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

Project name	KIF/05093O3/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 #	05093O3
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

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 colums 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' '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	1,994	502	-	317	-	2.81	2,813
		Geotextile (Nonwoven) Erosion Protection Channel	4,300.00 sy	0.016	68.80 mh	1,963	5,772	-	175	-	1.84	7,911
		D50 9" Riprap	5,215.00 tn	0.320	1,668.80 mh	49,667	53,037	-	26,865	-	24.85	129,568
		3" Stone, 1' Thick To Prevent Erosion (Assume 105 pcf)	2,004.00 tn	0.096	192.38 mh	6,056	18,190	-	3,066	-	13.63	27,312
		Stg 1-6 CMP Mtl Spillway (1/2 of 48" Dia Riser Stand Pipe @ 128 Ft/Ea)	4.00 ea	166.084	664.33 mh	20,450	20,198	-	2,795	-	10,860.84	43,443
		Cut (Excavation For Placement Of 48" Dia Half-Round Pipe) 43 bcy	52.00 cy	0.400	20.80 mh	599	-	-	177	-	14.91	776
		Fill With 1032 CompactedCrushed Stone	93.00 tn	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	-	3,682	-	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 (4Pipes @ 6 Stages w/30' Per Stage)	720.00 lf	0.750	540.00 mh	16,623	19,038	-	2,279	-	52.70	37,940
		D50 9" Riprap Outlet For Metal Spillway	53.00 tn	0.320	16.96 mh	505	539	-	273	-	24.85	1,317
		Galvanized Corrugated Metal Anti-Seep Collar	16.00 ea	16.000	256.00 mh	7,461	4,882	-	1,571	-	869.59	13,914
		Erosion Controls/S P			**4,201.35 hrs**	**125,853**	**150,687**		**42,029**			**318,569**
		01			***4,201.35 hrs***	***125,853***	***150,687***		***42,029***			***318,569***
02												
	Seed/Mulch											
		See/Mulch Disturbed Areas	26.00 ac		-	-	-	64,619	-	-	2,485.34	64,619
		Seed/Mulch			**hrs**			**64,619**				**64,619**
		02			***hrs***			***64,619***				***64,619***
03												
	South Access Road											
		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
		South Access Road			**422.40 hrs**	**13,739**	**31,950**		**4,147**			**49,836**
		03			***422.40 hrs***	***13,739***	***31,950***		***4,147***			***49,836***
04												
	Perimeter Road											
		1032 Roller Compacted Crushed Stone Base, 6" Depth	6,885.00 tn	0.120	826.20 mh	26,872	62,493	-	8,112	-	14.16	97,478
		Perimeter Road			**826.20 hrs**	**26,872**	**62,493**		**8,112**			**97,478**
		04			***826.20 hrs***	***26,872***	***62,493***		***8,112***			***97,478***
05												
	Instl Drns/Swan Pond											
		6" Dia Pipe Bollards	24.00 ea	1.500	36.00 mh	1,036	4,882	-	245	-	256.78	6,163
		PVC Monitoring Wells	6.00 ea		-	-	-	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	2,587	785	-	403	-	7.96	3,774
		Crushed Stone, Bedding 6" Depth	16.00 tn	0.500	8.00 mh	230	152	-	27	-	25.61	410
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 780)	520.00 lf	0.200	104.00 mh	2,838	861	-	442	-	7.96	4,141
		Crushed Stone, Bedding 6" Depth	18.00 tn	0.500	9.00 mh	259	171	-	31	-	25.61	461
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 792)	491.00 lf	0.200	98.20 mh	2,680	813	-	417	-	7.96	3,910
		Crushed Stone, Bedding 6" Depth	17.00 tn	0.500	8.50 mh	245	162	-	29	-	25.61	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	10,208
		Crushed Stone, Bedding 6" Depth	43.00 tn	0.500	21.50 mh	619	409	-	73	-	25.61	1,101
		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 6" Depth	41.00 tn	0.500	20.50 mh	590	390	-	70	-	25.61	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	9,396
		Crushed Stone, Bedding 6" Depth	40.00 tn	0.500	20.00 mh	578	380	-	68	-	25.61	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	9,237
		Crushed Stone, Bedding 6" Depth	39.00 tn	0.500	19.50 mh	561	371	-	66	-	25.61	999
		Cut For 6" Dia Non-Perforated HDPE (17,658 bcy)	21,190.00 cy	0.200	4,238.00 mh	121,995	-	-	36,025	-	7.46	158,020
		Backfill For 6" Dia Non-Perforated HDPE (12,361 bcy)	14,833.00 cy	0.250	3,708.25 mh	106,748	-	-	44,481	-	10.20	151,227
		Cut For 6" Dia Perforated HDPE (18,186 bcy)	21,824.00 cy	0.200	4,364.80 mh	125,646	-	-	37,103	-	7.46	162,748
		Backfill For 6" Dia Perforated HDPE (12,730 bcy)	15,276.00 cy	0.250	3,819.00 mh	109,934	-	-	45,810	-	10.20	155,744
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 763)	2,000.00 lf	0.200	400.00 mh	10,917	3,310	-	1,698	-	7.96	15,926
		1081 Crushed Stone	378.00 tn	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	-	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	30,179
		1081 Crushed Stone	716.00 tn	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	5,969	-	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	786.00 tn	0.150	117.90 mh	3,394	7,134	-	1,002	-	14.67	11,530
		Geotextile Woven Monofilament	3,236.00 sy	0.021	66.56 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 tn	0.150	111.30 mh	3,204	8,735	-	946	-	14.67	10,886
		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	0.200	1,282.00 mh	34,989	10,810	-	5,443	-	7.96	51,042
		1081 Crushed Stone	1,211.00 tn	0.150	181.65 mh	5,229	10,992	-	1,544	-	14.67	17,765
		Geotextile Woven Monofilament	4,986.00 sy	0.021	102.56 mh	2,926	10,096	-	349	-	2.68	13,371
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 817)	6,090.00 lf	0.200	1,218.00 mh	33,242	10,080	-	5,171	-	7.96	48,494
		1081 Crushed Stone	1,151.00 tn	0.150	172.65 mh	4,970	10,447	-	1,468	-	14.67	16,885
		Geotextile Woven Monofilament	4,737.00 sy	0.021	97.44 mh	2,780	9,592	-	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	9,765	-	5,010	-	7.96	46,981

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 Drns/Swan Pond											
		1081 Crushed Stone	1,115.00 tn	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	9,292	-	321	-	2.68	12,306
		6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200	1,160.00 mh	31,659	9,800	-	4,925	-	7.96	46,185
		1081 Crushed Stone	1,096.00 tn	0.150	164.40 mh	4,732	9,948	-	1,397	-	14.67	16,078
		Geotextile Woven Monofilament	4,511.00 sy	0.021	92.79 mh	2,647	9,134	-	316	-	2.68	12,097
		12" Dia Force Main HDPE Perimeter Underdrain (EL. 763)	2,580.00 lf	0.250	645.00 mh	17,604	13,087	-	2,741	-	12.96	33,432
		1081 Crushed Stone	575.00 tn	0.150	86.25 mh	2,483	5,219	-	733	-	14.67	8,435
		Submersible Pumping Station Equipment Package	1.00 ls	56.000	56.00 mh	2,266	5,085	-	209	-	7,560.57	7,561
		60" Diameter Catch Basin (Precast)	1.00 ea	60.000	60.00 mh	1,810	3,051	-	478	-	5,338.36	5,338
		Geotextile Woven Monofilament	2,293.00 sy	0.021	47.17 mh	1,346	4,643	-	160	-	2.68	6,149
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	54.00 cy	1.000	54.00 mh	1,515	2,856	-	499	-	90.19	4,870
		Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ea	4.000	8.00 mh	304	102	-	80	-	243.02	486
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	53.00 cy	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	4.000	8.00 mh	304	102	-	80	-	243.02	486
		Grout Seal Storm Drain - 24" Diameter (Pump & Plug)	23.00 cy	1.000	23.00 mh	645	1,216	-	212	-	90.19	2,074
		Seal Weld 1/4" Thick A-36 Steel Plate	2.00 ea	4.000	8.00 mh	304	102	-	80	-	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	-	-	77	-	8.31	249
		Backfill For 24" Diameter CMP (17 bcy)	21.00 cy	0.320	6.72 mh	193	-	-	166	-	17.13	360
		Bedding For 24" Culvert	4.00 tn	0.500	2.00 mh	58	38	-	7	-	25.61	102
		36" CMP Storm Drain	72.00 lf	0.600	43.20 mh	1,259	2,709	-	265	-	58.80	4,233
		Excavation For 36" Dia Pipe (67 bcy)	81.00 cy	0.200	16.20 mh	466	-	-	207	-	8.31	673
		Backfill For 36" Diameter CMP (47 bcy)	57.00 cy	0.320	18.24 mh	525	-	-	451	-	17.13	976
		Bedding For 36" Culvert	9.00 tn	0.500	4.50 mh	130	86	-	15	-	25.61	230
		Anchor Trench - Excavate Into Borrow Area (8,650 bcy)	10,380.00 cy	0.200	2,076.00 mh	59,760	-	-	26,469	-	8.31	86,229
		Upper & Lower LLDPE Geomembrane	110,688.00 sy	0.050	5,534.40 mh	157,885	247,653	-	14,113	-	3.79	419,651
		Sediment Trap (3,630 bcy)	4,356.00 cy	0.040	174.24 mh	5,807	-	-	4,582	-	2.39	10,389
		Instl Drns/Swan Pond			35,789.66 hrs	1,016,066	495,205	12,324	265,158			1,788,753
		05			***35,789.66 hrs***	***1,016,066***	***495,205***	***12,324***	***265,158***			***1,788,753***
06												
	Drg Cell/P1 Opr Cost											
		Elv. 810 To Elv. 844	***1.00 lot***		-	-	-	-	-	-	***0.00***	***0***
		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		-	-	-	7,631,580	-	-	1.57	7,631,580
		Wet Dip And Stack	678,848.00 cy	375.000	1,810.26 cd	531,659	-	-	1,264,903	-	2.65	1,796,563
		Disposal Life (Assume Dike & Dredge Ash)	***12.90 yr***		-	-	-	-	-	-	***0.00***	***0***
		Drg Cell/P1 Opr Cost			48,954.36 hrs	1,691,078		7,631,580	2,231,890			11,554,547
		06			***48,954.36 hrs***	***1,691,078***		***7,631,580***	***2,231,890***			***11,554,547***
07												
	Ph 2&Ph 3 Base Const											
		Base Layers	***1.00 lot***		-	-	-	-	-	-	***0.00***	***0***
		Cut For Dredge Cell (268,500 bcy)	322,200.00 cy	0.040	12,888.00 mh	429,505	-	-	338,937	-	2.39	768,442
		Compacted Fly Ash Base (Fill)	910,556.00 cy	1,300.000	700.43 cd	1,696,157	-	-	1,414,641	-	3.42	3,110,798
		Proofroll Subgrade	281,111.00 sy	28,111.100	10.00 cd	8,497	-	-	4,080	-	0.05	12,577
		2.5' Thick Bottom Ash Layer	242,407.00 cy	1,300.000	186.47 cd	451,549	-	-	376,604	-	3.42	828,153
		0.5' Thick Fly Ash Filter Layer	48,481.00 cy	1,300.000	37.29 cd	90,309	-	-	75,320	-	3.42	165,629
		18" Dia Coarse Bottom Ash Drain Columns (haul 2 miles, 1,100 bcy)	16,920.00 lf		-	-	-	347,537	-	-	20.54	347,537
		Roto Till Fly Ash Layer	281,111.00 sy	1,400.000	200.79 cd	117,943	-	-	32,770	-	0.54	150,712
		Bottom Ash Dike Fill	163,614.00 cy	1,300.000	125.86 cd	304,775	-	-	254,191	-	3.42	558,966
		4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	41,400.00 lf	0.070	2,898.00 mh	79,094	64,987	-	12,320	-	3.78	156,401
		Trenching For The Drain System (4" Dia Underdrains), 1,533 bcy	1,840.00 cy	0.200	368.00 mh	10,593	-	-	3,128	-	7.46	13,721
		Strip Existing 1' Soil Cover (Phase 1 Expansion), 19,133 bcy	22,960.00 cy	800.000	28.70 cd	14,128	-	-	14,930	-	1.27	29,058
		Anchor Trench Cut	2,073.00 cy	0.200	414.60 mh	11,935	-	-	5,286	-	8.31	17,221
		Anchor Trench Fill & Compact	1,971.00 cy	0.320	630.72 mh	18,156	-	-	15,607	-	17.13	33,763
		2.0' Thick Bottom Ash Blanket Drain	39,111.00 cy	1,300.000	30.09 cd	72,855	-	-	60,763	-	3.42	133,618
		1.0' Thick Filter Drain Ash Layer	19,556.00 cy	1,300.000	15.04 cd	36,428	-	-	30,382	-	3.42	66,811
		Geomembrane	58,667.00 sy	0.050	2,933.35 mh	83,682	131,262	-	7,480	-	3.79	222,424
		Perforated Pipe ADS Drain Tube, 6" Diameter	7,850.00 lf	0.200	1,570.00 mh	42,849	12,993	-	6,666	-	7.96	62,508
		Geotextile For Underdrain	6,542.00 sy	0.021	134.57 mh	3,839	13,247	-	458	-	2.68	17,543
		#57 Stone For Outlet pipe Bedding (135 pcf)	1,590.00 tn	0.150	238.50 mh	6,865	14,432	-	2,027	-	14.67	23,325
		Solid Outlet Pipe ADS Drain 6" Diameter	1,963.00 lf	0.200	392.60 mh	10,715	3,249	-	1,667	-	7.96	15,631
		#57 Stone For Outlet pipe Bedding (135 pcf)	397.00 tn	0.150	59.55 mh	1,714	3,603	-	506	-	14.67	5,824
		6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 760)	480.00 lf	0.200	96.00 mh	2,620	794	-	408	-	7.96	3,822
		1081Crushed Stone, Bedding 6" Depth	16.00 tn	0.500	8.00 mh	230	152	-	27	-	25.61	410
		6" Dia Perforated HDPE Drain (EL. 760)	2,400.00 lf	0.200	480.00 mh	13,100	3,972	-	2,038	-	7.96	19,111
		1081Crushed Stone	454.00 tn	0.500	227.00 mh	6,534	4,317	-	773	-	25.61	11,625
		Geotextile Woven Monofilament	1,867.00 sy	0.021	38.40 mh	1,096	3,780	-	131	-	2.68	5,007
		Cut For Underdrain System	356.00 cy	0.200	71.20 mh	2,050	-	-	605	-	7.46	2,655
		Backfill For Underdrain System	267.00 cy	0.250	66.75 mh	1,921	-	-	801	-	10.20	2,722
		Certification	1.00 ls		-	-	-	-	-	50,000	50,000.00	50,000
		QA/QC For Construction Of Diposal Facility	1.00 ls		-	-	-	746,424	-	-	746,423.60	746,424

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
					106,279.60 hrs	3,519,142	256,789	1,093,960	2,662,546	50,000		7,582,437
		07			*106,279.60 hrs*	*3,519,142*	*256,789*	*1,093,960*	*2,662,546*	*50,000*		*7,582,437*
08												
	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
		D50 9" Riprap	4,239.00 tn	0.320	1,356.48 mh	40,371	43,111	-	21,837	-	24.85	105,319
		Seed Ditch	6,978.00 sy		-	-	-	3,583	-	-	0.51	3,583
		Jute Matting	6,978.00 sy	0.012	83.74 mh	2,389	5,464	-	427	-	1.19	8,280
		Temp Slope Protect			1,765.86 hrs	53,741	48,575	3,583	34,304			140,204
		08			*1,765.86 hrs*	*53,741*	*48,575*	*3,583*	*34,304*			*140,204*
09												
	Riprap Stilling Basn											
		Riprap D50 Size 9"	2,344.00 tn	0.320	750.08 mh	22,324	23,838	-	12,075	-	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
		Riprap Stilling Basn			950.75 hrs	29,091	23,838		19,495			72,424
		09			*950.75 hrs*	*29,091*	*23,838*		*19,495*			*72,424*
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 mh	40,229	12,199	-	6,258	-	7.96	58,686
		Geotextile For Underdrain	6,142.00 sy	0.021	128.34 mh	3,804	12,437	-	430	-	2.68	16,671
		#57 Stone For Outlet pipe Bedding (135 pcf)	1,492.00 tn	0.150	223.80 mh	6,442	13,542	-	1,902	-	14.67	21,887
		Solid Outlet Pipe ADS Drain 6" Diameter	1,658.00 lf	0.200	331.60 mh	9,050	2,744	-	1,408	-	7.96	13,202
		#57 Stone For Outlet pipe Bedding (135 pcf)	336.00 tn	0.150	50.40 mh	1,451	3,050	-	428	-	14.67	4,929
		Ph 2 Initial Constr			2,206.14 hrs	60,777	43,972		10,427			115,175
		10			*2,206.14 hrs*	*60,777*	*43,972*		*10,427*			*115,175*
11												
	Rim Ditches											
		Cut (111,899 bcy)	134,279.00 cy	375.000	358.08 cd	105,164	-	-	250,203	-	2.65	355,368
		Rim Ditches			2,864.62 hrs	105,164			250,203		4.25	355,368
		11			*2,864.62 hrs*	*105,164*			*250,203*			*355,368*
12												
	Ph 2 Operationl 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	199,859	-	-	475,496	-	4.25 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	2,299.00 mh	62,746	19,026	-	9,761	-	7.96	91,533
		Geotextile For Underdrain	9,579.00 sy	0.021	197.04 mh	5,621	19,396	-	670	-	2.68	25,687
		#57 Stone For Outlet pipe Bedding (135 pcf)	2,328.00 tn	0.150	349.20 mh	10,052	21,131	-	2,968	-	14.67	34,151
		Solid Outlet Pipe ADS Drain 6" Diameter	2,586.00 lf	0.200	517.20 mh	14,116	4,280	-	2,196	-	7.96	20,592
		#57 Stone For Outlet pipe Bedding (135 pcf)	524.00 tn	0.150	78.60 mh	2,263	4,756	-	668	-	14.67	7,687
		Ph 2 Operationl Cost			8,885.07 hrs	294,656	68,589		491,759			855,005
		12			*8,885.07 hrs*	*294,656*	*68,589*		*491,759*			*855,005*
13												
	Ph 2 Operationl 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	206,292	-	-	490,801	-	2.65	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*		-	-	-	-	-	-	*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)	2,403.00 tn	0.150	360.45 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	4,419	-	2,267	-	7.96	21,261
		#57 Stone For Outlet pipe Bedding (135 pcf)	541.00 tn	0.150	81.15 mh	2,336	4,911	-	690	-	14.67	7,936
		Ph 2 Operationl Cost			9,171.26 hrs	304,146	70,801		507,589			882,536
		13			*9,171.26 hrs*	*304,146*	*70,801*		*507,589*			*882,536*
14												
	Ph 3 Initial Constr											
		Dry Ash Stack	569,783.00 cy	1,100.000	517.98 cd	1,134,475	-	-	760,816	-	3.33	1,895,291
		Disposal Life (Assumes Dry Stack Ash)	*1.20 yrs*		-	-	-	-	-	-	*0.00*	*0*
		Ph 3 Initial Constr			37,294.89 hrs	1,134,475			760,816			1,895,291
		14			*37,294.89 hrs*	*1,134,475*			*760,816*			*1,895,291*
15												
	Ph 3 Operationl Cost											

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 Operationl 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	2,686,305	-	-	1,801,523	-	3.33	4,487,828
		Stage 1 Disposal Life (Assume Dike Stack)	*2.80 yrs*		-	-	-	-	-	-	*0.00*	*0*
		Ph 3 Operationl Cost			88,309.96 hrs	2,686,305			1,801,523			4,487,828
		15			*88,309.96 hrs*	*2,686,305*			*1,801,523*			*4,487,828*
16												
	Ph 3 Operationl Cost											
		Stage 2 (3 To 1 Side Slopes)	*1.00 lot*		-	-	-	-	-	-	*0.00*	*0*
		Dry Stack Ash Quantities	1,504,825.00 cy	1,100.000	1,368.02 cd	2,996,204	-	-	2,009,352	-	3.33	5,005,556
		Stage 2 Disposal Life (Assume Dry Stack)	*3.20 yrs*		-	-	-	-	-	-	*0.00*	*0*
		Ph 3 Operationl Cost			98,497.64 hrs	2,996,204			2,009,352			5,005,556
		16			*98,497.64 hrs*	*2,996,204*			*2,009,352*			*5,005,556*
17												
	Ph 3 Operationl Cost											
		Dry Stack Ash Quantities	1,334,189.00 cy	1,100.000	1,212.90 cd	2,656,457	-	-	1,781,506	-	3.33	4,437,963
		Stage 3 Disposal Life (Assume Dry Stack)	*2.80 yrs*		-	-	-	-	-	-	*0.00*	*0*
		Ph 3 Operationl Cost			87,328.74 hrs	2,656,457			1,781,506			4,437,963
		17			*87,328.74 hrs*	*2,656,457*			*1,781,506*			*4,437,963*
18												
	Ph 2 Operationl Cost											
		Stage 3 (3 To 1 Side Slopes)	*1.00 lot*		-	-	-	-	-	-	*0.00*	*0*
		Wet Cast Gypsum Dike Fill	227,106.00 cy	375.000	605.62 cd	177,865	-	-	423,169	-	2.65	601,033
		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 lf	0.200	2,046.00 mh	55,841	16,932	-	8,687	-	7.96	81,460
		Geotextile For Underdrain	8,525.00 sy	0.021	175.36 mh	5,003	17,262	-	597	-	2.68	22,861
		#57 Stone For Outlet pipe Bedding (135 pcf)	2,072.00 tn	0.150	310.80 mh	8,947	18,807	-	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	-	1,955	-	7.96	18,330
		#57 Stone For Outlet pipe Bedding (135 pcf)	466.00 tn	0.150	69.90 mh	2,012	4,230	-	594	-	14.67	6,836
		Ph 2 Operationl Cost			7,907.39 hrs	262,232	61,041		437,643			760,916
		18			*7,907.39 hrs*	*262,232*	*61,041*		*437,643*			*760,916*
19												
	Ph 2 Operationl Cost											
		Stage 4 (3 To 1 Side Slopes)	*1.00 lot*		-	-	-	-	-	-	*0.00*	*0*
		Wet Cast Gypsum Dike Fill	168,831.00 cy	375.000	450.22 cd	132,225	-	-	314,584	-	2.65	446,809
		Wet Sluice Gypsum & Ash Quantities	*702,654.00 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	7,605.00 lf	0.200	1,521.00 mh	41,512	12,588	-	6,458	-	7.96	60,557
		Geotextile For Underdrain	6,338.00 sy	0.021	130.37 mh	3,719	12,833	-	443	-	2.68	16,996
		#57 Stone For Outlet pipe Bedding (135 pcf)	1,540.00 tn	0.150	231.00 mh	6,650	13,978	-	1,964	-	14.67	22,591
		Solid Outlet Pipe ADS Drain 6" Diameter	1,711.00 lf	0.200	342.20 mh	9,340	2,832	-	1,453	-	7.96	13,624
		#57 Stone For Outlet pipe Bedding (135 pcf)	347.00 tn	0.150	52.05 mh	1,498	3,150	-	442	-	14.67	5,090
		Ph 2 Operationl Cost			5,878.35 hrs	194,944	45,381		325,344			565,669
		19			*5,878.35 hrs*	*194,944*	*45,381*		*325,344*			*565,669*
20												
	Ph 3 Operationl 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	1,150,265		-	771,271	-	3.33	1,921,536
		Stage 4 Disposal Life (Dry Stack Ash)	*1.20 yrs*		-	-	-	-	-	-	*0.00*	*0*
		Ph 3 Operationl Cost			37,807.40 hrs	1,150,265			771,271			1,921,536
		20			*37,807.40 hrs*	*1,150,265*			*771,271*			*1,921,536*
25												
	Dry Fly Ash Conver											
		Dry Fly Ash Conversion Capital Cost	1.00 ls		-	-	-	21,977,800	-	-	21,977,800.00	21,977,800
		Dry Fly Ash Conver			hrs			21,977,800				21,977,800
		25			*hrs*			*21,977,800*				*21,977,800*
xCONST FACILITY												
	Construct Facilities											
		Mobilize, Drug Test, Misc Other, & Demobilize	1.00 ls	10,926.518	10,926.52 mh	*342,000*	-	-	184,000	0	526,000.00	526,000
		Construct Facilities			10,926.52 hrs	342,000			184,000			526,000
		xCONST FACILITY			*10,926.52 hrs*	*342,000*			*184,000*			*526,000*
zNON MANUAL												
	Non-Manual											
		Non Manual	1.00 ls	20,149.780	20,149.78 mh	*1,007,489*	-	-	-	-	1,007,489.00	1,007,489

Location	Activity	Description	Takeoff Quantity	Labor Productivity	Labor Quantity	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount
					20,149.78 hrs	1,007,489						1,007,489
		zNON MANUAL			*20,149.78 hrs*	*1,007,489*						*1,007,489*

Estimate Totals

Labor	19,670,695		616,417.919	hrs			
Material	1,359,322						
Subcontract	30,783,866						
Equipment	14,599,114		427,794.559	hrs			
Other	50,000						
	66,462,997	66,462,997					
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		0.062	% @	42.00	A	381
Non-TVA Engr - Phase 2	281,005		0.633	% @	72.00	A	3,903
FPG Proj Cntrl Cost - Phase 2	997		0.004	% @	42.00	A	24
FPG Proj Cntrl 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
	317,003	66,780,000					
Rounding						L	
		66,780,000					
	Total	***66,780,000***					