		5,439		7.96	50,967
			Concrete Anchors For Underdrain Piping	85.00 ea	0.200	10.00 mh	407				13.10	565
			Proctor Subgrade	70.00 ac	12,500	1,622.50 mh	10,157		2,778		559.59	47,399
			Gypsum Disp Facility			66,392.74 hrs	1,772,388		1,961,331		179.67	5,925,652
		13				66,392.74 hrs	1,772,388		1,961,331			5,925,652
	Gyp On Peninsula Cst	Capital	Allowance For Karst Geologic Features	1.00 ls				245,480			245.4800	245,480
			Addition Geotechnical Investigation	1.00 ls				102,700			102.7000	102,700
			Capital					349,180				349,180
	O & M		Call For Underdrain System	4,407.00 cy	0.200	881.40 mh	25,372		7,492		7.46	33,364
			6" Dia Perforated HDPE Perimeter Underdrains	58,491.00 lf	0.200	11,698.20 mh	324,733		50,571		7.96	473,710
			Fill For Underdrain System	3,525.00 cy	0.250	881.25 mh	25,963		10,571		10.20	35,339
			1081 Crushed Stone, 6" Depth (110 pcd)	3,272.00 ln	0.150	490.80 mh	14,128		4,172		14.67	47,999
			Call For Lateral Outlet Pipes	551.00 cy	0.200	110.20 mh	3,172		997		7.46	4,199
			8" Dia Non-Perforated HDPE Lateral Outlet Pipes	7,436.00 lf	0.200	1,487.20 mh	40,590		6,314		7.96	59,212
			Fill For Lateral Outlet Pipes	441.00 cy	0.250	110.25 mh	3,174		1,332		10.20	4,496
			1081 Crushed Stone, 6" Depth (110 pcd)	499.00 ln	0.150	81.35 mh	3,712		551		14.67	6,000
			Gypsum Disposal Stack (Wet Sludge)	5,535,653.00 cy							0.00	0
			Wet Cast Gypsum Gypsum Dike	1,011,347.00 cy							2.65	2,676,517
			Call Form Ditches	114,593.00 cy							2.65	303,217
			Life Of Gypsum Disposal Stack	20.00 yrs							0.00	0
			C & M			39,640.32 hrs	1,320,101		2,179,787			3,644,078
			Gyp On Peninsula Cst			39,640.32 hrs	1,320,101		2,179,787			3,993,235

616,200



Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Construction Parking	14				39,940.32 hrs	1,320,101	144,187	349,180	2,179,787			3,993,255
	Capital		Sill Fence	1,000.00 lf	0.020	20.00 mh	526	320				0.85	946
			Cut And Fill Balance (500 boy)	600.00 cy	2.800	0.21 cd	645			791		2.24	1,345
			Cut & Spoil Additional Material	400.00 cy	1.904	0.21 cd	459	12,707		542		2.90	1,001
			Crushed Stone Base	1,400.00 ln	0.120	188.00 mh	5,464	18,028		1,650		14.16	19,321
			Capital			220.30 hrs	7,093	13,028		2,892			23,013
			Construction Parking			220.30 hrs	7,093	13,028		2,892			23,013
		15				220.30 hrs	7,093	13,028		2,892			23,013
	Ph 2 Base Construct												
	Capital		Base Layers	1.00 lot	1,300.000	441.27 cd	1,089,579			891,223		0.00	1,980,802
			Compacted Fly Ash Base (F1)	573,650.00 cy	1,300.000	6.30 cd	5,953	440,312		12,150		3.42	689,391
			Proofing Subgrade	177,100.00 sy	28,111.100	117.47 cd	284,477	40,942		7,972		3.78	96,533
			2.5" Thick Bottom Ash Layer	152,717.00 cy	1,300.000	1,825.74 mh	49,829			1,972		7.45	6,950
			0.5" Thick Fly Ash Filter Layer	30,543.00 cy	1,300.000	232.00 mh	6,678			14,930		1.27	29,958
			18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 boy)	15,920.00 lf	800.000	28.70 cd	14,128			3,330		17.13	10,949
			Roller Tilt Fly Ash Layer	177,100.00 sy	1,400.000	397.44 mh	11,441			9,835		3.42	21,275
			Bottom Ash Dike Fill	0.00 cy	1,300.000	18.05 cd	45,899			38,281		3.79	42,080
			1.0" Layer Of Bottom Ash	61,087.00 cy	1,300.000	1,948.00 mh	52,720	82,694		4,712		3.96	140,126
			Geotextile Fabric Underlain	183,290.00 sy	0.925	889.20 mh	26,998	5,196		4,200		7.96	39,394
			4" Diameter Poly Lined PVC Pipe Underlain) SDR 17.5	26,092.00 lf	0.070	150.15 mh	4,322	8,344		288		2.68	11,051
			Trapping For The Drain System (4" Dia Underdrain) 566 boy	1,150.00 cy	0.150	10.15 mh	2,677	9,086		1,276		14.67	14,984
			Strip Edge 1" Soil Center (Phase 1 Extension), 19,133 boy	1,320.00 cy	0.200	247.20 mh	6,747	2,046		1,050		7.96	9,842
			Anchor Trench Cut	1,320.00 cy	0.200	37.50 mh	1,079	2,289		319		14.67	3,967
			Anchor Trench Fill & Compact	1,320.00 cy	0.320	80.46 mh	1,643			256		7.96	2,405
			2.0" Thick Bottom Ash Blanket Drain	24,640.00 cy	1,300.000	5.00 mh	144			1,284		25.61	266
			1.0" Thick Filter Drain/Ash Layer	12,320.00 cy	1,300.000	302.46 mh	8,253	2,603		487		7.96	12,340
			Geomembrane Underlain	36,960.00 sy	0.950	143.00 mh	4,118	2,720		92		25.61	7,323
			Perforated Pipe ADS Drain Tube, 8" Diameter	4,121.00 sy	0.921	84.77 mh	2,419			1,284		7.46	1,970
			Geotextile For Underlain	1,001.00 ln	0.150	10.15 mh	2,677	9,086		1,276		2.68	11,051
			#57 Stone For Outlet Pipe Bedding (135 pcf)	1,236.00 lf	0.200	247.20 mh	6,747	2,046		1,050		7.96	9,842
			Solid Outlet Pipe ADS Drain 8" Diameter	250.00 ln	0.150	37.50 mh	1,079	2,289		319		14.67	3,967
			#57 Stone For Outlet Pipe Bedding (135 pcf)	10.00 lf	0.200	80.46 mh	1,643			256		7.96	2,405
			8" Dia Non-Fer HDPE Corrugated Tubing Lateral Outlet Pipe (EL 760)	1,512.00 lf	0.500	5.00 mh	17			1,284		25.61	266
			108" Crushed Stone Bedding 6" Depth	296.00 sy	0.200	143.00 mh	4,118	2,720		92		7.96	12,340
			8" Dia Perforated HDPE Drain (EL 760)	1,176.00 sy	0.500	5.00 mh	17			1,284		25.61	266
			108" Crushed Stone	224.00 sy	0.200	44.80 mh	1,290			504		10.20	1,713
			Geotextile Woven Nonreinforcement	198.00 cy	0.250	42.00 mh	1,209			504		31.500	31,500
			Cut For Underdrain System	100.15								470.248	470,248
			Backfill For Underdrain System									31,500	31,500
			Certification									470.248	470,248
			QA/QC For Construction Of Disposal Facility									31,500	31,500
			Capital									470.248	470,248
			Ph 2 Base Construct									31,500	31,500
			17			61,445.61 hrs	2,009,405	602,078	817,784	1,416,313			4,877,080
			Temp Slope Protect			61,445.61 hrs	2,009,405	602,078	817,784	1,416,313			4,877,080
			Capital										4,877,080
			Cut For Ditch (5.815 boy)	6,978.00 cy	1,200.000	5.82 cd	10,981			12,041		3.30	23,022
			D50 # Riprap	4,239.00 ln	0.920	1,595.48 mh	40,371	43,111		21,657		24.86	109,319
			Seed Ditch	6,978.00 sy						3,583		0.51	3,583
			Julie Malling	6,978.00 sy	0.012	83.74 mh	2,389	5,484		427		1.19	6,280
			Capital										140,204
			Temp Slope Protect										140,204
			18			1,765.86 hrs	53,741	48,575	3,583	34,304			140,204
			Riprap Stilling Basin										140,204
			Capital										140,204
			Riprap D50 Size 6"	2,344.00 ln	0.320	750.06 mh	22,324	23,838		12,075		24.85	58,237
			Cut For Basin (3,562 boy)	4,300.00 cy	1,200.000	3.50 cd	6,767	23,838		1,420		3.30	14,186
			Capital										72,424
			Riprap Stilling Basin										72,424
			19			950.75 hrs	29,091	23,838		19,485			72,424
			Capital										72,424
			Ph 2 Initial Constr										72,424
			O & M										72,424
			Dry Stack Ash Quantities	814,900.00 cy	1,100.000	559.01 cd	1,224,324			821,071		3.33	2,045,395
			Initial Construction Disposal Life (Assume Dry Ash Stack)	1.30 yrs								0.00	0
			O & M										2,045,395
			Ph 2 Initial Constr										2,045,395
			20			40,248.59 hrs	1,224,324			821,071			2,045,395
			Capital										2,045,395
			Ph 2 Operation Cost										2,045,395



Estimate Totals

Labor	20,984,840	955,826,001	hrs			
Material	2,941,113					
Subcontract	27,042,057					
Equipment	22,144,690	853,174,062	hrs			
Other	31,500					
	82,144,000	82,144,000				
Engineered Materials - Ph 2		100,000	%	C		
Adjustment - Engr Materials		(100,000)	%	C		
Environmental Costs		100,000	%	C		
Adjustment Environmental		(100,000)	%	C		
	82,144,000	82,144,000				
FPG Mech Engr - Phase 2	14,888	0.037	% @ 42.00	A	357	
FPG Elec Engr - Phase 2	14,898	0.037	% @ 42.00	A	357	
FPG Civil Engr - Phase 2	30,080	0.075	% @ 42.00	A	716	
Non-TVA Engr - Phase 2	534,039	0.775	% @ 72.00	A	7,417	
FPG Proj Child Cost - Phase 2	888	0.002	% @ 42.00	A	24	
FPG Proj Child Sched - Phase 2	2,039	0.007	% @ 42.00	A	70	
FPG Cost Estimating - Phase 2	880	0.002	% @ 42.00	A	23	
FPG Engr Records - Phase 2	950	0.002	% @ 42.00	A	23	
	600,002	82,744,002				
Rounding		82,744,002				L
<b>Total</b>		<b>82,744,002</b>				

Spreadsheet Report  
KIF/0509306/FLY&BOTTM ASH

KINGSTON FOSSIL PLANT  
OPTION 6 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)

Project name KIF/0509306/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 0509306  
PCN # KIF530  
Requesting Engr Dan Smith  
Option e  
Revision c  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 12/20/2004  
Funding Type Capital  
Unit N

Notes  
Dry ash in pond & gypsum on peninsula (Vel ash in dredge cell/Phase 1, and Phase2, Phase 3 incl. constructed - Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,000 cy annually (including bottom and fly ash) & gypsumash generating 327,300 cy annually
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity/Outage Seq  
Detail summary

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount			
1	Erosion Controls/S P	Capital	Erect Silt Fence	1,000.00 lf	0.069	69.57 mh	1,984	502					2,813			
			Geotextile (Nonwoven) Erosion Protection Channel	4,900.00 sf	0.016	68.80 mh	1,983	5,172						7,913		
			D50 9" Riprap	5,215.00 ln	0.320	1,668.00 mh	49,687	53,037						133,668		
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pct)	2,004.00 ln	0.096	192.38 mh	6,059	18,190						13,633		
			Sig 1-6 CMP W/ Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 F/Ea)	4.00 ea	166.064	664.33 mh	20,450	2,795						10,800.04		
			Cul Excavation For Placement Of 48" Dia Half-Round Pipe @ 43' bcy	52.00 ea	0.400	20.80 mh	599	177						14,911		
			Fill With 1032 Compacted/Crushed Stone	93.00 ln	0.400	37.20 mh	599	2,510						26,990		
			30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	17,487	3,652						47,611		
			Bedding For 30" CMP 6" Thick	135.00 ln	0.500	67.50 mh	1,943	234						25,611		
			30" Diameter CMP Stand Pipe (Pipes @ 6 Stages w/30" Per. Stage)	720.00 lf	0.750	540.00 mh	16,623	2,279						37,940		
			D50 2" Riprap Outlet For Metal Spillway	53.00 ln	0.320	16.96 mh	505	273						1,317		
			Galvanized Corrugated Metal Anti-Seep Collar	16.00 ea	16.000	256.00 mh	7,481	1,571						869.56		
			Erosion Controls/S P			4,201.35 hrs	125,853	150,687							318,569	
01			4,201.35 hrs	125,853	150,687							318,569				
2	Seed/Mulch	Capital	Seed/Mulch Disturbed Areas	28.00 ac		hrs	64,619					2,485.34	64,619			
			Seed/Mulch			hrs	64,619						64,619			
3	South Access Road	Capital	1032 Crushed Stone Base, 6" Depth	3,520.00 ln	0.120	422.40 mh	13,739	31,850				14.16	48,836			
			Capital			422.40 hrs	13,739	31,850					4,147	49,836		
			South Access Road			422.40 hrs	13,739	31,850					4,147	49,836		
4	Perimeter Road	Capital	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,685.00 ln	0.120	802.20 mh	26,872	62,493					89,365			
			Capital			802.20 hrs	26,872	62,493					8,112	97,478		
			Perimeter Road			802.20 hrs	26,872	62,493					8,112	97,478		
						826.20 hrs	26,872	62,493					8,112	97,478		
16	Drg CallP1 Opr Cost	O & M	Elv. 810 To Elv. 866	1.00 lot								0.00	0			
			Dry Ash Stack	5,476.0000 cy	1,000.000	4,978.95 cd	10,903.10						3.33	18,215.257		
			Wet Dip And Slack Bottom Ash Only	978,848.00 cy	375.000	3,619.25 cd	531,659						1,204.903	1,706,563		
			Disposal Life (Assume Dike & Dredge Ash)	12.90 yr										0.00	0	
			Haul Distance (Round Trip)	0.50 mile										0.00	0	
			Drg CallP1 Opr Cost			372,915.76 hrs	11,434,869	8,576,950							20,011,819	
17	Gypsum Silt Penneulas	Capital	Drg CallP1 Opr Cost										20,011,819			
			Clear And Grub	1.00 lot									0.00	0		
			Clear And Grub	80.00 ac										3,941.32		
			Strip 11" Vegetation And Topsoil - Spill At Stockpile	128,000.00 cy	0.020	2,560.00 mh	79,380							1,25	161,610	
			Capital			2,560.00 hrs	79,380							161,610		
			Gypsum Silt Penneulas			9,060.00 hrs	273,155								516,336	
						9,060.00 hrs	273,155								516,336	
						9,060.00 hrs	273,155								516,336	
						9,060.00 hrs	273,155								516,336	
						9,060.00 hrs	273,155								516,336	
						9,060.00 hrs	273,155								516,336	
						9,060.00 hrs	273,155								516,336	
						9,060.00 hrs	273,155								516,336	
						9,060.00 hrs	273,155								516,336	
						9,060.00 hrs	273,155								516,336	
			18	Erosion Controls	Capital	Erect Silt Fence (Trench Bottom Of Fence, 10% Hay Bales)	4,900.00 lf	0.069	335.99 mh	9,769	2,462					2,813
						Cul For Stormwater Runoff Pond (2,000 bcy)	2,400.00 cy	800.000	3,000 cd	3,199						
Cul For Stormwater Runoff Pond (2,000 bcy)	2,760.00 cy	383.333				7,200 cd	3,639							2,39		
Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00 cy	1,800.000				7,560 cd	22,757							6,199		
Riprap For Stormwater Runoff Pond	4,300.00 ln	0.200				860.00 mh	25,695	43,731						3,30		
Riprap For Stormwater Runoff Pond	20.00 ln	0.500				10.00 mh	288	34						20,411		
72" Dia. CMP For Outlet Structure	6.00 lf	2.000				12.00 mh	337	1,651						26,03		
48" Dia. CMP For Outlet Structure	7.00 lf	1.091				7.64 mh	214	936						375.24		
48" Dia. CMP For Outlet Structure	150.00 lf	0.620				93.00 mh	2,810	7,040						170,64		
Cul Inlets in Riser	4.00 ea	1.000				4.00 mh	74	300						29.92		
Compacted Concrete For Riser Bases (Assume 7 x 7 x 2)	7.00 ea	10.000				40.00 mh	1,294	823						565.30		
Anti-Seep Coners (Assume Concrete)	7.00 ea	75.000				525.00 mh	16,984	62,460						2,221		
Erosion Controls						2,763.38 hrs	86,992	62,460							207,219	
Capital						2,763.38 hrs	86,992	62,460							207,219	
						2,763.38 hrs	86,992	62,460							207,219	
						2,763.38 hrs	86,992	62,460							207,219	
						2,763.38 hrs	86,992	62,460							207,219	
						2,763.38 hrs	86,992	62,460							207,219	
			2,763.38 hrs	86,992	62,460							207,219				
			2,763.38 hrs	86,992	62,460							207,219				

Location	Activity	Outage Seq	Description	Talent Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
9	Roads	08				2,783.38 hrs	86,992	62,480		51,777			201,219
	Capital		Bottom Ash (South Access Road)	2,400.00 cy	1,904.000	1.26 cd	3,052			3,119		2.57	6,170
			Crushed Stone Base (South Access Road)	2,900.00 in	0.120	348.00 mh	11,319	28,323		3,417		14.16	14,656
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 in	0.120	40.80 mh	1,327	3,086		401		14.16	4,184
			Roads			479.56 hrs	15,699	29,409		6,935			52,042
						479.56 hrs	15,698	29,409		6,935			52,042
0	Fencing	09				479.56 hrs	15,698	29,409		6,935			52,042
	Capital		New Fencing (Including Grounding)	200.00 lf			4,211					21.05	4,211
			Personnel Swinging Gate	1.00 ea			210					17,458.00	17,459
			Sliding Gate, 20 Ft Wide, With Motorized Operator	1.00 ea			22,039					22,039	22,039
			Fencing				22,039					22,039	22,039
1	Seed/Mulch	10					22,039						22,039
	Capital		Seed/Mulch Disturbed Areas	25.00 ac			62,134					2,485.34	62,134
			Seed/Mulch				62,134					2,485.34	62,134
2	Borrow Area Develop	11					62,134						62,134
	Capital		Disc Future Borrow Area (Assumed For Compacted Clay Material)	20.00 ac	6.000	3.33 cd	1,958					142.10	2,842
			Seed/Fertilizer/Lime Future Borrow Area	20.00 ac			47,719					2,385.93	50,560
			Capital				1,958					884	884
			Borrow Area Develop				1,958					884	884
3	Gypsum Disp Facility	12					1,958						1,958
	Capital		Disposal Facility Construction	1.00 lot			244,655					0.00	244,655
			Cut And Fill Balance (189,719 bcy)	277,653.00 cy	2,800.000	81.31 cd	166,778					2.24	382,707
			Cut & Spoil Sited Cut For Future 1 Ft Clay Layer In Final Cover	145,000.00 cy	1,904.000	76.16 cd	139,861					2.50	479,657
			Riprap For Ditch	7,300.00 lf	0.044	4,700.00 mh	10,911	238,995		12,904		20.41	479,657
			Ditch For Riprap (24' wide x 2' deep)	19,500.00 lf	0.015	320.00 mh	8,200	28,029		885		3.26	23,916
			Geotextile (If Riprap Is Used)	2,400.00 lf	1,904.000	1.26 cd	3,052					2.57	35,443
			Perimeter Road Surfacing - Bottom Ash	2,800.00 lf	1,200.000	11.319	28,323					14.16	41,056
			Compacted Clay Liner, 6" Ulis (339,000 bcy)	408,000.00 cy	0.096	338.00 cd	1,020,046	1,452,276		1,108,239		5.23	2,228,285
			Drainage Layer (1 Ft Thick) For Liner (No. 57 Stone)	168,000.00 cy	0.011	16,128.00 mh	507,884			257,040		13.20	2,417,010
			Geotextile For Underdrain Pipe	5,700.00 lf	0.200	59.85 mh	1,233	7,008		203		1.87	9,535
			8" Dia. HDPE SDR 17 Perforated Pipe	5,400.00 lf	0.200	1,280.00 mh	34,935	10,593		5,439		7.96	50,967
			8" Dia. HDPE Standard Filings	85.00 ea		10.00 mh	248	407				13.10	665
			Concrete Anchors For Underdrain Piping	70.00 ea		1,082.50 mh	34,373	10,157		2,778		556.59	47,309
			Proctor Subgrade			10.00 cd	8,467					179.67	12,577
			Capital				2,191,934	1,772,388		1,961,331		5,925.652	5,925,652
			Gypsum Disp Facility				66,392.74 hrs	1,772,388		1,961,331		5,925.652	5,925,652
							66,392.74 hrs	1,772,388		1,961,331		5,925.652	5,925,652
4	Gyp On Peninsulas Cst	13					2,191,934	1,772,388		1,961,331			5,925,652
	Capital		Allowance For (Best) Geologic Features	1.00 ls			246,480					246,480.00	246,480
			Addition Geotechnical Investigation	1.00 ls			102,700					102,700.00	102,700
			Capital				349,180					349,180	349,180
	O & M		Cut For Underdrain System	4,407.00 cy	0.200	881.40 mh	25,372					7.46	32,864
			8" Dia Perforated HDPE Perimeter Underdrains	59,481.00 lf	0.250	11,898.20 mh	324,733	88,466		50,571		7.96	473,778
			Fill For Underdrain System	3,595.00 cy	0.150	480.80 mh	14,128	29,896		4,172		10.20	35,939
			108" Crushed Stone, 5' Depth (110 pcf)	55,100.00 lf	0.200	110.20 mh	3,172	12,308		6,314		14.67	47,998
			Cut For Lateral Outlet Pipes	7,436.00 lf	0.250	1,487.20 mh	40,950					7.96	59,212
			8" Dia Non-Perforated HDPE Lateral Outlet Pipes	44,100.00 lf	0.150	61.85 mh	1,168	3,712				10.20	4,486
			Fill For Lateral Outlet Pipes	409.00 lf								14.67	6,000
			108" Crushed Stone, 5' Depth (110 pcf)									0.00	0
			Gypsum Disposal Stack (Wet Sludge)	5,535,653.00 cy			782,985					2.65	2,676,517
			Wet Cast Gypsum Gypsum Dike	1,011,347.00 cy			89,133					2.65	303,221
			Cut Rim Ditches	114,575.00 cy			1,320,101					0.00	3,644,075
			O & M				1,320,101					0.00	3,644,075
			Life Of Gypsum Disposal Stack	20.00 yrs			38,940.32 hrs	144,187				38,940.32 hrs	3,952,255
			Gyp On Peninsulas Cst				1,320,101					38,940.32 hrs	3,952,255



Location	Activity	Outage Set	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	O & M		Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,588,895.00 cy	1,100,000	1,445.17 cd	3,165,166			2,122,663		0.00	0
			Stage 1 Disposal Life (Assume Dry Stack Area)	3.30 yrs								0.00	0
			Haul Distance (Round Trip)	0.50 mile								0.00	0
			O & M			104,652.11 hrs	3,165,166			2,122,663		0.00	5,287,829
			Ph 2 Operational Cost			104,652.11 hrs	3,165,166			2,122,663		0.00	5,287,829
			22			104,652.11 hrs	3,165,166			2,122,663		0.00	5,287,829
			Ph 2 Operational Cost									0.00	0
			O & M			1,445.17 cd	3,530,309			2,367,540		0.00	5,897,849
			Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,773,076.00 cy	1,100,000	1,611.89 cd	3,530,309			2,367,540		0.00	5,897,849
			Stage 2 Disposal Life (Assume Dry Stack Area)	3.70 yrs								0.00	0
			O & M			116,656.88 hrs	3,530,309			2,367,540		0.00	5,897,849
			Ph 2 Operational Cost			116,656.88 hrs	3,530,309			2,367,540		0.00	5,897,849
			23			116,656.88 hrs	3,530,309			2,367,540		0.00	5,897,849
			Ph 2 Operational Cost									0.00	0
			O & M			1,428.11 cd	3,129,998			2,099,076		0.00	5,229,076
			Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 1,974,022.00 cy	1,100,000	1,428.11 cd	3,129,998			2,099,076		0.00	5,229,076
			Stage 3 Disposal Life (Assume Dry Stack Area)	3.30 yrs								0.00	0
			O & M			102,895.99 hrs	3,129,998			2,099,076		0.00	5,229,076
			Ph 2 Operational Cost			102,895.99 hrs	3,129,998			2,099,076		0.00	5,229,076
			24			102,895.99 hrs	3,129,998			2,099,076		0.00	5,229,076
			Ph 2 Operational Cost									0.00	0
			Dry Fly Ash Conver									0.00	0
			* unassigned									0.00	0
			Dry Fly Ash Conversion Capital Cost	1.00 lot					25,675,000			25,675,000.00	25,675,000
			* unassigned -						25,675,000			25,675,000.00	25,675,000
			Dry Fly Ash Conver						25,675,000			25,675,000.00	25,675,000
			25						25,675,000			25,675,000.00	25,675,000
			Ph 2 Operational Cost									0.00	0
			Capital									0.00	0
			Construct Facilities									0.00	0
			Non-Manual									0.00	0
			Non Manual									0.00	0



Estimate Totals

Labor	28,840,267	824,680,126	hrs	
Material	2,041,113			
Subcontract	27,042,057			
Equipment	21,958,490	647,681,437	hrs	
Other	31,500			
	<u>80,613,427</u>	80,613,427		
Engineered Materials - Ph. 2		100,000 %		
Adjustment - Engr Materials		(100,000) %		
		80,613,427		
Environmental Costs		100,000 %		
Adjustment Environmental		(100,000) %		
		80,613,427		
FPG Mech Engr - Phase 2	19,380	0.050 % @	42.00 A	461
FPG Elec Engr - Phase 2	19,380	0.050 % @	42.00 A	461
FPG Civil Engr - Phase 2	33,543	0.087 % @	42.00 A	806
Non-TVA Engr - Phase 2	1,246,083	1.870 % @	72.00 A	17,293
FPG Proj Cntrl Cost - Phase 2	924	0.002 % @	42.00 A	22
FPG Proj Cntrl Sched - Phase 2	2,789	0.007 % @	42.00 A	66
FPG Cost Estimating - Phase 2	924	0.002 % @	42.00 A	22
FPG Engr Records - Phase 2	924	0.002 % @	42.00 A	22
	<u>1,323,227</u>			
Rounding				
	81,936,654			
<b>Total</b>	<b>81,936,654</b>			

30.27/mh  
33.90/eh

4,835,480  
x 11%

531,900

L=65% \* 345,700 11/6/05

E=35% \* 186,200 11/27/05

159,744

x 112%

199,770

14,998

14,998

30,086

5,241,057

15,000,000

1,277,000

9,800

KINGSTON FOSSIL PLANT  
OPTION 6 - DRY ASH IN POND & GYPSUM ON PENINSULA  
(WITH BUFFER OPTION)

Project name KIF/0509306/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Plant  
Estimate # 0509306  
PCN # KIF530  
Requesting Engr Dan Smith  
Revision 6  
Phase 0  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 12/20/2004  
Funding Type Capital  
Unit N

Notes

Dry ash in pond & gypsum on peninsula (Wet ash in dredge cell/Phase 1, and Phase2. Phase 3 not constructed. Gypsum on peninsula).

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (Incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by Location/Activity  
Detail summary

Spreadsheet Report  
KIF:0509306/FLY&BOTTM ASH

ADJUST COLUMNS 10 INCREASE  
FSCALATION  
L=1970 M=1.76 SUB 2.776 EQPT 2.2

(CARTON DATA)

Location	Activity	Description	Takeoff Quantity	Units	Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
1	Erosion Controls/S P	Erect Silt Fence Geotextile (Nonwoven) Erosion Protection Channel D50 9" Riprap 3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf) Sig L-6 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 Ft(Ea) Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 boy Fill With 1032 Compacted/ Crushed Stone 30" Diameter CMP Culvert Bedding For 30" CMP, 6" Thick D30 9" Riprap Outlet For Metal Spillway Galvanized Corrugated Metal Anti-Sleep Collar Erosion Controls/S P 01	1,000.00 lf 4,300.00 sy 5,215.00 tn 2,004.00 tn 4.00 ea 52.00 cy 93.00 tn 1,000.00 lf 135.00 tn 720.00 lf 53.00 tn 16.00 ea		0.089 0.016 0.320 0.086 166.084 0.400 0.400 0.600 0.500 0.750 16.000	68.57 mh 68.80 mh 1,698.80 mh 192.36 mh 664.33 mh 20.80 mh 37.20 mh 600.00 mh 67.50 mh 540.00 mh 46.86 mh 226.00 mh 4,201.35 hrs	1,675 1,649 41,737 5,089 17,765 593 930 14,695 1,633 13,959 424 4,800 105,159 105,759	494 172 52,150 17,886 19,860 791 29,000 225 2,235 268 1,540 41,205 148,168 148,168			2.48 1.74 23.05 12.96 9,846.25 13.01 24.82 44.30 31.21 34,563 23.05 768.12 295.132 295.132	2,480 7,487 20,225 25,981 39,785 676 2,308 44,304 3,121 34,563 12,610 295.132 295.132	
2	Seed/Mulch	Seed/Mulch Disturbed Areas Seed/Mulch 02	26.00 ac			0.00 hrs 0.00 hrs	0 0	0 0	62,920 62,920			2,420.00	62,920 62,920 62,920
3	South Access Road	1032 Crushed Stone Base, 6" Depth South Access Road 03	3,520.00 tn		0.120	422.40 mh 422.40 hrs 422.40 hrs	11,545 11,545 11,545	31,416 31,416 31,416				13.36	47,027 47,027 47,027
4	Perimeter Road	1032 Roller Compacted Crushed Stone Base, 6" Depth Perimeter Road 04	6,885.00 tn		0.120	826.20 mh 826.20 hrs 826.20 hrs	22,582 22,582 22,582	61,449 61,449 61,449				13.36	91,983 91,983 91,983
6	Dig Call/P1 Opr Cost	Elv. 810 To Elv. 866 Dry Ash Slack Wet Dip And Slack Bottom Ash Only Disposal Life (Assume Dike & Dredge Ash) Haul Distance (Round Trip) Dig Call/P1 Opr Cost 06	1.00 lot 5,476,070.00 cy 679,848.00 sy 12.90 yr 0.50 mile		1,100.000 375.000	4,878.25 cd 1,810.26 cd	9,182.361 446,773					0.00	16,331,035 1,686,874 1,686,874 0 0 18,017,909 18,017,909
7	Gypsum Silt Peninsula	Clear And Grub Clear And Grub Strip 1 ft Vegetation And Topsoil - Spoil At Stockpile Gypsum Silt Peninsula 07	1.00 lot 90.00 ac 129,000.00 cy		72.000 0.020	6,480.00 mh 2,580.00 mh 9,060.00 hrs 9,060.00 hrs	162,836 66,706 229,542 229,542					0.00	3,562,49 147,331 147,331 467,955 467,955
8	Erosion Controls	Erect Silt Fence (Trench Bottom Of Fence, 10% Hay Bales) Cut For Stormwater Runoff Pond (2,000 bcy) Cleanup Stormwater Runoff Pond (2,300 bcy) Fill For Stormwater Runoff Pond (12,000 bcy) Riprap For Stormwater Runoff Pond Pipe Bedding 72" Dia. CMP For Outlet Structure 48" Dia. CMP For Riser For Outlet Structure 48" Dia. CMP Outlet Pipe (Principle Spillway) Cut Holes In Riser Composite Concrete For Riser Base (Assume 7' x 7' x 2') Anti-Sleep Collars (Assume Concrete) Erosion Controls 08	4,900.00 lf 2,400.00 sy 2,760.00 cy 14,400.00 cy 4,300.00 tn 20.00 tn 6.00 lf 7.00 lf 3.00 ea 7.00 ea	0.069 800.000 383.333 1,904.000 0.200 0.500 2.000 1.091 0.820 1.000 10.000 75.000	335.99 mh 3.00 cd 7.20 cd 7.56 cd 860.00 mh 10.00 mh 12.00 mh 7.64 mh 93.00 mh 3.00 mh 525.00 mh 2,763.38 hrs	8,209 2,688 3,226 19,124 21,509 242 283 2,193 63 1,087 14,273 73,077 73,077	2,421 2,475 2,304 24,240 19,21 23,54 69 44 531 15 103 61,436 61,436				2.46 2.15 2.00 3.01 82,588 6,471 361.90 163.40 66.70 29.86 499.70 2,944.23	2,12,153 5,164 5,590 43,363 82,588 6,471 361.90 163.40 66.70 29.86 1,999 20,610 50,732 185,274 185,274	
9	Roads	Bottom Ash (South Access Road) Crushed Stone Base (South Access Road) Crushed Stone Base (Permanent Parking Lot, Paved Stone) Roads 09	2,400.00 cy 2,900.00 tn 340.00 tn		1,904.000 0.120 0.120	1.26 cd 348.00 mh 40.80 mh 478.56 hrs	2,585 9,312 1,115 13,192	25,883 3,035 28,917				2.34 13.36 13.36	5,622 38,744 4,542 48,908

Spreadsheet Report  
KIP/0509306/FLY&BOTTIM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Material Amount	Sub-Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
0	Fencing	New Fencing (Including Grounding) Personnel Swingling Gate Sliding Gate, 20 FT Wide, with Motorized Operator Fencing	200.00 lf 1.00 ea 1.00 ea		479.56 hrs	28,917	13,192	6,799			48,908
1	Seed/Mulch	Seed/Mulch Disturbed Areas Seed/Mulch	25.00 ac		0.00 hrs	0	60,500			2,420.00	60,500
12	Borrow Area Develop	Disc Future Borrow Area (Assumed For Compacted Clay Material) Seed / Fertilize / Lime Future Borrow Area Borrow Area Develop	20.00 ac 20.00 ac	6.000	3.33 cd 53.33 hrs	1,645 1,645	46,464 46,464	867 867		125.60 2,323.20	2,512 48,976
13	Gypsum Disp Facility	Disposal Facility Construction Cut And Fill Balance (189,719 bcy) Cut & Spill Select Cut For Future 1 Ft Clay Layer In Final Cover Riprap For Ditch Ditch For Riprap (24" Wide X 2' deep) Geotextile (1 Riprap Is Used) Perimeter Road Surfacing - Bottom Ash Perimeter Road Surfacing - Crushed Stone Compacted Clay Liner, 6" Lifts (939,000 bcy) Drainage Layer (1 Ft Thick) For Liner (No. 57 Stone) Geotextile For Underdrain Pipe 8" Dia. HDPE, SDR 17 Perforated Pipe 8" Dia. HDPE Standard Fittings Concrete Anchors For Underdrain Piping Profile/Subgrade Gypsum Disp Facility	1.00 lot 227,563.00 cy 145,001.00 cy 23,500.00 tn 7,300.00 lf 19,500.00 sy 2,400.00 sy 2,900.00 tn 408,800.00 cy 198,000.00 tn 5,700.00 sy 5,400.00 lf 50.00 ea 85.00 ea 70.00 ac	2,800.000 1,904.000 0.200 0.044 0.015 1,904.000 0.120 1,200.000 0.086 0.011 0.200 0.200 12.500 7.000	61.31 cd 78.16 cd 4,700.00 mh 320.03 mh 292.50 mh 1.26 cd 348.00 mh 16,128.00 mh 59.65 mh 1,280.00 mh 19.00 mh 1,062.90 mh 10.00 cd 66,392.74 hrs 66,392.74 hrs	205,593 139,616 17,847 9,659 7,076 2,565 9,512 857,182 426,634 1,426,000 7,481 29,357 209 28,685 7,140 1,841,961 1,841,961		260,596 192,675 98,605 12,651 875 3,957 3,390 1,086,509 252,000 200 5,333 4,000 1,922,873 1,922,873	0.00 2.05 2.29 19.21 2.99 1.73 3.34 13.36 4.78 7.94 1.60 7.05 12.17 489.37 159.14	0 466,189 332,320 451,352 21,821 33,644 5,622 38,744 1,843,690 2,108,634 3,129 45,106 41,597 1,140 5,507,585 5,507,585	
14	Gyp On Peninsula Cst	Cut For Underdrain System 6" Dia Perforated HDPE Perimeter Underdrains Fill For Underdrain System 1081 Crushed Stone, 6" Depth (110 pcf) Cut For Lateral Outlet Pipes 6" Dia Non-Perforated HDPE Lateral Outlet Pipes Fill For Lateral Outlet Pipes 1081 Crushed Stone, 6" Depth (110 pcf) Gypsum Disposal Stack (Wet Sluice) Wet Cast Gypsum, Gypsum Dike Cut Rim Ditches	4,407.00 sy 59,491.00 lf 3,625.00 cy 3,275.00 tn 551.00 sy 7,435.00 lf 441.00 sy 408.00 tn 5,535,853.00 cy 1,011,347.00 sy 114,575.00 sy 20.00 yrs 1.00 ls 1.00 ls	0.200 0.200 0.250 0.150 0.200 0.200 0.250 0.150 375.000 375.000	861.40 mh 11,898.20 mh 881.25 mh 11,872 480.80 mh 110.20 mh 1,487.20 mh 110.25 mh 61.35 mh 2,686.93 cd 305.93 cd	21,321 272,885 21,317 11,872 2,666 34,109 2,867 1,484 665,501 75,406		7,345 49,526 10,364 4,959 918 6,190 1,287 511 1,847,502 209,303	6.51 7.05 31.681 13.80 3.584 7.05 8.99 13.89 0.00 2.49 0.00	26,666 419,233 31,681 45,165 5,622 52,401 1,287 5,646 2,513,103 2,284,706 0	
15	Construction Parking	Life Of Gypsum Disposal Stack Allowance For Karst Geologic Features Addition Geotechnical Investigation Gyp On Peninsula Cst	1,000.00 lf 600.00 cy 400.00 sy 1,400.00 tn	0.020 2,800.000 1,904.000 0.120	20.00 mh 0.21 cd 0.21 cd 168.00 mh	442 542 385 4,592	315	687 532 1,617 2,835	0.76 2.05 2.29 13.36	757 1,229 917 18,704	
17	Base Layers	Compacted Fly Ash Base (Fill) Profile/Subgrade 2.5" Thick Bottom Ash Layer	1.00 lot 573,650.00 cy 177,100.00 sy 152,717.00 cy	1,300.000 28,111.000 1,300.000	441.27 cd 6.30 cd 117.47 cd	897,965 4,498 239,656		873,748 2,920 232,609	0.00 0.04 3.09	0 7,018 471,665	

Spreadsheet Report  
KF/0509306/FLY&BOTT/ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
18	Ph 2 Base Construct	0.5" Thick Fly Ash Filter Layer	30,543.00 cy	1,300,000	23.49 cd	47,811	-	-	48,521	-	3.09	94,332	
		18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	16,920.00 lf	1,400,000	126.50 cd	82,440	-	-	338,400	20,240	-	20.00	338,400
		Root Top Fly Ash Layer	177,100.00 sy	1,300,000	0.00 cd	0	0	-	-	0	-	0.00	0
		Bottom Ash Dike Fill	61,087.00 cy	1,300,000	46.96 cd	95,623	-	-	-	93,044	-	3.09	188,667
		1.0" Layer Of Bottom Ash	183,280.00 sy	0.025	4,764.76 mh	114,226	-	-	-	11,912	-	3.05	595,099
		Geosynthetic Clay Liner	26,082.00 lf	0.070	1,825.74 mh	41,873	-	-	-	7,609	-	3.44	99,740
		4" Diameter Perforated PVC Pipe (Underdrains, SDR 17.5)	1,160.00 cy	0.200	232.00 mh	5,412	-	-	-	1,933	-	6.51	7,546
		Trenching For The Drain System (4" Dia Underdrains), 966 bcy	22,960.00 cy	800,000	28.70 cd	11,873	-	-	-	14,637	-	1.16	28,510
		Ship Existing 1" Soil Cover (Phase 1 Expansion), 19,133 bcy	1,306.00 cy	0.200	261.20 mh	6,316	-	-	-	3,285	-	7.34	9,593
		Anchor Trench Cut	1,242.00 cy	0.320	397.44 mh	9,614	-	-	-	9,642	-	15.50	19,256
		Anchor Trench Fill & Compact	24,640.00 cy	1,300,000	18.95 cd	38,570	-	-	-	37,530	-	3.09	76,100
		2.0" Thick Bottom Ash Blanket Drain	12,320.00 cy	0.050	9.45 cd	19,285	-	-	-	19,785	-	3.52	38,050
		1.0" Thick Filter Drain Ash Layer	39,860.00 sy	0.050	1,848.00 mh	44,302	-	-	-	4,620	-	7.05	10,520
		Geomembrane	4,946.00 lf	0.021	2,032	22,687	-	-	-	4,118	-	2.55	13,817
		Perforated Pipe ADS Drain Tube, 6" Diameter	4,121.00 lf	0.150	150.15 mh	3,632	-	-	-	1,251	-	7.05	8,710
		Geotextile For Underdrain	1,081.00 lf	0.200	84.77 mh	2,032	-	-	-	1,029	-	19.80	3,451
		#57 Stone For Outlet Pipe Bedding (135 pcf)	1,298.00 lf	0.150	150.15 mh	3,632	-	-	-	1,251	-	7.05	8,710
Solid Outlet Pipe ADS Drain, 6" Diameter	250.00 lf	0.150	37.50 mh	907	-	-	-	313	-	7.05	2,128		
#7 Stone For Outlet Pipe Bedding (135 pcf)	302.00 lf	0.200	60.40 mh	1,385	-	-	-	251	-	23.12	231		
108" Crushed Stone, Bedding 6" Depth	10.00 lf	0.200	5.00 mh	121	-	-	-	17	-	7.05	10,655		
6" Dia Perforated Stone, Bedding 6" Depth	1,512.00 lf	0.200	302.40 mh	696	-	-	-	1,259	-	23.12	6,111		
108" Crushed Stone	286.00 sy	0.500	302.40 mh	3,459	-	-	-	478	-	2.55	3,002		
General Ytzen Monofilament	1,176.00 sy	0.021	24.19 mh	590	-	-	-	81	-	6.51	1,457		
Cut For Underdrain System	168.00 cy	0.200	44.80 mh	1,084	-	-	-	373	-	6.88	1,510		
Backfill For Underdrain System	1.00 ls	0.250	42.00 mh	1,016	-	-	-	494	-	31,500.00	31,500		
Certification	1.00 ls	-	-	-	-	-	-	457,884	-	487,884.00	487,884.00		
O&OC For Construction Of Disposal Facility	61,445.61 hrs	-	-	1,688,576	592,014	1,388,542	-	31,500	-	4,486,916	4,486,916		
Ph 2 Base Construct	61,445.61 hrs	-	-	1,688,576	592,014	1,388,542	-	31,500	-	4,486,916	4,486,916		
17													
19	Temp Slope Protect	Cut For Ditch (6.315 bcy)	9,978.00 cy	1,200,000	5.82 cd	9,228	-	-	11,804	-	3.01	21,032	
		D50 9" Riprap	4,239.00 tn	0.320	1,356.48 mh	33,926	-	-	42,390	-	21,409	23.05	97,724
		Seed Ditch	5,978.00 sy	-	-	-	-	-	-	0.50	-	0.50	3,489
		Temp Slope Protect	6,978.00 sy	0.012	83.74 mh	2,007	-	-	-	419	-	1.12	7,799
		18											
		19											
		Riprap Stilling Basin	2,344.00 tn	0.320	750.08 mh	18,760	-	-	-	11,838	-	23.05	54,039
		2005											
		Riprap Stilling Basin	4,300.00 cy	1,200,000	3.58 cd	5,868	-	-	-	7,274	-	3.01	12,960
		2005											
20													
Ph 2 Initial Constr	614,900.00 cy	1,100,000	559.01 cd	1,029,843	-	-	-	804,972	-	2.88	1,833,816		
Dry Stack Ash Quantities	614,900.00 cy	1,100,000	559.01 cd	1,029,843	-	-	-	804,972	-	0.00	1,833,816		
Initial Construction Disposal Life (Assume Dry Ash Stack)	1.30 yrs	-	-	-	-	-	-	-	-	-	0.00		
Ph 3 Operational Cost	1.00 lot	-	-	-	-	-	-	-	-	-	0.00		
2007-2009													
22													
Ph 2 Operational Cost	1,589,885.00 cy	1,100,000	1,445.17 cd	2,659,803	-	-	-	2,081,042	-	2.98	4,740,845		
Dry Stack Ash Quantities	1,589,885.00 cy	1,100,000	1,445.17 cd	2,659,803	-	-	-	2,081,042	-	0.00	4,740,845		
Stage 1 (3 To 1 Side Slopes)	3.30 yrs	-	-	-	-	-	-	-	-	-	0.00		
Dry Stack Ash Quantities	3.30 yrs	-	-	-	-	-	-	-	-	-	0.00		
Stage 1 Disposal Life (Assume Dry Stack Area)	0.50 mile	-	-	-	-	-	-	-	-	-	0.00		
Haul Distance (Round Trip)	104,052.11 hrs	-	-	-	-	-	-	-	-	-	0.00		
Ph 2 Operational Cost	104,052.11 hrs	-	-	-	-	-	-	-	-	-	0.00		
22													
23													
Ph 2 Operational Cost	1,773,076.00 cy	1,100,000	1,611.89 cd	2,985,646	-	-	-	2,321,118	-	2.98	5,287,764		
Dry Stack Ash Quantities	1,773,076.00 cy	1,100,000	1,611.89 cd	2,985,646	-	-	-	2,321,118	-	0.00	5,287,764		
Stage 2 (3 To 1 Side Slopes)	3.70 yrs	-	-	-	-	-	-	-	-	-	0.00		
Dry Stack Ash Quantities	3.70 yrs	-	-	-	-	-	-	-	-	-	0.00		
Stage 2 Disposal Life (Assume Dry Stack Area)	-	-	-	-	-	-	-	-	-	-	0.00		

Spreadsheet Report  
KIF0909306/FLY&BOTTOM ASH

Location	Activity	Description	Take-off Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
4	Ph 2 Operational Cost	Stage 3 (3 To 1 Side Slopes) Dry Slack Ash Quantities	1.00 lot	1,100.000	116,055.88 hrs	2,966,646			2,321,118		0.00	5,287,764
		Stage 2 Disposal Life (Assume Dry Stack Area)	3.30 yrs		102,895.99 hrs	2,630,250			2,057,920		0.00	4,688,170
		Ph 2 Operational Cost			102,895.99 hrs	2,630,250			2,057,920			4,688,170
15	Dry Fly Ash Converter	Dry Fly Ash Conversion Capital Cost	1.00 ls		hrs			25,000,000				25,000,000
		Dry Fly Ash Converter			hrs			25,000,000				25,000,000
								25,000,000				25,000,000
(CONST FACILITY	Construct Facilities	Mobilize, Drog Test, Misc Other, & Demobilize	1.00 ls	14,230.769	14,230.77 hrs	370,000			199,000		569,000.00	569,000
		Construct Facilities			14,230.77 hrs	370,000			199,000			569,000
		xCONST FACILITY			14,230.77 hrs	370,000			199,000			569,000
zNON MANUAL	Non-Manual	Non-Manual	1.00 ls	25,344.000	25,344.00 hrs	1,267,200					1,267,200.00	1,267,200
		zNON MANUAL			25,344.00 hrs	1,267,200						1,267,200
					25,344.00 hrs	1,267,200						1,267,200



KINGSTON FOSSIL PLANT  
OPTION 7 - WET ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)

DSA  
2010

Project name	KIF0509307/FLY&3CITTM ASH
Engineer	DAN SMITH
Estimator	C. L. Toney
Labor rate table	KIF 40 2004
Equipment rate table	TVA Equipment
Project Plant	Ash
Estimate #	KIF
PCN #	0509307
Requesting Engr	KIF530
Option	Dan Smith
Revision	7
Phase	0
Estimate Type	2
Estimate Accuracy	Preliminary
Est. Issue Date	+/- 20%
Funding Type	12/20/2004
Unit	Capital
Notes	N

(Wet ash in credge call/Phase 1. Wet gypsum in Phase 2. Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge call seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by 'Location/Activity/Outage Sec'  
"Detail" summary



Spreadsheet Report  
KIF/0509307/FL Y&B/OTW ASH

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labors Quantity	Labors Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Erosion Controls/S P	Capital	Erect Sill Fence	1,000.00 lf	0.099	99.70	1,994	502		317		2,513	2,513
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sq	0.016	68.80	1,963	5,772		175		1,838	1,838
			D50 6" Riprap	5,215.00 ln	0.320	1,668.80	49,667	53,037		28,955		129,566	129,566
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 ln	0.096	192.38	6,055	16,190		3,089		13,533	13,533
			Sig 1-4 CMP Mtl Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 Ft/Ea)	4.00 ea	198.084	664.33	20,450	20,198		2,795		10,860.54	43,443
			Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 box	20.00 cy	0.400	8.00	568	804		177		14.91	776
			Fill With 1032 Compacted Crushed Stone	93.00 ln	0.000	37.20	1,107	604		599		2,510	2,510
			30" Diameter CMP Culvert	1,000.00 lf	0.000	17.467	26,442	26,442		3,682		47.51	47,911
			Bedding For 30" CMP, 6" Thick	135.00 ln	0.500	67.50	1,943	1,284		230		3.457	3,457
			30" Diameter CMP Stand Pipe (4 Pipes @ 5 Stages w/30" Per Stage)	720.00 lf	0.750	16,623	19,038	540.00		2,279		52.70	37,940
			D50 6" Riprap Outlet For Metal Spillway	53.00 ln	0.320	16.96	505	539		273		24.65	1,317
			Galvanized Corrugated Metal Anti-Seep Collar	16.00 ea	18.000	288.00	7,461	4,882		1,571		13.914	13,914
			Erosion Controls/S P	4,201.35 hrs		4,201.35 hrs	125,853	150,687		42,029		316,569	316,569
			01			4,201.35 hrs	125,853	150,687		42,029		316,569	316,569
	Seed/Mulch	Capital	Seed/Mulch Disturbed Areas	26.00 ac					64,619			2,485.34	64,619
			Seed/Mulch						64,619			64,619	64,619
			02						64,619			64,619	64,619
	South Access Road	Capital	1032 Crushed Stone Base, 6" Depth	3,520.00 ln	0.120	422.40	13,739	31,850		4,147		14.16	49,835
			Capitol			422.40 hrs	13,739	31,850		4,147		14.16	49,835
			South Access Road	422.40 hrs		422.40 hrs	13,739	31,850		4,147		14.16	49,835
			03			422.40 hrs	13,739	31,850		4,147		14.16	49,835
	Perimeter Road	Capital	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,685.00 ln	0.120	802.20	26,872	62,493		8,112		14.16	97,478
			Capitol			802.20 hrs	26,872	62,493		8,112		14.16	97,478
			Perimeter Road	802.20 hrs		802.20 hrs	26,872	62,493		8,112		14.16	97,478
			04			802.20 hrs	26,872	62,493		8,112		14.16	97,478
	Inlet Drms/Swan Pond	Capital	6" Dia Pipe Boulders	24.00 ea	1.500	36.00	1,036	4,892		245		259.78	6,163
			PVC Monitoring Wells	6.00 ea				12,324		403		7.96	3,774
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.200	94.80	2,887	785		27		25.61	4,10
			Crushed Stone, Bedding 6" Depth	16.00 ln	0.200	3.20	8.64	152		442		25.61	4,10
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 760)	520.00 lf	0.200	104.00	2,839	861		31		25.61	4,61
			Crushed Stone, Bedding 6" Depth	18.00 ln	0.500	9.00	259	171		417		25.61	4,61
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 752)	491.00 lf	0.200	98.20	2,880	813		29		25.61	4,35
			Crushed Stone, Bedding 6" Depth	17.00 ln	0.500	8.50	245	162		1,089		25.61	4,35
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 810)	1,292.00 lf	0.200	258.40	6,996	2,122		73		25.61	10,208
			Crushed Stone, Bedding 6" Depth	43.00 ln	0.500	21.50	619	409		1,034		25.61	1,101
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.200	243.60	6,648	2,016		70		25.61	9,999
			Crushed Stone, Bedding 6" Depth	41.00 ln	0.500	20.50	590	390		1,002		25.61	1,050
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 825)	1,180.00 lf	0.200	236.00	6,441	1,953		68		25.61	9,397
			Crushed Stone, Bedding 6" Depth	40.00 ln	0.500	20.00	576	380		66		25.61	999
			6" Dia Non-Perf HDPE Compugated Tubing Lateral Outlet Pipes (EL. 832)	1,180.00 lf	0.200	232.00	6,332	1,920		66		25.61	999
			Crushed Stone, Bedding 6" Depth	39.00 ln	0.500	19.50	561	371		36,025		7.46	159,020
			Cul For 6" Dia Non-Perforated HDPE (17,659 box)	21,190.00 cy	0.200	4,238.00	121,995	37,025		44,481		10.20	151,227
			Backfill For 6" Dia Non-Perforated HDPE (12,361 box)	14,833.00 cy	0.250	3,708.25	106,746	44,481		37,103		7.46	162,748
			Cul For 6" Dia Perforated HDPE (18,186 box)	21,824.00 cy	0.200	4,364.80	125,646	45,610		1,698		19.20	195,744
			Backfill For 6" Dia Perforated HDPE (12,730 box)	15,276.00 cy	0.250	3,819.00	108,934	45,610		462		7.96	15,928
			6" Dia Perforated HDPE Peimetele Underdrain (EL. 765)	2,000.00 lf	0.200	400.00	10,917	3,310		109		14.67	15,654
			1081 Crushed Stone	378.00 ln	0.150	56.70	1,632	3,431		32.01		2.68	4,173
			Geotextile Woven Monofilament	1,555.00 sq	0.021	32.61	913	3,151		3,092		7.96	30,719
			6" Dia Perforated HDPE Peimetele Underdrain (EL. 772)	3,190.00 lf	0.200	758.00	20,688	6,273		208		14.67	10,503
			1081 Crushed Stone	716.00 ln	0.150	107.40	3,194	6,499		1,032		2.68	7,96
			Geotextile Woven Monofilament	2,448.00 sq	0.021	51.41	1,730	5,969		208		14.67	10,503
			6" Dia Perforated HDPE Peimetele Underdrain (EL. 780)	4,160.00 lf	0.150	624.00	17,880	5,487		228		7.96	33,125
			1081 Crushed Stone	188.00 ln	0.150	28.20	832.00	6,896		228		2.68	6,878
			Geotextile Woven Monofilament	3,235.00 sq	0.021	68.53	2,425	8,552		948		14.67	10,885
			6" Dia Perforated HDPE Peimetele Underdrain (EL. 792)	3,925.00 lf	0.200	785.00	21,425	6,497		214		7.96	31,254
			1081 Crushed Stone	742.00 ln	0.150	111.30	3,204	6,735		1,544		2.68	8,187
			Geotextile Woven Monofilament	3,653.00 sq	0.021	76.21	2,622.00	8,182		349		7.96	51,942
			6" Dia Perforated HDPE Peimetele Underdrain (EL. 810)	8,410.00 lf	0.200	1,682.00	44,966	10,610		1,544		14.67	17,065
			1081 Crushed Stone	1,211.00 ln	0.150	181.65	5,229	10,992		349		2.68	13,371
			Geotextile Woven Monofilament	4,989.00 sq	0.021	105.96	2,956	10,096		5,171		7.96	48,494
			6" Dia Perforated HDPE Peimetele Underdrain (EL. 817)	6,900.00 lf	0.200	1,380.00	33,242	10,080		1,469		14.67	16,885
			1081 Crushed Stone	1,151.00 ln	0.150	172.65	4,970	10,447		331		2.68	12,103
			Geotextile Woven Monofilament	4,737.00 sq	0.021	97.44	2,780	9,592				7.96	16,885





Location	Activity	Outage Seq	Description	Takeoff Quantity	Labo. Productivity	Labo. Quantity	Labo. Amount	Material Amount	Sub Amount	Equip. Amount	Other Amount	Total Cost Unit	Total Amount
O & M			Disposal Life (Assumes Dry Stack Ash) O & M Ph 3 Initial Constr 14	1.20 yrs		37,294.89 hrs 37,294.88 hrs 37,294.89 hrs	1,134,475 1,134,475 1,134,475			760,916 760,916 760,916		0.00	0 1,895,291 1,895,291 1,895,291
Ph 3 Operational Cost			Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot	1,100,000	1,228.53 cd	2,999,305			1,801,523		0.00	0 2,487,828 0
O & M			Stage 1 Disposal Life (Assume Dike Stack) O & M Ph 3 Operational Cost 15	2.80 yrs		88,509.96 hrs 88,509.96 hrs 88,509.96 hrs	2,686,305 2,686,305 2,686,305			1,801,523 1,801,523 1,801,523		0.00	0 4,487,828 4,487,828 4,487,828
Ph 3 Operational Cost			Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot	1,100,000	1,386.02 cd	2,999,204			2,009,352		0.00	0 5,005,556 0
O & M			Stage 2 Disposal Life (Assume Dry Stack) O & M Ph 3 Operational Cost 16	3.20 yrs		98,497.64 hrs 98,497.64 hrs 98,497.64 hrs	2,995,204 2,995,204 2,995,204			2,009,352 2,009,352 2,009,352		0.00	0 5,005,556 5,005,556 5,005,556
Ph 3 Operational Cost			Stage 3 Disposal Life (Assume Dry Stack) Dry Stack Ash Quantities	1.00 lot	1,100,000	1,312.90 cd	2,858,457			1,781,506		3.33	4,437,963
O & M			Stage 3 Disposal Life (Assume Dry Stack) O & M Ph 3 Operational Cost 17	2.80 yrs		87,228.74 hrs 87,228.74 hrs 87,228.74 hrs	2,659,457 2,659,457 2,659,457			1,781,506 1,781,506 1,781,506		0.00	0 4,437,963 4,437,963 4,437,963
Ph 2 Operational Cost			Stage 3 (3 To 1 Side Slopes) Wet Sluice Gypsum Quantities	1.00 lot	375,000	605.62 cd	177,065			423,169		2.55	601,033
O & M			Stage 3 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost 18	4.80 yrs		7,907.39 hrs 7,907.39 hrs 7,907.39 hrs	262,232 262,232 262,232			437,843 437,843 437,843		0.00	0 81,460 22,981 22,981 18,330 6,538 6,538 760,916 760,916 760,916
Ph 2 Operational Cost			Stage 4 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill	1.00 lot	375,000	450.22 cd	132,235			314,584		0.00	0 446,609 0
O & M			Stage 4 Disposal Life (Assume Dike & Sluice Ash) Wet Sluice Gypsum & Ash Quantities Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost 19	2.70 yrs		1,521.00 mh 1,521.00 mh 1,521.00 mh 1,521.00 mh 1,521.00 mh 1,521.00 mh	41,512 3,719 6,890 9,340 1,438 194,944 194,944 194,944			6,558 443 1,584 1,584 3,150 45,381 45,381 45,381		0.00	0 60,557 16,995 16,995 22,591 13,924 13,924 5,090 565,669 565,669 565,669
Ph 3 Operational Cost			Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot	1,100,000	525.10 cd	1,150,285			771,271		0.00	0 1,921,536 0
O & M			Stage 4 Disposal Life (Dry Stack Ash) O & M Ph 3 Operational Cost 20	1.20 yrs		37,807.40 hrs 37,807.40 hrs 37,807.40 hrs	1,150,285 1,150,285 1,150,285			771,271 771,271 771,271		0.00	0 1,921,536 1,921,536 1,921,536
Dry Fly Ash Convr													1,921,536

Location	Activity	Outage Seq	Description	Taskoff Quantity	Labour Productivity	Labour Quantity	Labour Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
CONST LILITY	Capital	25	Dry Fly Ash Conversion Capital Cost	1.00 is		hrs			21,977,800			21,977,800.00	21,977,800	
			Dry Fly Ash Converter		hrs				21,977,800				21,977,800	21,977,800
					hrs					21,977,800				21,977,800
CONST LILITY	Capital		Mobilize, Drug Test, Misc Other, & Demobilize	1.00 is	11,824.864	11,824.86 mh	370,000			200,000		0	570,000	
			Capital		hrs			370,000			200,000			570,000
			Construct Facilities		hrs			370,000			200,000			570,000
NON MANUAL	Non-Manual		XCONST FACILITY			11,824.86 hrs	370,000			200,000			570,000	
NON MANUAL	Capital		Non Manual	1.00 is	21,885.500	21,885.50 mh	1,094,275					1,094,275.00	1,094,275	
			Capital		hrs			1,094,275						1,094,275
			Non-Manual		hrs			1,094,275						1,094,275
NON MANUAL	Non-Manual		ZNON MANUAL			21,885.50 hrs	1,094,275						1,094,275	

Estimate Totals

Labor	20,161,860	631,985,357	hrs			
Material	2,053,231					
Subcontract	30,765,005					
Equipment	14,765,000	433,741,181	hrs			
Other	80,000					
	<u>67,858,999</u>	67,858,999				
Engineered Materials - Ph 2		100,000	%	C		
Adjustment - Engr Materials		(100,000)	%	C		
Environmental Costs		100,000	%	C		
Adjustment Environmental		(100,000)	%	C		
FPG Mech Engr - Phase 2	7,002	0.025	% @	42.00	A	167
FPG Elec Engr - Phase 2	7,002	0.029	% @	42.00	A	167
FPG Civil Engr - Phase 2	18,003	0.060	% @	42.00	A	381
Non-TVA Engr - Phase 2	281,003	0.519	% @	72.00	A	3,903
FPG Proj Critl Cost - Phase 2	1,001	0.004	% @	42.00	A	24
FPG Proj Critl Sched - Phase 2	2,889	0.011	% @	42.00	A	71
FPG Cost Estimating - Phase 2	1,001	0.004	% @	42.00	A	24
FPG Engr Records - Phase 2	1,001	0.004	% @	42.00	A	24
	<u>317,002</u>	68,176,001				
Rounding		68,176,001			L	
<b>Total</b>		<b>66,176,001</b>				

KINGSTON FOSSIL PLANT  
OPTION 7 - WET ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)

Project name KIF0509307FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Ash

KIF

0509307

KIF530

PCN #

Dan Smith

Requesting Engr

7

Revision

0

Phase

2

Estimate Type

Preliminary

Estimate Accuracy

+/- 20%

Est. Issue Date

12/20/2004

Funding Type

Capital

Unit

N

(Wet ash in dredge cell/Phase 1, Wet gypsum in Phase 2, Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & Gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump. Installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format

Sorted by Location/Activity/Outage Sect  
Detail summary

Spreadsheet Report  
KIF0509307/FLY&B01TM ASH

Location	Activity	Outage Seq	Description	Factor Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
1	Erosion Controls/S P	Capital	Erect Silt Fence	1,000.00 lf	0.069	68.57 mh	1,984	502			317		2,813	
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.016	68.80 mh	1,983	3,722				175		7,911
			D50 9' Filterap	5,215.00 ln	0.320	1,668.90 mh	49,087	53,030				25,865		129,968
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,000.00 ln	0.096	192.39 mh	1,956	20,198				3,066		27,312
			Slg 1-6 CMP Mill Spillway (1/2" of 48" Dia Riser Stand Pipe @ 128 FIEs)	4.00 ea	166.084	664.33 mh	20,450					2,795		43,443
			Cul Excavation For Placement Of 48" Dia Half-Round Pipe @ 43 bcy	52.00 sy	0.400	20.80 mh	599					177		776
			Fill With 1032 Compacted Crushed Stone	93.00 ln	0.400	37.20 mh	1,107	904				28.99		2,510
			30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	17,487	26,442				3,922		47,811
			Bedding For 30" CMP, 6" Thick	1,943 ln	0.500	67.50 mh	1,943	1,284				25.81		3,457
			30" Diameter Culp Stand Pipe (Pipes @ 6 Stages w/30" Per Stage)	135.00 ln	0.750	54.00 mh	19,923	19,923				52.70		37,940
			D50 9' Filterap Outlet For Metal Spillway	53.00 ln	0.320	18.96 mh	505	538				24.85		1,317
2	Seed/Mulch	Capital	Galvanized Corrugated Metal Anti-Sweep Collar	16.00 ea	16.000	256.00 mh	7,461	4,882			42,029		318,569	
			Capital	125,859			150,887				869.69		318,569	
			Erosion Controls/S P	4,201.35 hrs			125,853					42,029		318,569
			01	4,201.35 hrs			125,853					42,029		318,569
			Seed/Mulch	26.00 ac							64,619		2,485.34	64,619
			Capital								64,619			64,619
			Seed/Mulch								64,619			64,619
			02								64,619			64,619
			South Access Road	3,520.00 ln	0.120	422.40 hrs	13,739	31,950						49,836
			03	422.40 hrs			13,739	31,950						49,836
			3	Perimeter Road	Capital	1032 Crushed Stone Base, 6" Depth	6,885.00 ln	0.120	826.20 mh	26,872	62,483			8,112
Capital	826.20 hrs						26,872	62,483				8,112		97,478
Perimeter Road	826.20 hrs						26,872	62,483				8,112		97,478
04	826.20 hrs						26,872	62,483				8,112		97,478
6" Dia Pipe Bellards	24.00 ea	1.500				36.00 mh	1,036	4,882				245		6,163
PVC Monitoring Wells	6.00 ea	0.200				64.80 mh	2,687	785				12,324		12,324
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 772)	474.00 lf	0.200				94.80 mh	2,687	785				403		410
Crushed Stone Bedding 6" Depth	18.00 ln	0.500				9.00 mh	230	152				25.61		4.14
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 760)	520.00 lf	0.200				104.00 mh	2,838	842				25.61		461
Crushed Stone Bedding 6" Depth	18.00 ln	0.500				9.00 mh	259	171				25.61		3,910
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 752)	491.00 lf	0.200				98.20 mh	2,850	813				25.61		435
Crushed Stone Bedding 6" Depth	17.00 ln	0.500	8.50 mh	245	162				25.61		10,208			
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 810)	1,292.00 lf	0.200	258.40 mh	6,998	2,122				25.61		1,101			
Crushed Stone Bedding 6" Depth	43.00 ln	0.500	21.50 mh	619	409				25.61		9,689			
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 817)	1,218.00 lf	0.200	243.60 mh	6,848	2,016				25.61		1,050			
Crushed Stone Bedding 6" Depth	41.00 ln	0.500	20.50 mh	590	390				25.61		9,395			
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 825)	1,180.00 lf	0.200	236.00 mh	6,441	1,953				25.61		1,024			
Crushed Stone Bedding 6" Depth	40.00 ln	0.500	20.00 mh	576	380				25.61		9,237			
6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 832)	1,150.00 lf	0.200	230.00 mh	6,332	1,920				25.61		969			
Crushed Stone Bedding 6" Depth	38.00 ln	0.500	19.00 mh	551	371				25.61		158,020			
Cul For 6" Dia Non-Perf HDPE (17,658 bcy)	21,190.00 cy	0.200	4,238.00 mh	121,995	19,500				38,082		10,200			
Backfill For 6" Dia Non-Perf HDPE (12,361 bcy)	14,833.00 cy	0.250	3,708.25 mh	106,746	16,481				37,103		152,748			
Cul For 6" Dia Perforated HDPE (18,166 bcy)	21,824.00 cy	0.200	4,364.80 mh	125,646	19,500				49,610		155,744			
Backfill For 6" Dia Perforated HDPE (12,730 bcy)	15,276.00 cy	0.250	3,819.00 mh	109,934	16,481				1,696		18,826			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 763)	2,000.00 lf	0.200	400.00 mh	10,917	3,310				14.87		5,545			
1081 Crushed Stone	378.00 ln	0.150	56.70 mh	1,632	462				30.79		4,173			
Geotextile Woven Nonfilament	1,556.00 sy	0.021	32.61 mh	913	3,151				3.26		10,503			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 772)	3,790.00 lf	0.200	758.00 mh	20,688	6,273				3.13		7,905			
1081 Crushed Stone	716.00 ln	0.150	107.40 mh	3,092	6,999				2.06		33,125			
Geotextile Woven Nonfilament	2,948.00 sy	0.021	60.64 mh	1,730	5,969				1.57		11,530			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 780)	4,180.00 lf	0.150	832.00 mh	22,707	6,885				1.02		2,688			
1081 Crushed Stone	786.00 ln	0.150	117.90 mh	3,394	7,134				3.33		31,354			
Geotextile Woven Nonfilament	3,226.00 sy	0.021	66.56 mh	1,899	6,552				2.96		10,885			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 792)	3,925.00 lf	0.200	785.00 mh	21,425	6,497				2.14		8,307			
1081 Crushed Stone	742.00 ln	0.150	111.30 mh	3,204	6,735				2.98		17,059			
Geotextile Woven Nonfilament	3,053.00 sy	0.021	62.80 mh	1,792	5,192				1.46		17,059			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 810)	6,410.00 lf	0.200	1,282.00 mh	34,989	10,610				5.44		33,111			
1081 Crushed Stone	1,211.00 ln	0.150	181.65 mh	5,229	10,992				3.49		46,434			
Geotextile Woven Nonfilament	4,988.00 sy	0.021	102.58 mh	2,926	10,059				5.17		16,885			
6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	6,080.00 lf	0.200	1,216.00 mh	33,242	10,059				4.970		14,861			
1081 Crushed Stone	1,151.00 ln	0.150	172.65 mh	4,970	10,447				6.552		32,703			
Geotextile Woven Nonfilament	4,737.00 sy	0.021	97.44 mh	2,780	6,552				2.66		12,703			



Spreadsheet Report  
KIF0509307FLY&BOTIM ASH

Location	Activity	Outage Seq	Description	Task/Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
26	Capitol	O & M	6" Dia Perforated HDPE Perimeter Underdrain (EL. 825)	5,900.00 lf	0.200	1,180.00 mh	32,205	9,765	-	5,010	-	7.95	46,981		
			1081 Crushed Stone	1,115.00 in	0.150	167.25 mh	4,814	10,121	1,422	-	-	-	16.57	16,357	
			Geotextile Woven Monofilament	4,590.00 sq	0.021	94.40 mh	2,693	9,292	321	-	-	-	-	2.68	12,492
			8" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,900.00 lf	0.200	1,180.00 mh	31,659	9,600	4,925	-	-	-	-	7.96	18,078
			1081 Crushed Stone	1,098.00 in	0.150	164.40 mh	4,732	9,648	1,397	-	-	-	-	16.57	18,078
			Geotextile Woven Monofilament	4,511.00 sq	0.021	92.79 mh	2,647	9,134	318	-	-	-	-	2.69	12,997
			12" Dia Force Main HDPE Perimeter Underdrain (EL. 793)	2,590.00 lf	0.250	645.00 mh	17,604	13,087	2,741	-	-	-	-	12.95	32,452
			1081 Crushed Stone	575.00 in	0.150	88.25 mh	2,483	5,519	733	-	-	-	-	14.67	9,459
			Submersible Pumping Station Equipment Package	1.00 ps	56.000	56.00 mh	2,386	6,095	209	-	-	-	-	7,560.57	7,560.57
			80" Diameter Catch Basin (Precast)	1.00 bs	60.000	60.00 mh	1,810	3,051	478	-	-	-	-	5,338.38	5,338.38
			Geotextile Woven Monofilament	2,233.00 sq	1.346	4,643	499	2,656	-	-	-	-	-	90.19	4,746
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	54.00 ea	1.000	54.00 mh	304	1,027	90	-	-	-	-	203.02	4,786
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	53.00 ea	1.000	53.00 mh	304	1,027	90	-	-	-	-	203.02	4,786
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	23.00 ea	1.000	23.00 mh	645	1,216	212	-	-	-	-	243.02	2,074
			Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	2.00 ea	4.000	8.00 mh	304	1,027	90	-	-	-	-	243.02	2,074
			24" CMP Storm Drain	36.00 lf	0.490	18.24 mh	408	773	69	-	-	-	-	85.24	1,339
			Excavation For 24" Dia Pipe (25 box)	30.00 sv	0.200	6.00 mh	173	77	-	-	-	-	-	36.00	245
			Backfill For 24" Diameter CMP (17 box)	21.00 sv	0.320	6.72 mh	193	36	-	-	-	-	-	25.61	102
			Bedding For 24" Diameter CMP (17 box)	4.00 in	0.500	2.00 mh	189	7	-	-	-	-	-	5.00	4.23
			36" CMP Storm Drain	81.00 sv	0.200	16.20 mh	1,259	2,109	265	-	-	-	-	58.91	673
			Excavation For 36" Dia Pipe (67 box)	57.00 sv	0.320	18.24 mh	468	96	-	-	-	-	-	17.13	976
			Backfill For 36" Diameter CMP (47 box)	9.00 in	0.500	4.50 mh	130	15	-	-	-	-	-	25.61	230
			Bedding For 36" Diameter CMP (47 box)	10,390.00 sv	0.200	2,076.00 mh	59,780	26,469	-	-	-	-	-	379	68,229
			Upper & Lower LDFE Geomembrane	110,886.00 sv	0.050	5,544.30 mh	157,885	14,113	-	-	-	-	-	2.89	10,369
			Capitol Trap (3,630 box)	4,356.00 sv	0.040	174.24 mh	1,016,066	495,205	-	-	-	-	-	12.324	419,651
			Insan Dams/Sven Pond	35,789.66 hrs	1,016,066	495,205	1,016,066	495,205	-	-	-	-	-	12.324	1,788,753
Capitol	05												1,788,753		
27	Capitol	O & M	1.00 lot	1.00 lot	1,300.000	478.78 cd	1,159,419	-	-	-	-	0.00	0		
			Bottom Ash Dike Fill	822,418.00 sv										2,126,405	
			Wet Dip And Slack	4,863,654.00 sv										7,631,580	
			Dredge	6,786,848.00 sv										1,296,563	
			Disposal Life (Assume Dike & Dredge Ash)	12.90 yr										0.00	
			Drg CellP1 Opr Cost												11,554,547
			O & M												11,554,547
			Drg CellP1 Opr Cost												11,554,547
			O & M												11,554,547
			Drg CellP1 Opr Cost												11,554,547
			O & M												11,554,547
			27	Capitol	Ph 2&Ph 3 Base Const	Base Layers									
Cut For Dredge Cell (265,500 box)	322,200.00 sv	0.040				12,888.00 mh	429,505	-	-	-	-	-	3.39	793,442	
Compacted Fly Ash Base (Fill)	910,598.00 sv	1.300.000				700.43 cd	1,996,157	-	-	-	-	-	1,419,641	3,116,798	
Proctor Subgrade	203,111.00 sv	8.497				10.00 cd	4,060	-	-	-	-	-	4,060	12,577	
2.5" Thick Bottom Ash Layer	245,497.00 sv	1,300.000				186.47 cd	451,549	-	-	-	-	-	376,604	828,153	
0.5" Thick Fly Ash Filter Layer	49,461.00 sv	1,300.000				37.29 cd	90,309	-	-	-	-	-	76,320	166,629	
18" Dia Coarse Bottom Ash Drain Columns (Total 2 miles, 1,100 box)	18,926.00 lf	1,400.000				200.78 cd	117,973	-	-	-	-	-	347,537	20,54	
Bottom Ash Dike Fill	251,111.00 sv	1,300.000				125.96 cd	304,775	-	-	-	-	-	254,191	150,712	
Bottom Ash Dike Fill	159,614.00 sv	1,300.000				74.96 cd	180,920	-	-	-	-	-	150,642	331,262	
1.0" Layer Of Bottom Ash	36,863.00 sv	0.028				2,893.11 mh	215,760	690,908	-	-	-	-	19,286	3.42	933,954
Geosynthetic Clay Liner	41,400.00 lf	0.030				868.00 mh	79,094	84,987	-	-	-	-	13,320	3.21	159,401
Trenching For The Drain System (4" Dia Underdrains), 1,533 box	22,963.00 sv	900.000				28.70 cd	14,128	-	-	-	-	-	14,930	13,121	29,059
Slip Existing 1" Soil Cover (Phase 1 Expansion), 19,132 box	2,072.00 sv	0.030				414.60 mh	11,935	-	-	-	-	-	1,930	7.46	29,059
Anchor Trench Cut	1,971.00 sv	0.020				60.72 mh	16,156	-	-	-	-	-	15,607	17.13	33,763
2.0" Thick Bottom Ash Blanket Drain	38,111.00 sv	1,300.000				30.05 cd	78,555	-	-	-	-	-	15,607	17.13	133,918
Geomembrane	19,996.00 sv	1,300.000				15.04 cd	36,428	-	-	-	-	-	30,382	3.42	66,811
Perforated Pipe ADS Drain Tube, 6" Diameter	7,850.00 lf	0.050				2,932.36 mh	42,849	131,292	-	-	-	-	7,480	3.79	22,424
Geotextile For Underdrain	6,542.00 sv	0.021				134.57 mh	6,865	14,432	-	-	-	-	4,58	2.69	17,543
#57 Stone For Outlet Pipe Bedding (135 pd)	1,990.00 in	0.150				298.60 mh	8,995	3,249	-	-	-	-	2,027	4.67	23,325
#57 Stone For Outlet Pipe Bedding (135 pd)	397.00 in	0.150				59.55 mh	1,714	3,603	-	-	-	-	1,687	7.96	15,631
6" Dia Non-Per HDPE Corrugated Tubing (Lateral Outlet Pipes (EL. 790))	480.00 lf	0.030				96.00 mh	2,320	192	-	-	-	-	408	2.61	3,624
1081 Crushed Stone, Bedding 6" Depth	16.00 in	0.850				8.00 mh	13,100	3,972	-	-	-	-	2,038	7.96	19,111
1081 Crushed Stone	454.00 in	0.850				486.00 mh	13,100	3,972	-	-	-	-	2,038	7.96	19,111
Cut For Underdrain System	1,667.00 sv	0.021				221.00 mh	1,096	131	-	-	-	-	773	2.61	11,695
Backfill For Underdrain System	356.00 sv	0.020				71.20 mh	2,050	3,780	-	-	-	-	605	7.46	2,855
Certification	29,100.00 sv	0.250				66.75 mh	1,921	801	-	-	-	-	801	10.20	50,000.00
QA/QC For Construction Of Disposal Facility	1.00 lf			3,916,521	655,697	-	-	-	-	746,424	50,000	50,000.00			
Capitol													6,847,653		

Spreadsheet Report  
KIF0509307/FLY&BOT/IM ASH

Location	Activity	Outage Seq	Description	Task Quant	Labo Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
8	Temp Slope Protect	Capital	Cut For Ditch (6.615 bcy)	6,078.00 cy	1,200.000	5.065 hrs	19,981	955,687	1,093,960	2,832,473	50,000	8,847,653	8,847,653
			550' x Riprap	4,238.00 ln	0.320	1,356.48 mh	40,571	45,111	21,837			23,022	105,319
			Seed Ditch	6,078.00 sy	0.012	83.74 mh	2,388	5,664	427			0.51	8,280
			Joint Hauling	6,078.00 sy		1,765.86 hrs	53,741	46,575	3,883	34,304		1.19	140,204
			Temp Slope Protect			1,765.86 hrs	53,741	48,575	3,593	34,304			140,204
9	Riprap Stilling Basin	Capital	Riprap D50 Size 8"	2,344.00 ln	0.320	750.08 mh	22,324	23,838	12,075			24.85	59,237
			Cut For Basin (3.562 bcy)	4,300.00 cy	1,200.000	3.59 cd	6,787	23,638	19,485			3.30	14,186
			Capital			850.75 hrs	29,091	23,838	19,485				72,424
			Riprap Stilling Basin			950.75 hrs	29,091	23,838	19,485				72,424
0	Ph 2 Initial Constr	O & M	Wet Sluice Sedimented Gypsum Quantities	451,295.00 cy								0.00	0
			Initial Disposal Life	1.40 yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	40,228	12,196	6,258			7.56	56,686
			Geotextile For Underdrain	6,142.00 sy	0.021	126.34 mh	3,034	12,437	1,802			14.67	16,471
			Open Stone For Outlet Pipe Bedding (135 pcf)	1,482.00 lf	0.150	6.42 mh	9,490	13,542	1,906			7.96	13,202
			#57 Stone For ADS Drain 6" Diameter	1,659.00 lf	0.200	331.80 mh	9,490	3,050	428			14.67	4,929
			#57 Stone For Outlet Pipe Bedding (135 pcf)	338.00 ln	0.150	50.40 mh	1,451	3,050	428				115,175
			O & M			2,206.14 hrs	60,777	43,972	10,427				115,175
			Ph 2 Initial Constr			2,206.14 hrs	60,777	43,972	10,427				115,175
1	Rim Ditches	O & M	Out (111,859 bcy)	134,278.00 cy	375.000	358.08 cd	105,164	19,395	250,203			2.65	355,368
			O & M			2,864.62 hrs	105,164	2,864.62	250,203				355,368
			Rim Ditches			2,864.62 hrs	105,164	2,864.62	250,203				355,368
12	Ph 2 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Wet Cast Gypsum Dike Fill	255,189.00 cy	375.000	680.50 cd	199,859		475,498			2.65	675,354
			Wet Sluice Gypsum Quantities	1,334,496.00 cy								0.00	0
			Stage 1 Disposal Life (Assumes Dikes & Sluice Gypsum)	4.90 yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf	0.200	2,286.00 mh	63,746	19,026	9,761			7.56	91,533
			Geotextile For Underdrain	9,578.00 sy	0.021	197.04 mh	5,631	19,395	670			14.67	25,687
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,328.00 lf	0.150	345.20 mh	9,652	21,131	2,958			7.96	34,151
			#57 Stone For ADS Drain 6" Diameter	2,596.00 lf	0.200	517.20 mh	14,116	4,280	2,196				20,552
			#57 Stone For Outlet Pipe Bedding (135 pcf)	524.00 ln	0.150	76.00 mh	2,283	4,759	668			14.67	7,687
			O & M			8,885.07 hrs	294,656	68,509	461,759				655,005
			Ph 2 Operational Cost			8,885.07 hrs	294,656	68,509	461,759				855,005
13	Ph 2 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Wet Cast Gypsum Dike Fill	255,493.00 cy	375.000	702.41 cd	208,292		495,801			2.65	697,603
			Wet Sluice Gypsum Quantities	1,509,673.00 cy								0.00	0
			Stage 2 Disposal Life (Assume Dike & Sluice Gypsum)	5.40 yrs								0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,885.00 lf	0.200	2,375.00 mh	64,765	19,639	10,076			7.56	94,479
			Geotextile For Underdrain	9,888.00 sy	0.021	209.49 mh	5,802	20,022	692			14.67	26,016
			#57 Stone For Outlet Pipe Bedding (135 pcf)	2,403.00 lf	0.150	360.45 mh	10,376	3,064	3,287			7.96	35,251
			#57 Stone For ADS Drain 6" Diameter	2,670.00 lf	0.200	538.00 mh	14,574	4,419	2,267				21,281
			#57 Stone For Outlet Pipe Bedding (135 pcf)	541.00 ln	0.150	81.15 mh	2,336	4,911	690			14.67	7,938
			O & M			9,171.26 hrs	304,146	70,801	491,759				662,536
			Ph 2 Operational Cost			9,171.26 hrs	304,146	70,801	491,759				882,536
14	Ph 3 Initial Constr	O & M	Out Ash Stack	569,789.00 cy	1,100.000	517.98 cd	1,134,475		760,619			3.33	1,995,201

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Label Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
5	Ph 3 Operational Cost	O & M	Disposal Life (Assumes Dry Stack Ash) O & M Ph 3 Initial Concr 14	1.20 yrs		37,294.89 hrs 37,294.89 hrs 37,294.89 hrs	1,134,475 1,134,475 1,134,475			760,816 760,816 760,816		0.00	1,895,291 1,895,291 1,895,291
5	Ph 3 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 1 Disposal Life (Assume Dike Stack) O & M Ph 3 Operational Cost 15	1.00 lot 1,348,180.00 cy 2.80 yrs	1,100,000	1,226.53 cd 88,309.96 hrs 88,309.96 hrs 88,309.96 hrs	2,686,305 2,686,305 2,686,305 2,686,305			1,801,523 1,801,523 1,801,523 1,801,523		0.00	4,487,828 4,487,828 4,487,828 4,487,828
6	Ph 3 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 2 Disposal Life (Assume Dry Stack) O & M Ph 3 Operational Cost 16	1.00 lot 1,504,825.00 cy 3.20 yrs	1,100,000	1,368.02 cd 96,497.64 hrs 96,497.64 hrs 96,497.64 hrs	2,996,204 2,996,204 2,996,204 2,996,204			2,009,352 2,009,352 2,009,352 2,009,352		0.00	5,005,556 5,005,556 5,005,556 5,005,556
7	Ph 3 Operational Cost	O & M	Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack) O & M Ph 3 Operational Cost 17	1.00 lot 1,334,189.00 cy 2.80 yrs	1,100,000	1,212.80 cd 87,328.74 hrs 87,328.74 hrs 87,328.74 hrs	2,656,457 2,656,457 2,656,457 2,656,457			1,781,506 1,781,506 1,781,506 1,781,506		0.00	4,437,963 4,437,963 4,437,963 4,437,963
8	Ph 2 Operational Cost	O & M	Stage 3 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pf) O & M Ph 2 Operational Cost 18	1.00 lot 227,106.00 cy 1,344,916.00 cy 4.80 yrs	375,000	605.82 cd 2,046.00 mh 175.95 mh 9,317 310.80 mh 469.00 mh 69.50 mh 1,807.39 hrs 1,807.39 hrs	177,865 55,841 5,003 8,347 12,966 2,112 262,232 262,232			423,169 6,687 597 2,642 1,956 594 437,043 437,043		0.00	601,033 61,460 22,661 30,395 19,320 14,87 760,916 760,916
9	Ph 2 Operational Cost	O & M	Stage 4 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum & Ash Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet pipe Bedding (135 pf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet pipe Bedding (135 pf) O & M Ph 2 Operational Cost 19	1.00 lot 169,841.00 cy 702,654.00 cy 2.70 yrs	375,000	450.22 cd 1,521.00 mh 130.37 mh 3,719 6,338.00 cy 1,640.00 in 1,711.00 in 347.00 in	132,225 41,512 12,668 443 6,548 6,850 3,872 1,198			314,564 6,458 2,669 443 22,581 14,67 1,453 442		0.00	446,809 90,557 16,996 22,581 33,824 5,090 595,669 595,669
0	Ph 3 Operational Cost	O & M	Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 4 Disposal Life (Dry Stack Ash) O & M Ph 3 Operational Cost 20	1.00 lot 577,813.00 cy 1.20 yrs	1,100,000	525.10 cd 37,807.40 hrs 37,807.40 hrs 37,807.40 hrs	1,150,265 1,150,265 1,150,265 1,150,265			771,271 771,271 771,271 771,271		0.00	1,921,536 1,921,536 1,921,536 1,921,536
5	Dry Fly Ash Concr												

Spreadsheet Report  
KIP050907/FLY&BOTT/ASH

Location	Activity	Outage Seq	Description	Resource Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		Capital	Dry Fly Ash Conversion Capital Cost	1.00 ls		hrs	21,977,800		21,977,800			21,977,800.00	21,977,800
		Capital	Dry Fly Ash Conve			hrs	21,977,800		21,977,800				21,977,800
		25				hrs	21,977,800		21,977,800				21,977,800
CONST	Construct Facilities												
		Capital	Mobilize, Drug Test, Misc Other, & Demobilize	0.00 ls	#####	0.00 mh	0				0	0.00	0
NON MANUAL	Non-Manual												
		Capital	Non Manual	0.00 ls	#####	0.00 mh	0					0.00	0

Estimate Totals

Labor	18,717,585	598,274,893	hrs						
Material	2,058,231								
Subcontract	30,783,866								
Equipment	14,585,042	427,874,358	hrs						
Other	50,000								
	66,194,724								
Engineered Materials - Ph 2		100,000	%	C					
Adjustment - Engr Materials		(100,000)	%	C					
	66,194,724								
Environmental Costs		100,000	%	C					
Adjustment Environmental		(100,000)	%	C					
	66,194,724								
FPG Mech Engr - Phase 2	16,896	0.067	% @ 42.00	A			402		
FPG Elec Engr - Phase 2	16,896	0.067	% @ 42.00	A			402		
FPG Civil Engr - Phase 2	30,801	0.123	% @ 42.00	A			733		
Non-PVA Engr - Phase 2	1,031,170	2,394	% @ 72.00	A			14,322		
FPG Proj Civil Cost - Phase 2	935	0.004	% @ 42.00	A			22		
FPG Proj Civil Sched - Phase 2	2,802	0.011	% @ 42.00	A			67		
FPG Cost Estimating - Phase 2	935	0.004	% @ 42.00	A			22		
FPG Engr Records - Phase 2	935	0.004	% @ 42.00	A			22		
	1,101,370								
Rounding		67,296,094							
		67,296,094							
<b>Total</b>		<b>67,296,094</b>							

\$5,180,865  
11%

WR \$579,000

L = 65% 379,000  
E = 35% 209,000

175,024  
x 12.5%  
21,878

KINGSTON FOSSIL PLANT  
OPTION 7 - WET ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)

Project name KIF0509307/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Plant Ash

Estimate # KIF 0509307

PCN # KIF530

Requesting Engr Dan Smith

Option 7

Revision 0

Phase 2

Estimate Type Preliminary

Estimate Accuracy +/- 20%

Est. Issue Date 12/20/2004

Funding Type Capital

Unit N

DFA FACILITY  
year  
11-2016"

(Wet ash in dredge cell/Phase 1. Wet gypsum in Phase 2. Phase 3 is dry stack ash)

All cost are based in 2005 dollars. Additional notes are as follow;

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,800 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity  
Detail summary











Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
		zNON MANUAL			27,540.00 hrs	1,377,000						1,377,000



KINGSTON FOSSIL PLANT  
OPTION B - DRY ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)

Project name KIF0509308/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash  
Plant KIF  
Estimate # 0509308  
RCN # KIF530  
Requesting Engr Dan Smith  
Revision 8  
Option C  
Phase 2  
Estimate Type Preliminary  
Estimate Accuracy +/- 20%  
Est. Issue Date 12/20/2004  
Funding Type Capital  
Unit N

All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsumash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Notes

Report format

Sorted by 'Location/Activity/Outage Seq'  
'Detail' summary

Location	Activity	Usage Sec	Description	Material Quantity	Unit	Material	Material Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
Erosion Controls/S P	Capital		Erect Silt Fence	1,000.00	lf	0.059	1,984	317		2.81	2,301		
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00	sy	0.016	68.80	175			1.94	7,111	
			D50 9" Riprap	5,215.00	ln	0.320	1,668.80	26,957			24.85	129,562	
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00	ln	0.096	192.39	3,089			15.93	27,312	
			Sig 1-3 CMP Mat Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 Ft/Ea)	4.00	ea	186.084	664.33	20,450			10,960.54	43,443	
			Coll (Excavation For Placement Of 48" Dia Fall-Round Pipe) 43 boy	52.00	cy	0.400	599	177			14.91	776	
			Fill With 1032 Compacted Crushed Stone	83.00	ln	0.600	1,747	26,442			25.99	2,510	
			30" Diameter CMP Culvert	1,000.00	ln	0.500	1,943	3,682			47.61	47,611	
			Bedding For 30" CMP, 6" Thick	135.00	ln	0.750	16,673	22,979			25.91	3,457	
			D50 9" Riprap Stand Pipe (4Pipes @ 6 Stages w/30" Per Stage)	720.00	ln	0.320	1,668.80	26,957			52.70	37,890	
			Galvanized Corrugated Metal Anti-Seep Collar	53.00	ln	16,000	505	2,179			24.95	1,317	
			Capal	16.00	ea		7,461	1,571			869.59	13,914	
			Erosion Controls/S P				125,853	42,029			318,589		318,589
			01				4,201.35	hrs			42,029		318,589
			2	Seed/Mulch							42,029		318,589
Seed/Mulch			See/Mulch Disturbed Areas	28.00	ac		64,619		2,485.34	64,619			
02			Seed/Mulch				64,619			64,619			
3	South Access Road									64,619			
1032 Crushed Stone Base, 6" Depth				3,520.00	ln	0.120	13,739			31,950			
03			1032 Crushed Stone Base, 6" Depth				13,739			31,950			
Perimeter Road										49,836			
1032 Roller Compacted Crushed Stone Base, 6" Depth				8,885.00	ln	0.120	26,872			62,493			
04			Perimeter Road				26,872			62,493			
4	Perimeter Road									97,478			
1032 Roller Compacted Crushed Stone Base, 6" Depth				6,826.20	hrs		8,112			97,478			
05			Perimeter Road				8,112			97,478			
6	Drig Culprt Opr Cost	O & M								0			
Elv. 810 To Elv. 866				1,00	lot					0			
Dry Ash Stack				5,478.00	cy	1,100,000	10,903,210			18,215,257			
Wet Dip And Shred Bottom Ash Only				975,948.00	sy	375,000	531,559			1,796,593			
12.90 Yr										0			
0.50 mile										0			
Disposal Life (Assume Dike & Dredge Ash)										0			
Haul Distance (Round Trip)										0			
O & M										26,011,819			
Drig Culprt Opr Cost										20,011,819			
06										20,011,819			
7	Ph 2 Base Construct	Capital								0			
Base Layers				1,00	lot					0			
Connected Fly Ash Base (Fill)				910,556.00	cy	1,300,000	1,696,157			3,110,798			
Proctol Subgrade				281,111.00	sy	10,00	8,497			12,577			
2.5" Thick Bottom Ash Layer				242,407.00	cy	1,300,000	451,549			828,153			
0.5" Thick Fly Ash Filter Layer				48,481.00	cy	1,300,000	90,309			347,537			
18" Dia Compact Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)				18,920.00	lf	1,400,000	117,943			150,712			
Bottom Ash Layer				281,111.00	sy	1,300,000	304,776			558,996			
Bottom Ash Layer				163,814.00	cy	1,300,000	180,620			331,282			
1.0 Layer Of Bottom Ash				290,895.00	sy	0.026	215,760			939,954			
Geosynthetic Clay Liner				41,400.00	lf	0.070	78,094			155,404			
4" Diameter Perforated PVC Pipes (Underdrains) SDR 17.5				1,840.00	cy	0.200	2,868.00			3,708			
Tranching For The Drain System (4" Dia Underdrains) 1,659 boy				22,800.00	cy	800,000	14,128			29,058			
Slip Spacing, 1" Spacing (Phase 1 Expansion), 1.8, 193 Boy				2,073.00	cy	1,300,000	11,835			12,721			
Anchor Tranch Call				1,971.00	cy	0.320	630.72			33,763			
Anchor Tranch Fill & Compact				39,111.00	cy	1,300,000	30,09			33,611			
2.0" Thick Bottom Ash Blanket Drain				19,556.00	cy	1,300,000	36,428			66,811			
1.0" Thick Filter Drain Ash Layer				58,667.00	lf	0.050	83,682			22,424			
Geomembrane				7,850.00	lf	1,570.00	12,993			62,506			
Perforated Pipe ADS Drain Tube, 6" Diameter				6,542.00	lf	0.021	134.57			2,68			
Geotextile For Underdrain				1,500.00	lf	0.150	238.50			23,325			
#57 Stone For Outlet Pipe Bedding (135 pcf)				1,953.00	lf	0.200	382.80			14,67			
Solid Outlet Pipe ADS Drain 6" Diameter				397.00	lf	0.150	1,714			15,631			
#57 Stone For Outlet Pipe Bedding (135 pcf)				480.00	ln	0.200	784			5,824			
9" Dia Non-Pet-HDPE Compagated Lining Latera Outlet Pipes (El. 769)				16.00	ln	0.500	230			3,822			
1081 Crushed Stone, Bedding 6" Depth										25.61			

Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	
78	Temp Slope Protect	Capital	6" Dia Perforated HDPE Drain (EL 760)	2,400.00 lf	0.200	480.00 mh	3,972	-	2,038	7.96	19,111	
			108" x 6" Storm Sewer Installation	453.00 ln	0.500	226.50 mh	6,534	-	773	25.61	11,825	
			Geotextile For Underdrain	1,867.00 sy	0.021	39.10 mh	1,068	-	131	2.68	5,007	
			Cul For Underdrain System	356.00 sy	0.200	71.20 mh	2,650	-	805	7.46	2,655	
			Backfill For Underdrain System	287.00 cy	0.250	66.75 mh	1,911	-	801	10.20	2,722	
			Confirlation	1.00 lb	-	-	-	-	746,424	-	50,000	50,000.00
			O&M For Constuction Of Disposal Facility	1.00 lb	-	-	-	-	746,424	-	50,000	50,000.00
			PH 2 Base Construct	106,324.97 hrs	3,488.017	3,488,017	1,093,960	2,493,536	50,000	8,079,211	8,079,211	
			07	106,324.97 hrs	3,488.017	3,488,017	1,093,960	2,493,536	50,000	8,079,211	8,079,211	
			79	Temp Slope Protect	Capital	Cul For Ditch (5.815 bcy)	6,978.00 cy	1,200,000	8,374	-	12,041	3.30
79	Riprap Stilling Basin	Capital	D50 P Riprap	4,239.00 ln	0.320	1,356.48 mh	40,371	-	21,837	24.85	105,316	
			Seed Ditch	6,978.00 sy	-	-	3,633	-	-	0.51	3,583	
			June Mailing	6,978.00 sy	0.012	83.74 mh	2,389	-	427	1.16	8,280	
			Capital	1,785.86 hrs	53,741	53,741	3,893	34,304	140,204	140,204		
			Temp Slope Protect	1,785.86 hrs	53,741	53,741	3,893	34,304	140,204	140,204		
			08	1,785.86 hrs	53,741	53,741	3,893	34,304	140,204	140,204		
			80	1,785.86 hrs	53,741	53,741	3,893	34,304	140,204	140,204		
			81	1,785.86 hrs	53,741	53,741	3,893	34,304	140,204	140,204		
			82	1,785.86 hrs	53,741	53,741	3,893	34,304	140,204	140,204		
			83	1,785.86 hrs	53,741	53,741	3,893	34,304	140,204	140,204		
80	Riprap Stilling Basin	Capital	Riprap D50 Size 9"	2,344.00 ln	0.320	750.08 mh	22,324	-	12,075	24.85	56,237	
			Cul For Basin (3.592 bcy)	4,300.00 cy	1,200,000	5,100	-	7,420	3.30	14,186		
			Capital	950.75 hrs	29,091	29,091	23,838	19,495	72,424	72,424		
			Riprap Stilling Basin	950.75 hrs	29,091	29,091	23,838	19,495	72,424	72,424		
			09	950.75 hrs	29,091	29,091	23,838	19,495	72,424	72,424		
			84	950.75 hrs	29,091	29,091	23,838	19,495	72,424	72,424		
			85	950.75 hrs	29,091	29,091	23,838	19,495	72,424	72,424		
			86	950.75 hrs	29,091	29,091	23,838	19,495	72,424	72,424		
			87	950.75 hrs	29,091	29,091	23,838	19,495	72,424	72,424		
			88	950.75 hrs	29,091	29,091	23,838	19,495	72,424	72,424		
81	Ph 2 Initial Constr	O & M	Wet Sluice Sedimented Gypsum Quantities	451,295.00 cy	-	-	-	-	-	0.00	0	
			Initial Cons. Disposal Life	1.40 yrs	-	-	-	-	-	-	0.00	0
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200	1,474.00 mh	40,229	6,256	59,686			
			Geotextile For Underdrain	6,142.00 sy	0.021	126.94 mh	12,437	1,530	15,471			
			#57 Stone For Outlet Pipe Bedding (135 pc)	1,492.00 ln	0.150	223.80 mh	6,442	1,902	21,687			
			Solid Outlet Pipe ADS Drain 6" Diameter	1,858.00 lf	0.200	371.60 mh	9,050	1,408	13,202			
			#57 Stone For Outlet Pipe Bedding (135 pc)	336.00 ln	0.150	50.40 mh	1,451	428	4,829			
			O & M	2,206.14 hrs	60,777	60,777	43,972	10,427	115,175			
			Ph 2 Initial Constr	2,206.14 hrs	60,777	60,777	43,972	10,427	115,175			
			10	2,206.14 hrs	60,777	60,777	43,972	10,427	115,175			
81	Rim Ditches	O & M	Cul (111,889 bcy)	134,279.00 cy	375,000	505,184	105,184	250,203	385,368	2.85	385,368	
			O & M	2,864.62 hrs	105,184	105,184	250,203	250,203	355,368			
			Rim Ditches	2,864.62 hrs	105,184	105,184	250,203	250,203	355,368			
			11	2,864.62 hrs	105,184	105,184	250,203	250,203	355,368			
			89	2,864.62 hrs	105,184	105,184	250,203	250,203	355,368			
			90	2,864.62 hrs	105,184	105,184	250,203	250,203	355,368			
			91	2,864.62 hrs	105,184	105,184	250,203	250,203	355,368			
			92	2,864.62 hrs	105,184	105,184	250,203	250,203	355,368			
			93	2,864.62 hrs	105,184	105,184	250,203	250,203	355,368			
			94	2,864.62 hrs	105,184	105,184	250,203	250,203	355,368			
82	Ph 2 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	0.00	0	
			Wet Cast Gypsum Dike Fill	255,189.00 cy	375,000	690,50 cd	198,858	475,496	675,354			
			Wet Sluice Gypsum Quantities	1,334,496.00 cy	-	-	-	-	-	0.00	0	
			Stage 1 Disposal Life (3 To 1 Side Slopes)	4.90 yrs	-	-	-	-	-	-	-	
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,495.00 lf	0.200	2,299.00 mh	62,748	9,781	91,533			
			Geotextile For Underdrain	9,679.00 sy	0.021	197.94 mh	5,621	670	25,687			
			#57 Stone For Outlet Pipe Bedding (135 pc)	2,236.00 ln	0.150	335.40 mh	10,182	2,988	34,151			
			Solid Outlet Pipe ADS Drain 6" Diameter	2,956.00 lf	0.200	591.20 mh	4,116	1,186	20,582			
			#57 Stone For Outlet Pipe Bedding (135 pc)	524.00 ln	0.150	78.60 mh	2,463	695	7,687			
			O & M	8,885.07 hrs	294,656	294,656	68,589	491,759	855,005			
Ph 2 Operational Cost	8,885.07 hrs	294,656	294,656	68,589	491,759	855,005						
12	8,885.07 hrs	294,656	294,656	68,589	491,759	855,005						
83	Ph 2 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes)	1.00 lot	-	-	-	-	-	0.00	0	
			Wet Cast Gypsum Dike Fill	263,403.00 cy	375,000	702.41 cd	206,292	485,801	697,093			
			Wet Sluice Gypsum Quantities	1,509,673.00 cy	-	-	-	-	-	0.00	0	
			Stage 2 Disposal Life (Assume Dike & Sluice Gypsum)	5.40 yrs	-	-	-	-	-	-	-	
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,965.00 lf	0.200	2,393.00 mh	64,765	10,075	94,476			
			Geotextile For Underdrain	9,898.00 sy	0.021	203.90 mh	5,632	662	26,516			
			#57 Stone For Outlet Pipe Bedding (135 pc)	2,403.00 ln	0.150	360.45 mh	10,170	3,082	35,251			
			Solid Outlet Pipe ADS Drain 6" Diameter	3,074.00 lf	0.200	614.80 mh	4,314	1,227	21,261			
			#57 Stone For Outlet Pipe Bedding (135 pc)	541.00 ln	0.150	81.15 mh	2,335	680	7,936			
			O & M	8,885.07 hrs	294,656	294,656	68,589	491,759	855,005			
Ph 2 Operational Cost	8,885.07 hrs	294,656	294,656	68,589	491,759	855,005						
13	8,885.07 hrs	294,656	294,656	68,589	491,759	855,005						

Spreadsheet Report  
KIF050308/FLY&BOTTOM ASH

Location	Activity	Usage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
4	Ph 3 Initial Constr	O & M	Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack) O & M Ph 3 Initial Constr	677,412.00 cy 1.40 yrs	1,100,000	9,171.26 hrs 9,171.26 hrs	304,146 304,146	70,801 70,801	-	507,589 507,589	-	3.33 0.00	882,536 882,536
5	Ph 3 Operational Cost	O & M	Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack) O & M Ph 3 Operational Cost	677,412.00 cy 1.40 yrs	1,100,000	9,171.26 hrs 9,171.26 hrs	304,146 304,146	70,801 70,801	-	507,589 507,589	-	3.33 0.00	882,536 882,536
6	Ph 3 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 1 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1,344,916.00 cy 4.80 yrs 0.50 mile	1,100,000	98,497.64 hrs 98,497.64 hrs	2,996,204 2,996,204	437,643 437,643	-	2,009,352 2,009,352	-	3.33 0.00	5,005,556 5,005,556
7	Ph 2 Operational Cost	O & M	Wet Sludge Gypsum Dike Fill Wet Sludge Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sludge Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Gravelite For Underdrain Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Gypsum Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost	221,106.00 cy 1,344,916.00 cy 4.80 yrs	375,000	805.92 cd 2,048.00 mh 175.36 mh 310.80 mh 480.40 mh 69.00 mh 7,907.39 hrs 7,907.39 hrs	177,985 55,841 5,003 8,947 12,586 2,012 262,232 262,232	423,169 8,667 597 18,807 1,955 584 437,643 437,643	-	423,169 8,667 597 18,807 1,955 584 437,643 437,643	-	2.85 0.00 0.00 7.96 2.68 14.67 7.96 14.67	601,033 61,480 61,480 30,395 19,330 6,896 760,916 760,916
18	Ph 3 Operational Cost	O & M	Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1,344,916.00 cy 4.80 yrs 0.50 mile	1,100,000	805.92 cd 2,048.00 mh 175.36 mh 310.80 mh 480.40 mh 69.00 mh 7,907.39 hrs 7,907.39 hrs	177,985 55,841 5,003 8,947 12,586 2,012 262,232 262,232	423,169 8,667 597 18,807 1,955 584 437,643 437,643	-	423,169 8,667 597 18,807 1,955 584 437,643 437,643	-	2.85 0.00 0.00 7.96 2.68 14.67 7.96 14.67	601,033 61,480 61,480 30,395 19,330 6,896 760,916 760,916
19	Ph 2 Operational Cost	O & M	Wet Sludge Gypsum Dike Fill Wet Sludge Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sludge Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Gravelite For Underdrain Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost	169,831.00 cy 702,654.00 cy 2.70 yrs	375,000	450.22 cd 1,321.90 cd 1,321.90 cd	132,225 2,656,457 2,656,457	314,564 1,781,506 1,781,506	-	314,564 1,781,506 1,781,506	-	0.00 2.65 0.00	446,899 4,437,963 4,437,963
20	Ph 2 Operational Cost	O & M	Wet Sludge Gypsum Dike Fill Wet Sludge Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sludge Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Gravelite For Underdrain Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) O & M Ph 2 Operational Cost	169,831.00 cy 702,654.00 cy 2.70 yrs	375,000	450.22 cd 1,321.90 cd 1,321.90 cd	132,225 2,656,457 2,656,457	314,564 1,781,506 1,781,506	-	314,564 1,781,506 1,781,506	-	0.00 2.65 0.00	446,899 4,437,963 4,437,963



Location	Activity	Outage Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 3 Operational Cost	O & M											
			Stage 4 (3 To 1 Side Slopes)	1.00 lot								0.00	0
			Dry Stack Ash Quantities	577,819.00 sy	1,100,000	595.10 cd	1,150,065			771,271		3.53	1,921,336
			Stage 4 Disposal Life (Assume Dike & Dry Stack Ash)	1.20 yrs								0.00	0
			O & M			37,807.40 hrs	1,150,065			771,271			1,921,336
			Ph 3 Operational Cost			37,807.40 hrs	1,150,065			771,271			1,921,336
25	Dry Fly Ash Conver.	Capital											1,921,336
			Dry Fly Ash Conversion Capital Cost	1.00 ls					25,675,000			25,675,000.00	25,675,000
			Dry Fly Ash Conver						25,675,000				25,675,000
			25						25,675,000				25,675,000
xCONST FACILITY													
			Construct Facilities										
			Mobilize, Drug Test, Misc Other, & Demobilize	1.00 ls	8,635.188	8,635.19 mh	267,000			143,900		410,900.00	410,900
			Capital			8,635.19 hrs	267,000			143,900			410,900
			Construct Facilities			8,635.19 hrs	267,000			143,900			410,900
			xCONST FACILITY			8,635.19 hrs	267,000			143,900			410,900
ZNON MANUAL													
			Non-Manual										
			Capital										
			Non Manual	1.00 ls	16,385.780	16,385.78 mh	819,289					819,289.00	819,289
			Capital			16,385.78 hrs	819,289						819,289
			Non-Manual			16,385.78 hrs	819,289						819,289
			ZNON MANUAL			16,385.78 hrs	819,289						819,289

3,531,669  
1,410,578

Spreadsheet Report  
KIF0509308/FLY&BOTTMAASH

Company

Estimate Totals

Category	Amount	Unit	Rate	Code
Labor	28,316,181	hrs	605,624.513	
Material	1,563,026			
Subcontract	26,837,182			
Equipment	20,813,621			
Other	50,000			
	<u>77,380,000</u>			
Engineered Materials - Ph. 2		100,000 %		C
Adjustment - Engr. Materials	77,380,000	(100,000) %		C
Environmental Costs		100,000 %		C
Adjustment Environmental	77,380,000	(100,000) %		C
Demolition Costs		100,000 %		C
Adjustment Demolition	77,380,000	(100,000) %		C
FPG Mech Engr - Phase 2	17,002	0.045 % @	42.00	A
FPG Elec Engr - Phase 2	17,002	0.045 % @	42.00	A
FPG Civil Engr - Phase 2	15,998	0.042 % @	42.00	A
Non-TVA Engr - Phase 2	280,996	0.400 % @	72.00	A
FPG Proj Cntrl Cost - Phase 2	1,000	0.003 % @	42.00	A
FPG Proj Cntrl Sched - Phase 2	3,000	0.008 % @	42.00	A
FPG Cost Estimating - Phase 2	1,000	0.003 % @	42.00	A
FPG Engr Records - Phase 2	1,000	0.003 % @	42.00	A
Phase 2 Other/Other Org	315,999			L
Rounding	77,696,999			
<b>Total</b>	<b>77,696,999</b>			

**KINGSTON FOSSIL PLANT  
OPTION 8 - DRY ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)**

KIF/0509308/FLY&BOTTM ASH

DAN SMITH

C. L. Toney

KIF 40 2004

TVA Equipment

Ash

KIF

0509308

KIF530

Dan Smith

8

0

2

Preliminary

±1-20%

12/20/2004

Capital

N

All cost are based in 2005 dollars. Additional notes are as follow:

(1) Closure costs not included.

(2) Bottom ash columns are subject to change with final design.

(3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.

(4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & 9/ysum/ash generating 327,330 cy annually.

(5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Project name

Engineer

Estimator

Labor rate table

Equipment rate table

Project

Plant

Estimate #

PCN #

Requesting Engr

Option

Revision

Phase

Estimate Type

Estimate Accuracy

Est. Issue Date

Funding Type

Unit

Notes

Report format

Sorted by 'Location/Activity/Outage Seq'  
Detail summary

Location	Activity	Outage Seq	Description	Takeoff Quantity	Effort Productivity	Labpr Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
01	Erosion Controls P	Capital	Erect Silt Fence	1,000.00 lf	0.029	88.57 mh	1,894	502			317		2,813		
			Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.018	85.60 mh	1,893	5,772	175			7,911		1,84	
			D50 9" Riprap	5,215.00 ln	0.320	1,665.60 mh	48,652	53,032	26,865			129,500		24.95	
			3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 ln	0.098	192.36 mh	8,555	1,190	3,066			27,312		13.63	
			Sig 1-6 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 FIVE)	4.00 ea	166.064	20,450	20,450	2,795				10,880.64		10.88064	
			Cut (Excavation For Placement Of 48" Dia Riser Stand Pipe @ 128 FIVE)	52.00 sy	0.400	598	598	177				776		14.81	
			Fill With 1032 Compacted/Crushed Stone	93.00 ln	1.107	804	889	320				2,510		26.98	
			30" Diameter CMP Culvert	1,000.00 lf	0.600	17,487	26,442	3,662				47,611		47.611	
			Bedding For 30" CMP, 6" Thick	135.00 lf	0.500	1,943	1,943	230				3,497		25.81	
			30" Diameter CMP Stand Pipes (4 Pipes @ 6 Stages w/30" Per Stage)	720.00 lf	0.750	19,623	19,623	2,279				31,490		31.490	
			D50 9" Riprap Outlet For Metal Spillway	53.00 ln	0.320	595	530	173				1,317		24.85	
			Galvanized Corrugated Metal Anti-Sweep Collar	16.00 ea	16.000	7,481	4,882	1,571				13,914		869.59	
			Erosion Controls S P	4,201.35 hrs		125,653	150,687	42,029				376,569		376.569	
			01									64,619		2,485.34	64,619
			02	Seed/Mulch	Capital	See/Mulch Disturbed Areas	26.00 ac		hrs			64,619			64,619
03	South Access Road	Capital				hrs			64,619			64,619			
04	Perimeter Road	Capital	1032 Crushed Stone Base, 6" Depth	3,520.00 ln	0.120	422.40 mh	13,739	31,950			4,147		48,836		
			1032 Roller Compacted Crushed Stone Base, 6" Depth	8,865.00 ln		826.20 hrs	26,872	62,493			8,112		14.16		
			Perimeter Road	826.20 hrs		26,872	62,493			8,112					
04									64,619			64,619			
06	Drg Coll/P1 Opr Coat	O & M	Ely 810 To Ely, 866	1.00 lot								0.00	0		
			Dry Ash Slack	5,176.0700 cu yd	1,100.000	4,878.25 cu yd	10,903.210	7,312.047			3.33		18,215.257		
			Wet Clay And Slack Bottom Ash Only	919.848 cu yd	375.000	1,810.26 cu yd	531.659	1,264.903			2.65		1,796.563		
06											0.00	0			
07	Ph 2 Base Construct	Capital	Disposal Life (Assume Dike & Dredge Ash)	12.90 Yr									20,011.819		
			Haul Distance (Round Trip)	0.50 mile										20,011.819	
			Drg Coll/P1 Opr Coat	372,915.76 hrs		11,434,869	11,434,869					3,576,950		20,011.819	
			O & M	372,915.76 hrs		11,434,869	11,434,869					8,576,950		20,011.819	
			Drg Coll/P1 Opr Coat	372,915.76 hrs		11,434,869	11,434,869					8,576,950		20,011.819	
			Base Layers	1.00 lot										0.00	0
			Compacted Fly Ash Base (Fill)	910,556.00 cu yd	1,300.000	700.43 cu yd	1,696,157	1,419,641				3,110,796		3.42	
			Proform Subgrade	281,111.00 cu yd	281,111.000	10.00 cu yd	4,497	4,080				12,577		0.05	
			2.5" Thick Bottom Ash Layer	242,407.00 cu yd	1,300.000	186.47 cu yd	451,519	376,604				628,153		3.42	
			0.5" Thick Fly Ash Filler Layer	48,481.00 cu yd	1,300.000	37.29 cu yd	90,309	75,320				195,925		3.42	
			18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	16,920.00 lf				347,597				347,597		20.54	
			Roll Tilt Fly Ash Layer	281,111.00 sy	1,400.000	200.79 cu yd	117,843	32,770				150,712		0.54	
			Bottom Ash Dike Fill	163,614.00 cu yd	1,300.000	125.86 cu yd	304,775	254,181				598,956		3.42	
			1.0" Layer Of Bottom Ash	96,983.00 cu yd	1,300.000	74.59 cu yd	180,620	150,642				331,262		3.42	
			Geosynthetic Clay Liner	290,889.00 sy	0.028	7,583.11 mh	215,760	19,288				93,954		3.21	
4" Diameter Perforated PVC Pipes (Underdrains) SDR 17.5	41,400.00 lf	0.070	2,898.00 mh	78,094	12,320				156,401		3.78				
Trenching For The Drain System (4" Dia Underdrains), 1,533 bcy	1,840.00 cu yd	0.200	368.00 mh	10,593	3,128				13,721		7.46				
Slope Existing 1" Soil Cover (Phase 1 Expansion), 19,133 bcy	22,960.00 cu yd	900.000	28.70 cu yd	14,128	14,930				29,058		1.27				
Anchor Trench Fill	2,073.00 cu yd	0.200	414.60 mh	11,636	5,286				17,221		8.31				
2.0" Thick Bottom Ash Blanket Drain	39,111.00 cu yd	0.320	630.72 mh	18,156	15,097				33,763		17.13				
1.0" Thick Filter Drain Ash Layer	19,555.00 cu yd	1,300.000	30.09 cu yd	72,655	60,783				123,234		3.42				
Geomembrane	59,667.00 sy	0.050	2,933.35 mh	83,852	7,490				91,588		7.78				
Perforated Pipe ADS Drain Tube, 6" Diameter	7,850.00 lf	0.200	1,570.00 mh	42,849	9,856				11,533		2.68				
Geotextile For Underdrain	6,542.00 sy	0.021	134.57 mh	3,639	4,559				23,325		14.67				
#67 Stone For Outlet Pipe Bedding (135 pcf)	1,590.00 ln	0.150	144.22 mh	6,885	1,432				5,824		7.96				
Solid Outlet Pipe ADS Drain 6" Diameter	1,663.00 lf	0.200	322.60 mh	10,715	1,667				5,824		14.87				
#67 Stone For Outlet Pipe Bedding (135 pcf)	397.00 ln	0.150	99.55 mh	4,068	3,603				3,822		7.96				
6" Dia Non-Perf HDPE Compacted Tubing Lateral Outlet Pipes (EL. 769)	480.00 lf	0.200	96.00 mh	2,620	152				25.61		25.61				
1081 Crushed Stone, Bedding 6" Depth	18.00 ln	0.500	9.00 mh	230	27				410						

Spreadsheet Report  
KIF0509308/FLY&BOTT/ASH

Location	Activity	Outage Seq	Description	Task/Qty	Unit	Prod	Labo/Qty	Labo/Amnt	Matl/Amnt	Sub/Amnt	Equip/Amnt	Other/Amnt	Total Cost/Est	Total Amount
	Capital		6" Dia Perforated HDPE Drain (EL. 76)	2,400.00 lf	0.200		480.00 mh	13,100	3,972		2,038		7.96	19,111
			10# Crushed Stone	454.00 in	0.500		227.00 mh	5,534	4,317		773		25.91	5,825
			Geotextile Woven Monofilament	1,687.00 sv	0.021		35.40 mh	1,098	3,760		131		2.68	5,827
			Cut For Underdrain System	356.00 cy	0.200		71.20 mh	2,050			801		7.46	5,955
			Backfill For Underdrain System	297.00 cy	0.250		69.75 mh	1,921			801		10.20	7,722
			Certification	1.00 ls						746.424		50,000.00		50,000.00
			O&M For Construction Of Disposal Facility	1.00 ls				3,486.017	955.697				746.424	8,079.211
			Capital	106,324.97 hrs				3,486.017	955.697				50,000.00	8,079.211
12			Ph 2 Base Construct	106,324.97 hrs				3,486.017	955.697				50,000.00	8,079.211
08			Temp Slope Protect											
	Capital		Cut For Ditch (5.815 bcy)	6,978.00 cy	1,200.000		5.82 cd	10,981			12,041		3.30	23,022
			D50 3" Riprap	4,239.00 in	0.320		1,356.48 mh	40,371	43,111		21,837		24.85	105,319
			Seed Ditch	6,978.00 sv				2,386	5,494		427		0.51	3,583
			Jobs Mailing	83.74 mh	0.012			2,386	5,494		427		1.19	8,280
			Capital	1,765.86 hrs				53,741	48,575		34,304			140,204
			Temp Slope Protect	1,765.86 hrs				53,741	48,575		34,304			140,204
08			Temp Slope Protect	1,765.86 hrs				53,741	48,575		34,304			140,204
09			Riprap Stilling Basin											
	Capital		Riprap D50 Size 3"	2,344.00 in	0.320		750.08 mh	22,224	23,639		12,075		24.85	58,237
			Cut For Basin (3.582 bcy)	4,300.00 cy	1,200.000		3.58 cd	6,767			19,469		3.30	14,196
			Capital	950.75 hrs				29,097	23,639		19,469			72,424
			Riprap Stilling Basin	950.75 hrs				29,097	23,639		19,469			72,424
09			Riprap Stilling Basin	950.75 hrs				29,097	23,639		19,469			72,424
10			Ph 2 Initial Constr											
	O & M		Wet Sludge Sedimented Gypsum Quantities	451,295.00 cy										
			Initial Cons. Disposal Life	1.40 yrs										
			Perforated Pipe ADS Drain Tube, 6" Diameter	7,370.00 lf	0.200		1,474.00 mh	40,220	12,199		6,258		7.96	58,696
			Geotextile For Underdrain	6,142.00 sv	0.021		128.34 mh	3,604	12,437		430		2.68	16,471
			#57 Stone For Outlet pipe Bedding (135 pct)	1,492.00 in	0.150		223.80 mh	6,442	13,542		1,408		14.67	21,687
			Solid Outlet Pipe ADS Drain 6" Diameter	1,653.00 lf	0.200		331.60 mh	9,050	2,744		1,408		7.96	13,202
			O & M	336.00 in	0.150		50.40 mh	1,451	3,050		428		14.67	4,929
			Ph 2 Initial Constr	2,208.14 hrs				60,777	43,972		16,427			115,175
			Ph 2 Initial Constr	2,208.14 hrs				60,777	43,972		16,427			115,175
10			Ph 2 Initial Constr	2,208.14 hrs				60,777	43,972		16,427			115,175
11			Rim Ditches											
	O & M		Cut (111,599 bcy)	134,279.00 cy	375.000		356.08 cd	105,164			256,203		2.65	355,368
			O & M	2,864.62 hrs				105,164			256,203			355,368
			Rim Ditches	2,864.62 hrs				105,164			256,203			355,368
11			Rim Ditches	2,864.62 hrs				105,164			256,203			355,368
12			Ph 2 Operational Cost											
	O & M		Stage 1 (3 To 1 Side Slopes)	1.00 lot										
			Wet Cast Gypsum Dike Fill	256,189.00 cy	375.000		685.50 cd	199,859			475,496		2.65	675,354
			Wet Sludge Gypsum Quantities	1,334,496.00 cy										
			Stage 1 (Disposal Life (3 To 1 Side Slopes))	4.90 yrs										
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,456.00 lf	0.200		2,291.20 mh	62,746	18,026		9,781		7.96	91,533
			Geotextile For Underdrain	9,579.00 sv	0.021		197.74 mh	5,621	19,396		670		2.68	25,687
			#57 Stone For Outlet pipe Bedding (135 pct)	2,328.00 in	0.150		349.20 mh	10,052	21,131		2,988		14.67	34,151
			Solid Outlet Pipe ADS Drain 6" Diameter	2,595.00 lf	0.200		517.20 mh	14,116	4,280		2,190		7.96	20,592
			O & M	624.00 in	0.150		75.60 mh	2,283	4,756		668		14.67	7,687
			Ph 2 Operational Cost	8,885.07 hrs				294,056	66,589		491,759			855,005
			Ph 2 Operational Cost	8,885.07 hrs				294,056	66,589		491,759			855,005
12			Ph 2 Operational Cost	8,885.07 hrs				294,056	66,589		491,759			855,005
13			Ph 2 Operational Cost											
	O & M		Stage 2 (3 To 1 Side Slopes)	1.00 lot										
			Wet Cast Gypsum Dike Fill	293,493.00 cy	375.000		795.41 cd	206,292			490,801		2.65	697,093
			Wet Sludge Gypsum Quantities	1,509,673.00 cy										
			Stage 2 (Disposal Life (Assume Dike & Sludge Gypsum))	5.40 yrs										
			Perforated Pipe ADS Drain Tube, 6" Diameter	11,885.00 lf	0.200		2,373.00 mh	64,765	18,639		10,075		7.96	94,479
			Geotextile For Underdrain	8,888.00 sv	0.021		203.40 mh	5,802	20,022		692		2.68	26,516
			#57 Stone For Outlet pipe Bedding (135 pct)	2,403.00 in	0.150		360.45 mh	10,376	21,811		3,084		14.67	35,261
			Solid Outlet Pipe ADS Drain 6" Diameter	2,670.00 lf	0.200		534.00 mh	14,574	4,418		2,287		7.96	21,281
			O & M	541.00 in	0.150		81.15 mh	2,335	4,911		690		14.67	7,936

Location	Activity	Output Seq	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Where Applied	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
14	Ph 3 Initial Constr	O & M	Ph 2 Operational Cost 13	9,171.25 hrs 9,171.25 hrs	1,000,000	304,146 304,146	70,801 70,801	507,589 507,589	-	-	-	3.33 0.00	882,536 882,536
14	Ph 3 Initial Constr	O & M	Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack) O & M Ph 3 Initial Constr	677,412.00 cy 1.40 yrs	1,000,000	1,348,771 1,348,771	904,530 904,530	904,530 904,530	-	-	-	3.33 0.00	2,653,301 2,653,301
15	Ph 3 Operational Cost	O & M	Stage 1 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 1 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1,00 lot 1,349,190.00 cy 2.80 yrs 0.50 mile	1,000,000	2,666,305 2,666,305	1,801,523 1,801,523	1,801,523 1,801,523	-	-	-	0.00 3.33 0.00	4,487,828 4,487,828
16	Ph 3 Operational Cost	O & M	Stage 2 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 2 Disposal Life (Assume Dry Stack) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1,00 lot 1,354,825.00 cy 3.20 yrs 0.50 mile	1,000,000	2,996,204 2,996,204	2,009,352 2,009,352	2,009,352 2,009,352	-	-	-	0.00 3.33 0.00	5,005,556 5,005,556
17	Ph 2 Operational Cost	O & M	Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 3 Disposal Life (Assume Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pct) O & M Ph 2 Operational Cost	227,106.00 cy 1,344,916.00 cy 4.80 yrs	375,000	177,895 55,841 5,003 5,947 12,566 2,012 262,232 262,232	423,169 8,087 587 1,855 504 437,643 437,643	423,169 8,087 587 1,855 504 437,643 437,643	-	-	-	2.65 0.00 0.00 7.98 2.68 14.87 14.87	601,033 0.00 0.00 81,480 22,851 30,355 13,330 8,836 760,916 760,916
18	Ph 3 Operational Cost	O & M	Stage 3 (3 To 1 Side Slopes) Dry Stack Ash Quantities Stage 3 Disposal Life (Assume Dry Stack Area) Haul Distance (Round Trip) O & M Ph 3 Operational Cost	1,00 lot 1,334,199.00 cy 2.80 yrs 0.50 mile	1,000,000	2,656,457 2,656,457	1,781,506 1,781,506	1,781,506 1,781,506	-	-	-	0.00 3.33 0.00 0.00	4,437,963 4,437,963
19	Ph 2 Operational Cost	O & M	Stage 4 (3 To 1 Side Slopes) Wet Cast Gypsum Dike Fill Wet Sluice Gypsum Quantities Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pct) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pct) O & M Ph 2 Operational Cost	1,00 lot 702,654.00 cy 2.70 yrs	375,000	132,225 41,512 3,719 6,650 9,340 52,03 194,344 194,344	314,594 6,458 443 1,984 1,453 442 325,344 325,344	314,594 6,458 443 1,984 1,453 442 325,344 325,344	-	-	-	0.00 2.65 0.00 7.96 2.68 14.87 14.87	446,809 0.00 0.00 60,557 6,996 24,991 13,924 5,060 565,009 565,009

Spreadsheet Report  
KIF0509308/FLY&BOTTM ASH

Estimate Company

Location	Activity	Outage Sec	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
	Ph 3 Operational Cost	O & M	Stage 4 (3 To 1 Side Slopes) Dry Stack Ash Quantities	1.00 lot 577,613.00 sq	1,100,000	525.10 sq	1,150,065	-	-	771,271	-	0.00	0
			Stage 4 Disposal Life (Assume Dike & Dry Stack Ash) O & M	1.20 yrs		37,807.40 hrs	1,150,065	-	-	771,271	-	0.00	0
			Ph 3 Operational Cost			37,807.40 hrs	1,150,065	-	-	771,271	-		1,921,336
			20										1,921,336
25	Dry Fly Ash Conver	* unassigned											
			Dry Fly Ash Conversion Capital Cost	1.00 ls		hrs			25,675,000			25,675,000.00	25,675,000
			* unassigned *			hrs			25,675,000				25,675,000
			Dry Fly Ash Conver			hrs			25,675,000				25,675,000
			25										
XCONST FACILITY	Construct Facilities	* unassigned											
ZNON MANUAL	Non-Manual	* unassigned											
			Mobilize, Drug Test, Misc Other, & Demobilize	0.00 ls	#####	0.00 mh	0			0		0.00	0
			Non Manual	0.00 ls	#####	0.00 mh	0					0.00	0

Estimate Totals

Category	Amount	Rate	Unit	Code
Labor	27,228,802	880,603.945	hrs	C
Material	1,563,026			C
Subcontract	25,637,152	820,287.954	hrs	C
Equipment	20,489,721			C
Other	506,000			C
<b>Engineered Materials - Ph 2</b>	<b>76,148,811</b>	<b>100,000 %</b>		<b>C</b>
<b>Adjustment - Engr/Materials</b>	<b>76,148,811</b>	<b>(100,000) %</b>		<b>C</b>
<b>Environmental Costs</b>	<b>76,148,811</b>	<b>100,000 %</b>		<b>C</b>
<b>Adjustment - Environmental</b>	<b>76,148,811</b>	<b>(100,000) %</b>		<b>C</b>
<b>Demolition Costs</b>	<b>76,148,811</b>	<b>100,000 %</b>		<b>C</b>
<b>Adjustment - Demolition</b>	<b>76,148,811</b>	<b>(100,000) %</b>		<b>C</b>
FPG Mech Engr - Phase 2	18,030	0.049 % @	42.00 A	429
FPG Elec Engr - Phase 2	18,030	0.049 % @	42.00 A	429
FPG Civil Engr - Phase 2	31,060	0.084 % @	42.00 A	740
Non-TVA Engr - Phase 2	1,150,570	1.815 % @	72.00 A	15,980
FPG Proj Crti Cost - Phase 2	962	0.003 % @	42.00 A	23
FPG Proj Crti Sched - Phase 2	2,885	0.008 % @	42.00 A	69
FPG Cost Estimating - Phase 2	862	0.003 % @	42.00 A	23
FPG Engr Records - Phase 2	862	0.003 % @	42.00 A	23
Phase 2 Other/Other Org	1,223,481			L
<b>Total</b>	<b>77,373,272</b>			<b>L</b>

\$3092/MA  
\$33.00/EA  
\$3,735,312  
x 1176

we \$410,9000

L=656 \$267,000

E=356 \$143,900

131,127 hrs  
x 1125

16,390 hrs



Spreadsheet Report  
KIF0509308/FLY&BOTTM ASH

KINGSTON FOSSIL PLANT  
OPTION 8 - DRY ASH IN POND & GYPSUM IN POND  
(WITH BUFFER OPTION)

Project name KIF0509308/FLY&BOTTM ASH

Engineer DAN SMITH

Estimator C. L. Toney

Labor rate table KIF 40 2004

Equipment rate table TVA Equipment

Project Ash

Plant KIF

Estimate # 0509308

FCN # KIF530

Requesting Engr Dan Smith

Option 8

Revision 0

Phase 2

Estimate Type Preliminary

Estimate Accuracy +/- 20%

Est. Issue Date 12/20/2004

Funding Type Capital

Unit N

Notes All cost are based in 2005 dollars. Additional notes are as follow:

- (1) Closure costs not included.
- (2) Bottom ash columns are subject to change with final design.
- (3) Engineering (incl TVA oversight, subcontracts, and geotechnical investigation) - Assumes 10% of construction cost.
- (4) Assuming a disposal rate of 475,600 cy annually (including bottom and fly ash) & gypsum/ash generating 327,360 cy annually.
- (5) Single phase power is assumed for pump installed for dredge cell seepage retrofit. 3-phase power is assumed not to be required.

Report format Sorted by Location/Activity  
Detail summary

Spreadsheet Report KIP70509308/FLY&BOITTM ASH

L=19% MATL=17% SUB=27% EOPT=2%

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount		
1	Erosion Controls/S P	Erect Silt Fence	1,000.00 lf	0.069	68.57 mh	1,675	494	311	-	-	-	2,480		
		Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.016	68.80 mh	1,649	5,676	172	-	-	-	1,74	7,497	
		D50 9' Riprap	5,215.00 tn	0.320	1,668.80 mh	41,737	52,150	26,338	-	-	-	23.05	120,225	
		3" Stone, 1" Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 tn	0.096	192.38 mh	5,089	17,886	3,006	-	-	-	12.96	25,991	
		Sig 1-6 CMP Mill Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 FtEa)	4.00 ea	189.000	684.33 mh	17,165	19,860	2,740	-	-	-	9,945.25	39,785	
		Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 boy	52.00 cy	0.400	20.80 mh	503	173	-	-	-	-	13.01	676	
		Fill With 1032 Compacted Crushed Stone	93.00 tn	0.400	37.20 mh	930	597	-	-	-	-	24.82	2,308	
		30" Diameter CMP Culvert	1,000.00 lf	0.600	600.00 mh	14,659	26,000	3,610	-	-	-	44.30	44,304	
		Bedding For 30" CMP, 6" Thick	135.00 tn	0.500	67.50 mh	1,633	225	-	-	-	-	23.12	3,121	
		30" Diameter CMP Stand Pipe (4 Pipes @ 6 Stages w/30" Per Stage)	720.00 lf	0.750	540.00 mh	13,969	18,720	2,235	-	-	-	49.51	34,923	
		D50 9' Riprap Outlet For Metal Spillway	53.00 tn	0.320	16.96 mh	424	268	-	-	-	-	1,222	23.05	
		Galvanized Corrugated Metal Anti-Seep Collar	6,270	18,000	256.00 mh	6,270	4,800	1,540	-	-	-	788.12	12,610	
		Erosion Controls/S P	4,201.35 hrs		4,201.35 hrs	105,759	148,168	41,205	-	-	-		295,132	
		01				105,759	148,168	41,205	-	-	-			
		2	Seed/Mulch	See/Mulch Disturbed Areas	26.00 ac		0.00 hrs	0	0	62,920	-	-	2,420.00	62,920
				Seed/Mulch			0.00 hrs	0	0	62,920	-	-		62,920
		3	South Access Road	1032 Crushed Stone Base, 6" Depth	3,520.00 tn	0.120	422.40 mh	11,545	31,416	4,066	-	-	13.36	47,027
South Access Road					422.40 hrs	11,545	31,416	4,066	-	-		47,027		
				422.40 hrs	11,545	31,416	4,066	-	-		47,027			
4	Perimeter Road	1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 tn	0.120	826.20 mh	22,592	61,449	7,953	-	-	13.36	91,993		
		Perimeter Road			826.20 hrs	22,592	61,449	7,953	-	-		91,993		
				826.20 hrs	22,592	61,449	7,953	-	-		91,993			
				826.20 hrs	22,592	61,449	7,953	-	-		91,993			
6	Drg Call#1 Opr Cost	Elev. 810 To Elev. 866	1.00 lot								0.00	0		
		Dry Ash Stack	5,175.070.00 cy	1,100.000	4,975.25 cd	9,162.361	7,140	7,168.673	-	-	2.98	16,331.035		
		Wet Dip And Stack Bottom Ash Only	975,948.00 cy	375.000	1,810.26 cd	446.773	1,240.101	1,686.874	-	-	2.49	4,447.166		
		Disposal Life (Assume Dike & Dredge Ash)	12.90 yr									0.00	0	
		Haul Distance (Round Trip)	0.50 mile									0.00	0	
		Drg Call#1 Opr Cost										0.00	0	
													18,017,909	
													18,017,909	
													18,017,909	
													18,017,909	
17	Ph 2 Base Construct	Base Layers	1.00 lot								0.00	0		
		Compacted Fly Ash Base (Fill)	910,556.00 cy	1,300.000	700.43 cd	1,425.342	256,214	1,385,803	-	-	3.09	2,12,235		
		Proctroll Subgrade	281,111.00 sy	28,111.100	19.00 cd	7,140	4,000	4,000	-	-	0.04	11,140		
		2.5" Thick Bottom Ash Layer	242,407.00 cy	1,300.000	186.47 cd	379,453	369,219	369,219	-	-	3.09	748,672		
		0.5" Thick Fly Ash Filler Layer	48,481.00 cy	1,300.000	37.29 cd	75,690	73,643	73,643	-	-	3.09	145,733		
		18" Dig Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	16,920.00 lf							338,400	-	20.00	338,400	
		Ratio Fill Fly Ash Layer	281,111.00 sy	1,400.000	200.79 cd	99,112	32,127	131,239	-	-	0.47	131,239		
		Bottom Ash Dike Fill	163,614.00 cy	1,300.000	125.86 cd	256,114	249,207	249,207	-	-	3.09	505,321		
		1.0" Layer Of Bottom Ash	96,969.00 cy	1,300.000	74.59 cd	151,751	147,668	147,668	-	-	3.09	295,459		
		Geosynthetic Clay Liner	290,889.00 sy	0.028	7,963.11 mh	81,311	687,223	18,908	-	-	3.05	887,444		
		4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	41,400.00 lf	0.070	2,895.00 mh	66,456	12,078	11,969	-	-	3.44	142,445		
		Trenching For The Drain System (4" Dia Underdrains), 1,532 boy	1,840.00 cy	0.200	368.00 mh	8,902	12,078	3,667	-	-	6.51	26,510		
		Strip Existing 1" Soil Cover (Phase 1 Expansion), 19,133 boy	22,960.00 cy	800.000	28.70 cd	11,637	14,637	14,637	-	-	1.16	15,212		
		Anchor Trench Cut	2,073.00 cy	0.200	414.60 mh	10,029	5,163	5,163	-	-	7.34	15,212		
		Anchor Trench Fill & Compact	1,971.00 cy	0.320	630.72 mh	15,257	15,257	15,257	-	-	15.50	30,556		
		2.0" Thick Bottom Ash Blanket Drain	38,111.00 sy	1,300.000	30.09 cd	61,223	59,671	59,671	-	-	3.09	120,784		
		1.0" Thick Filter Drain Ash Layer	56,566.00 cy	1,300.000	15.04 cd	30,612	29,787	29,787	-	-	3.09	60,399		
		Geomembrane	56,566.00 sy	0.030	2,693.35 mh	70,321	128,067	6,333	-	-	3.52	206,722		
		Perforated Pipe ADS Drain Tube, 6" Diameter	7,850.00 lf	0.020	1,970.00 mh	39,008	12,770	6,335	-	-	7.05	55,319		
		Geotextile For Underdrain	6,542.00 sy	0.021	1,343.57 mh	3,226	13,925	1,888	-	-	2.55	16,700		
		#7 Stone For Outlet pipe Bedding (135 pcf)	1,990.00 tn	0.150	238.50 mh	5,769	14,191	21,948	-	-	13.80	21,948		
		Solid Outlet Pipe ADS Drain 6" Diameter	1,963.00 lf	0.200	392.60 mh	9,004	3,195	13,833	-	-	7.05	13,833		
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 760)	397.00 tn	0.150	59.55 mh	1,441	496	5,460	-	-	13.60	5,460		
		106' Crushed Stone, Bedding 6" Depth	480.00 lf	0.200	96.00 mh	2,202	781	3,388	-	-	7.05	3,388		
		6" Dia Perforated HDPE Drain (EL. 760)	2,400.00 lf	0.200	480.00 mh	11,009	1,998	16,913	-	-	7.05	16,913		
		106' Crushed Stone	454.00 tn	0.500	227.00 mh	5,651	2,258	10,464	-	-	23.12	10,464		
		Geotextile Woven Monofilament	1,867.00 sy	0.021	36.40 mh	891	128	4,766	-	-	2.55	4,766		
Cut For Underdrain System	356.00 cy	0.200	71.20 mh	1,722	593	2,316	-	-	6.51	2,316				

Spreadsheet Report KIF/0609308/FL Y&B/TIM ASH

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
8	Ph 2 Base Construct <i>Apr 08 2015-2029</i>	Backfill For Underdrain System Certification Ph 2 Base Construct 07	297.00 cy 1.00 ls 1.00 ls	0.250	66.75 mh 106,324.97 hrs 106,324.97 hrs	1,615 2,929,426 2,929,426	- 939,722 939,722	- 726,800 1,065,200	785 2,444,643 2,444,643	- 50,000 50,000	8.99 50,000.00 726,800.00	2,400 50,000 7,428,991
8	Temp Slope Protect <i>2005</i>	Cut For Ditch (5.815 bcy) D50 # Riprap Seed Ditch Jute Matting Temp Slope Protect 08	6,978.00 cy 4,239.00 tn 6,978.00 sy 6,978.00 sy	1,200.000 0.320 0.012	5.82 cd 1,356.48 mh 83.74 mh 1,765.86 hrs 1,765.86 hrs	9,228 33,926 2,007 45,161 45,161	42,380 5,373 47,763 47,763	3,489 3,489	11,804 21,409	-	3.01 23.05 1.12	21,032 97,724 130,045
9	Riprap Stilling Basin <i>2005</i>	Riprap D50 Size # Cut For Basin (3,582 bcy) Riprap Stilling Basin 09	2,344.00 tn 4,300.00 cy	0.320 1,200.000	750.08 mh 3.58 cd 950.75 hrs 950.75 hrs	19,780 7,274 24,446 24,446	23,440	-	11,838 19,112	-	23.05 3.01	54,038 12,960 66,998 66,998
0	Ph 2 Initial Constr <i>AM 2009-2029</i>	Wet Sluice Sedimented Gypsum Quantities Initial Cons. Disposal Life Perforated Pipe ADS Drain, Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) Ph 2 Initial Constr 10	451,295.00 cy 1.40 yrs 7,370.00 lf 5,142.00 sy 1,492.00 tn 1,658.00 lf 336.00 tn	0.200 0.021 0.150 0.200 0.150	1,474.00 mh 169.34 mh 223.80 mh 331.90 mh 50.40 mh 2,206.14 hrs 2,206.14 hrs	3,855 3,029 5,414 2,698 2,989 51,073 51,073	11,955 12,239 13,316 2,698 2,989 43,237 43,237	-	6,136 421 1,865 1,390 420 10,222 10,222	-	0.00 0.00 7.05 2.55 13.80	0 51,936 15,679 20,595 11,884 4,638 104,532 104,532
1	Rim Ditches <i>AM 2009-2029</i>	Cut (111,899 bcy) Rim Ditches 11	134,279.00 cy	375.000	358.08 cd 2,864.62 hrs 2,864.62 hrs	88,373 88,373 88,373	-	-	245,297 245,297 245,297	-	2.49	333,671 333,671 333,671
2	Ph 2 Operational Cost <i>AM 2009-2029</i>	Stage 1 (3 To 1 Side Slopes) Wet Sluice Gypsum Quantities Wet Sluice Gypsum Quantities Stage 1 Disposal Life (3 To 1 Side Slopes) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) Ph 2 Operational Cost 13	1.00 lot 255,189.00 cy 1,334,496.00 cy 4.90 yrs 11,495.00 lf 9,579.00 sy 2,328.00 tn 2,596.00 lf 524.00 tn	375.000 375.000 0.200 0.021 0.150 0.200 0.150	680.50 cd 2,289.00 mh 87.04 mh 349.20 mh 517.20 mh 78.60 mh 8,885.07 hrs 8,885.07 hrs	187,948 59,728 4,724 8,474 11,682 1,901 247,610 247,610	-	466,172 9,570 657 2,910 2,159 695 482,117 482,117	-	-	0.00 2.49 0.00 0.00 7.05 13.80	0 534,121 24,453 32,135 18,224 7,233 797,170 797,170
3	Ph 2 Operational Cost <i>AM 2009-2029</i>	Stage 2 (3 To 1 Side Slopes) Wet Sluice Gypsum Quantities Wet Sluice Gypsum Quantities Stage 2 Disposal Life (Assume Dike & Sluice Gypsum) Perforated Pipe ADS Drain Tube, 6" Diameter Geotextile For Underdrain #57 Stone For Outlet Pipe Bedding (135 pcf) Solid Outlet Pipe ADS Drain 6" Diameter #57 Stone For Outlet Pipe Bedding (135 pcf) Ph 2 Operational Cost 13	1.00 lot 263,403.00 cy 1,509,673.00 cy 5.40 yrs 11,865.00 lf 9,888.00 sy 2,403.00 tn 2,670.00 lf 541.00 tn	375.000 375.000 0.200 0.021 0.150 0.200 0.150	702.41 cd 2,373.00 mh 203.40 mh 360.45 mh 534.00 mh 81.15 mh 9,171.26 hrs 9,171.26 hrs	173,354 54,625 4,676 8,719 12,247 1,983 255,585 255,585	-	481,178 9,878 678 3,064 2,227 676 497,636 497,636	-	0.00 2.49 0.00 0.00 7.05 13.80	0 654,532 4,339 4,339 25,241 33,170 18,816 7,469 822,839 822,839	
4	Ph 3 Initial Constr <i>AM 2007-2029</i>	Dry Stack Ash Quantities Initial Construction Disposal Life (Assume Dry Ash Stack)	677,412.00 cy 1.40 yrs	1,100.000	616.83 cd	1,133,421	-	-	886,794	-	2.98	2,020,215

Location	Activity	Description	Takeoff Quantity	Takeoff Productivity	Labo Quantity	Labo Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
5	Ph 3 Operational Cost	14	44,339.70 hrs	1,133,421	886,794	2,020,215	2,020,215					
	Stage 1 (3 To 1 Side Slopes)	Dry Stack Ash Quantities	1.00 lot	1,349,180.00 cy	2,257,399	0	0				0.00	0
	Stage 1 Disposal Life (Assume Dry Stack Area)	Haul Distance (Round Trip)	2.80 yrs	0.50 mile	88,309.96 hrs	2,257,399	0				0.00	0
	Ph 3 Operational Cost		88,309.96 hrs	2,257,399	1,766,199	4,023,598	4,023,598					
6	Ph 3 Operational Cost	15	98,497.64 hrs	2,517,818	1,989,953	4,487,771	4,487,771					
	Stage 2 (3 To 1 Side Slopes)	Dry Stack Ash Quantities	1.00 lot	1,504,825.00 cy	2,517,818	0	0				0.00	0
	Stage 2 Disposal Life (Assume Dry Stack)	Haul Distance (Round Trip)	3.20 yrs	0.50 mile	98,497.64 hrs	2,517,818	0				0.00	0
	Ph 3 Operational Cost		98,497.64 hrs	2,517,818	1,989,953	4,487,771	4,487,771					
7	Ph 2 Operational Cost	16	605.62 cd	148,466	554,337	554,337	554,337					
	Wet Cast Gypsum Dike Fill		227,106.00 cy	1,344,916.00 cy	46,925	0	0				0.00	0
	Wet Sluice Gypsum Quantities	Stage 3 Disposal Life (Assume Dike & Sluice Gypsum)	4.80 yrs	10,230.00 lf	46,925	0	0				0.00	0
	Perforated Pipe ADS Drain Tube, 6" Diameter	Geotextile For Underdrain	9,625.00 sy	2,072.00 lf	4,204	16,973	21,177				7.05	72,091
	#57 Stone For Outlet Pipe Bedding (135 pcf)	Solid Outlet Pipe ADS Drain 6" Diameter	2,392.00 lf	466.00 lf	7,518	18,493	26,011				13.80	28,601
	#57 Stone For Outlet pipe Bedding (135 pcf)	Ph 2 Operational Cost	466.00 lf	1,691	10,559	3,747	14,306				13.80	16,222
	Ph 2 Operational Cost		7,907.39 hrs	220,363	429,061	60,021	709,445					
	Ph 2 Operational Cost		7,907.39 hrs	220,363	429,061	60,021	709,445					
8	Ph 3 Operational Cost	17	1,212.90 cd	2,232,317	3,978,891	3,978,891	3,978,891					
	Stage 3 (3 To 1 Side Slopes)	Dry Stack Ash Quantities	1.00 lot	1,334,189.00 cy	2,232,317	0	0				0.00	0
	Stage 3 Disposal Life (Assume Dry Stack Area)	Haul Distance (Round Trip)	2.80 yrs	0.50 mile	87,328.74 hrs	2,232,317	0				0.00	0
	Ph 3 Operational Cost		87,328.74 hrs	2,232,317	1,746,575	3,978,891	3,978,891					
9	Ph 2 Operational Cost	18	450.22 cd	1,111,113	308,416	419,529	419,529					
	Stage 4 (3 To 1 Side Slopes)	Wet Cast Gypsum Dike Fill	1.00 lot	168,831.00 cy	1,111,113	0	0				0.00	0
	Wet Sluice Gypsum Quantities	Stage 4 Disposal Life (Assume Dike & Sluice Ash & Gypsum)	2.70 yrs	7,685.00 lf	34,884	12,377	47,261				7.05	53,592
	Perforated Pipe ADS Drain Tube, 6" Diameter	Geotextile For Underdrain	6,336.00 sy	1,540.00 lf	3,125	12,619	15,739				2.55	16,178
	#57 Stone For Outlet Pipe Bedding (135 pcf)	Solid Outlet Pipe ADS Drain 6" Diameter	1,711.00 lf	347.00 lf	5,588	13,745	19,333				13.80	21,257
	#57 Stone For Outlet pipe Bedding (135 pcf)	Ph 2 Operational Cost	347.00 lf	1,259	3,097	434	4,293				13.80	4,729
	Ph 2 Operational Cost		5,878.35 hrs	163,818	316,965	44,622	527,406					
	Ph 2 Operational Cost		5,878.35 hrs	163,818	316,965	44,622	527,406					
0	Ph 3 Operational Cost	19	525.10 cd	968,441	756,148	1,722,589	1,722,589					
	Stage 4 (3 To 1 Side Slopes)	Dry Stack Ash Quantities	1.00 lot	577,613.00 cy	968,441	0	0				0.00	0
	Stage 4 Disposal Life (Assume Dike & Dry Stack Ash)	Haul Distance (Round Trip)	1.20 yrs	37,807.40 hrs	968,441	0	0				0.00	0
	Ph 3 Operational Cost		37,807.40 hrs	968,441	756,148	1,722,589	1,722,589					
5	Dry Fly Ash Converter	25	1.00 ls	25,000,000	25,000,000	25,000,000	25,000,000					
	Dry Fly Ash Converter Capital Cost		1.00 ls	25,000,000	25,000,000	25,000,000	25,000,000					
	Dry Fly Ash Converter		1.00 ls	25,000,000	25,000,000	25,000,000	25,000,000					
	CONST FACILITY											

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
NON MANUAL	Construct Facilities 2005-2009	Mobilize, Drug Test, Misc Other, & Demobilize Construct Facilities XCONST FACILITY	1.00 ls	12,124.71	12,124.71 mh 12,124.71 hrs 12,124.71 hrs	315,000 315,000 315,000	-	-	170,000 170,000 170,000	-	485,000.00	485,000 485,000 485,000
NON MANUAL	Non-Manual 2005-2009	Non Manual Non-Manual ZNON MANUAL	1.00 ls	23,000.00	23,000.00 mh 23,000.00 hrs 23,000.00 hrs	1,150,000 1,150,000 1,150,000	-	-	-	-	1,150,000.00	1,150,000 1,150,000 1,150,000

Estimate Totals

Labor	24,347,271	915,728,256	hrs		
Material	1,536,899				
Subcontract	26,131,609				
Equipment	20,238,354				
Other	50,000				
	<u>72,304,133</u>	<u>72,304,133</u>			
Engineered Materials - Ph 2		100,000 %		C	
Adjustment - Engr Materials		(100,000) %		C	
	<u>72,304,133</u>				
Environmental Costs		100,000 %		C	
Adjustment Environmental		(100,000) %		C	
	<u>72,304,133</u>				
Demolition Costs		100,000 %		C	
Adjustment Demolition		(100,000) %		C	
	<u>72,304,133</u>				
Small Tools Expense	401,728	0.450 \$/hr		H	
Consumables & Expendables	927,661	4.000 %		C	
Office Supplies & Expense	34,300	3.000 %		C	
Subcontract Fee	<u>1,364,119</u>			C	
	<u>73,668,252</u>				
Escalation - Craft Labor	1,043,877	4.500 %		C	
Escalation - Subcontract	705,553	2.700 %		C	
Escalation - Subcontract Fee		0.350 %		C	
Escalation - Perm Materials	26,127	1.700 %		C	
Escalation - HED Equipment		2.000 %		C	
Escalation - Tagged Equipment		2.000 %		C	
Escalation - Small Tools	30,353	0.034 \$/hr		H	
Escalation - Consumables	46,395	0.200 %		C	
Escalation - Non-Manual Labor	39,100	3.400 %		C	
Escalation - Office Supplies	<u>2,300</u>	0.200 %		C	
	<u>1,893,705</u>				
Performer Insurance (FY04)	730,418	3.000 %		C	
Partner Award Fee (FY04)	<u>1,217,364</u>	5.000 %		C	
	<u>1,947,782</u>				
FPG Mech Engr - Phase 2	18,750	0.049 % @ 42.00 A		A	446
FPG Elec Engr - Phase 2	18,750	0.049 % @ 42.00 A		A	446
FPG Civil Engr - Phase 2	32,299	0.084 % @ 42.00 A		A	769
Non-TVA Engr - Phase 2	1,196,463	1.815 % @ 72.00 A		A	16,618
FPG Proj Cntrl Cost - Phase 2	1,000	0.003 % @ 42.00 A		A	24
FPG Proj Cntrl Sched - Phase 2	3,000	0.008 % @ 42.00 A		A	71
FPG Cost Estimating - Phase 2	1,000	0.003 % @ 42.00 A		A	24
FPG Engr Records - Phase 2	1,000	0.003 % @ 42.00 A		A	24
Phase 2 Other/Other Org				L	
	<u>1,272,252</u>				
	<u>78,782,001</u>				
Total	<u>78,782,001</u>				

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-Rounding