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

Project name	KIF/05093O5R1/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 #	05093O5R1
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 475,600 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

TVA-00007575

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
01													
	Instl Drns/Swan Pond												
		Capital											
			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	576	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 (17,558 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	106,746	-	-	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. 753)	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	6,686	-	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	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	0.200	1,282.00 mh	34,989	10,610	-	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
			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	-	2.66	12,306
			6" Dia Perforated HDPE Perimeter Underdrain (EL. 832)	5,800.00 lf	0.200	1,160.00 mh	31,659	9,600	-	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
			Contingency @ 10%	1.00 ls		-	-	-	-	-	178,875	178,875.00	178,875
			Capital			*35,789.66 hrs*	*1,016,066*	*495,205*	*12,324*	*265,158*	*178,875*		*1,967,628*
			Instl Drns/Swan Pond			**35,789.66 hrs**	**1,016,066**	**495,205**	**12,324**	**265,158**	**178,875**		**1,967,628**
			01			***35,789.66 hrs***	***1,016,066***	***495,205***	***12,324***	***265,158***	***178,875***		***1,967,628***
02													
	Ash In Pond												
		Capital											
			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

TVA-00007576

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											
			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*	-	10,860.64	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
			Seed/Mulch Disturbed Areas	26.00 ac		-	-	-	64,619	-	-	2,485.34	64,619
			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	6,885.00 tn	0.120	826.20 mh	26,872	62,493	-	8,112	-	14.16	97,478
			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)	573,650.00 cy	1.300.000	441.27 cd	1,068,579	-	-	891,223	-	3.42	1,959,802
			Proofroll Subgrade	177,100.00 sy	28,111.100	6.30 cd	5,353	-	-	2,570	-	0.05	7,923
			2.5' Thick Bottom Ash Layer	152,717.00 cy	1,300.000	117.47 cd	284,477	-	-	237,261	-	3.42	521,738
			0.5' Thick Fly Ash Filter Layer	30,543.00 cy	1,300.000	23.49 cd	56,895	-	-	47,452	-	3.42	104,346
			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	177,100.00 sy	1,400.000	126.50 cd	74,304	-	-	20,845	-	0.54	94,949
			Bottom Ash Dike Fill	163,614.00 cy	1,300.000	125.86 cd	304,775	-	-	254,191	-	3.42	558,966
			1.0' Layer Of Bottom Ash	61,087.00 cy	1,300.000	46.99 cd	113,791	-	-	94,905	-	3.42	208,696
			Geosynthetic Clay Liner	183,260.00 sy	0.026	4,764.76 mh	135,928	440,312	-	12,150	-	3.21	588,391
			4" Diameter Perforated PVC Pipe (Underdrains) SDR 17.5	26,082.00 lf	0.070	1,825.74 mh	49,829	40,942	-	7,762	-	3.78	98,533
			Trenching For The Drain System (4" Dia Underdrains), 966 bcy	1,160.00 cy	0.200	232.00 mh	6,678	-	-	1,972	-	7.46	8,650
			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	1,306.00 cy	0.200	261.20 mh	7,519	-	-	3,330	-	8.31	10,849
			Anchor Trench Fill & Compact	1,242.00 cy	0.320	397.44 mh	11,441	-	-	9,835	-	17.13	21,275
			2.0' Thick Bottom Ash Blanket Drain	24,640.00 cy	1,300.000	18.95 cd	45,899	-	-	38,281	-	3.42	84,179
			1.0' Thick Filter Drain Ash Layer	12,320.00 cy	1,300.000	9.48 cd	22,949	-	-	19,140	-	3.42	42,090
			Geomembrane	36,960.00 sy	0.050	1,848.00 mh	52,720	82,694	-	4,712	-	3.79	140,126
			Perforated Pipe ADS Drain Tube, 6" Diameter	4,946.00 lf	0.200	989.20 mh	26,998	8,186	-	4,200	-	7.96	39,384
			Geotextile For Underdrain	4,121.00 sy	0.021	84.77 mh	2,418	8,344	-	288	-	2.68	11,051
			#57 Stone For Outlet pipe Bedding (135 pcf)	1,001.00 tn	0.150	150.15 mh	4,322	9,086	-	1,276	-	14.67	14,684
			Solid Outlet Pipe ADS Drain 6" Diameter	1,236.00 lf	0.200	247.20 mh	6,747	2,046	-	1,050	-	7.96	9,842
			#57 Stone For Outlet pipe Bedding (135 pcf)	250.00 tn	0.150	37.50 mh	1,079	2,269	-	319	-	14.67	3,667
			6" Dia Non-Perf HDPE Corrugated Tubing Lateral Outlet Pipes (EL. 750)	302.00 lf	0.200	60.40 mh	1,648	500	-	256	-	7.96	2,405
			1081Crushed Stone, Bedding 6" Depth	10.00 tn	0.500	5.00 mh	144	95	-	17	-	25.61	256
			6" Dia Perforated HDPE Drain (EL. 760)	1,512.00 lf	0.200	302.40 mh	8,253	2,503	-	1,284	-	7.96	12,040
			1081Crushed Stone	286.00 tn	0.500	143.00 mh	4,116	2,720	-	487	-	25.61	7,323
			Geotextile Woven Monofilament	1,176.00 sy	0.021	24.19 mh	690	2,381	-	82	-	2.68	3,154
			Cut For Underdrain System	224.00 cy	0.200	44.80 mh	1,290	-	-	381	-	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	31,500.00	31,500
			Contingency @ 10%	1.00 ls		-	-	-	-	-	626,474	626,474.00	626,474
			Capital			*88,845.26 hrs*	*2,910,150*	*847,209*	*412,156*	*2,063,729*	*657,974*		*6,891,217*
			Ash In Pond			**88,845.26 hrs**	2,910,150	847,209	412,156	2,063,729	657,974		6,891,217
			02			***88,845.26 hrs***	***2,910,150***	***847,209***	***412,156***	***2,063,729***	***657,974***		***6,891,217***
03													
	Gypsum On Peninsula												
		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	-	3,941.32	354,719
			Disc Future Borrow Area (Assumed For Compacted Clay Material)	20.00 ac	6.000	3.33 cd	1,958	-	-	884	-	142.10	2,842
			Strip 1 ft Vegetation And Topsoil - Spoil At Stockpile	129,000.00 cy	0.020	2,580.00 mh	79,380	-	-	82,238	-	1.25	161,618
			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
			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
			Erect Silt Fence (Trench Bottom OF Fence, 10% Hay Bales)	4,900.00 lf	0.069	335.99 mh	9,769	2,462	-	1,554	-	2.81	13,784
			Seed/Mulch Disturbed Areas	25.00 ac		-	-	-	62,134	-	-	2,485.34	62,134
			Silt Fence	1,000.00 lf	0.020	20.00 mh	526	320	-	-	-	0.85	846
			Disposal Facility Construction	***1.00 lot***		-	-	-	-	-	-	***0.00***	***0***
			Allowance For Karst Geologic Features	1.00 ls		-	-	-	513,500	-	-	513,500.00	513,500
			Wetland Mitigation Costs	1.00 ls		-	-	-	260,000	-	-	260,000.00	260,000
			Cut For Stormwater Runoff Pond (2,000 bcy)	2,400.00 cy	800.000	3.00 cd	3,199	-	-	2,525	-	2.39	5,724
			Cleanout Stormwater Runoff Pond (2,300 bcy)	2,760.00 cy	383.333	7.20 cd	3,839	-	-	2,350	-	2.24	6,189
			Fill For Stormwater Runoff Pond (12,000 bcy)	14,400.00 cy	1,904.000	7.56 cd	22,757	-	-	24,725	-	3.30	47,482
			Bottom Ash (South Access Road)	2,400.00 cy	1,904.000	1.26 cd	3,052	-	-	3,118	-	2.57	6,170
			Cut And Fill Balance (500 bcy)	500.00 cy	2,800.000	0.21 cd	645	-	-	701	-	2.24	1,345
			Cut & Spoil Additional Material	400.00 cy	1,904.000	0.21 cd	458	-	-	542	-	2.50	1,001
			Cut And Fill Balance (169,719 bcy)	227,663.00 cy	2,800.000	81.31 cd	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	1,904.000	76.16 cd	166,178	-	-	196,528	-	2.50	362,707
			Crushed Stone Base (South Access Road)	2,900.00 tn	0.120	348.00 mh	11,319	26,323	-	3,417	-	14.16	41,058

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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											
			Crushed Stone Base (Permanent Parking Lot Paved Stone)	340.00 tn	0.120	40.80 mh	1,327	3,066	-	401	-	14.16	4,814
			Crushed Stone Base	1,400.00 tn	0.120	168.00 mh	5,464	12,707	-	1,650	-	14.16	19,821
			Riprap For Stormwater Runoff Pond	4,300.00 tn	0.200	860.00 mh	25,595	43,731	-	18,441	-	20.41	87,767
			Riprap For Ditch	23,500.00 tn	0.200	4,700.00 mh	139,881	238,995	-	100,781	-	20.41	479,657
			Ditch For Riprap (24' wide x 2' deep)	7,300.00 lf	0.044	320.03 mh	10,911	-	-	12,904	-	3.26	23,816
			Geotextile (If Riprap Is Used)	19,500.00 sy	0.015	292.50 mh	8,420	25,029	-	995	-	1.82	35,443
			New Fencing (Including Grounding)	200.00 lf		-	-	-	4,211	-	-	21.05	4,211
			Personnel Swinging 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
			Pipe Bedding	20.00 tn	0.500	10.00 mh	288	199	-	34	-	26.03	521
			Perimeter Road Surfacing - Bottom Ash	2,400.00 cy	1,904.000	1.26 cd	3,052	-	-	3,118	-	2.57	6,170
			Perimeter Road Surfacing - Crushed Stone	2,900.00 tn	0.120	348.00 mh	11,319	26,323	-	3,417	-	14.16	41,058
			Compacted Clay Liner, 6" Lifts (339,000 bcy)	406,800.00 cy	1,200.000	339.00 cd	1,020,046	-	-	1,108,239	-	5.23	2,128,285
			Drainage Layer (1 Ft Thick) For Liner (No. 57 Stone)	168,000.00 tn	0.096	16,128.00 mh	507,694	1,452,276	-	257,040	-	13.20	2,217,010
			Geotextile For Underdrain Pipe	5,700.00 sy	0.011	59.85 mh	1,723	7,608	-	203	-	1.67	9,535
			8" Dia. HDPE, SDR 17 Perforated Pipe	6,400.00 lf	0.200	1,280.00 mh	34,935	10,593	-	5,439	-	7.96	50,967
			8" Dia. HDPE Standard Fittings	50.00 ea	0.200	10.00 mh	248	407	-	-	-	13.10	655
			Concrete Anchors For Underdrain Piping	85.00 ea	12.500	1,062.50 mh	34,373	10,157	-	2,778	-	556.58	47,309
			Proofroll Subgrade	70.00 ac	7.000	10.00 cd	8,497	-	-	4,080	-	179.67	12,577
			72 " Dia. CMP For Outlet Structure	6.00 lf	2.000	12.00 mh	337	1,851	-	70	-	376.24	2,257
			48 " Dia. CMP For Riser For Outlet Structure	7.00 lf	1.091	7.64 mh	214	936	-	45	-	170.64	1,195
			48 " Dia. CMP Outlet Pipe (Principle Spillway)	150.00 lf	0.620	93.00 mh	2,610	7,404	-	542	-	70.37	10,556
			Cut Holes In Riser	3.00 ea	1.000	3.00 mh	74	-	-	15	-	29.92	90
			Seed / Fertilize / Lime Future Borrow Area	20.00 ac		-	-	-	47,719	-	-	2,385.93	47,719
			Composite Concrete For Riser Base (Assume 7' x 7' x 2')	4.00 cy	10.000	40.00 mh	1,294	823	-	105	-	555.30	2,221
			Anti-Seep Collars (Assume Concrete)	7.00 ea	75.000	525.00 mh	16,984	5,076	-	1,373	-	3,347.60	23,433
			Contingency @ 15%	1.00 ls		-	-	-	-	-	1,175,868	1,175,868.00	1,175,868
			Capital			*81,685.91 hrs*	*2,659,631*	*1,949,718*	*908,975*	*2,320,799*	*1,175,868*		*9,014,991*
			Gypsum On Peninsula			**81,685.91 hrs**	**2,659,631**	**1,949,718**	**908,975**	**2,320,799**	**1,175,868**		**9,014,991**
			03			***81,685.91 hrs***	***2,659,631***	***1,949,718***	***908,975***	***2,320,799***	***1,175,868***		***9,014,991***
05													
	Miscellaneous												
		Capital											
			Non Manual	1.00 ls	28,149.140	28,149.14 mh	***1,407,457***	-	-	-	-	1,407,457.00	1,407,457
			Mobilize, Drug Test, Misc Other, & Demobilize	1.00 ls	14,502.618	14,502.62 mh	***470,900***	-	-	***253,500***	0	724,400.00	724,400
			Contingency @ 15%	1.00 ls		-	-	-	-	-	319,779	319,779.00	319,779
			Capital			*42,651.76 hrs*	*1,878,357*		*7,631,580*	*2,231,890*			*11,554,547*
			Drg Cell/P1 Opr Cost			**48,954.36 hrs**	**1,691,078**		**7,631,580**	**2,231,890**			**11,554,547**
			O & M			***48,954.36 hrs***	***1,691,078***		***7,631,580***	***2,231,890***			***11,554,547***
			Drg Cell/P1 Opr Cost			**48,954.36 hrs**	**1,691,078**		**7,631,580**	**2,231,890**			**11,554,547**
			Disposal Life (Assume Dike & Dredge Ash)	***12.90 yr***		-	-	-	-	-	-	***0.00***	***0***
			O & M			*48,954.36 hrs*	*1,691,078*		*7,631,580*	*2,231,890*			*11,554,547*
			Drg Cell/P1 Opr Cost			**48,954.36 hrs**	**1,691,078**		**7,631,580**	**2,231,890**			**11,554,547**
			05			***42,651.76 hrs***	***1,878,357***	***0***		***253,500***	***319,779***		***2,451,636***
06													
	Drg Cell/P1 Opr Cost												
		O & M											
			Elv. 810 To Elv. 866	***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***
			O & M			*48,954.36 hrs*	*1,691,078*		*7,631,580*	*2,231,890*			*11,554,547*
			Drg Cell/P1 Opr Cost			**48,954.36 hrs**	**1,691,078**		**7,631,580**	**2,231,890**			**11,554,547**
	Engr/Geotech												
		Capital											
			Addition Geotechnical Investigation	1.00 ls		-	-	-	102,700	-	-	102,700.00	102,700
			Contingency @ 15%	1.00 ls		-	-	-	-	-	15,405	15,405.00	15,405
			Capital			*hrs*			*102,700*		*15,405*		*118,105*
			Engr/Geotech			**hrs**			**102,700**		**15,405**		**118,105**
			06			***48,954.36 hrs***	***1,691,078***		***7,734,280***	***2,231,890***	***15,405***		***11,672,652***
14													
	Gyp On Peninsula Cst												
		O & M											
			Cut For Underdrain System	4,407.00 cy	0.200	881.40 mh	25,372	-	-	7,492	-	7.46	32,864
			6" Dia Perforated HDPE Perimeter Underdrains	59,491.00 lf	0.200	11,898.20 mh	324,733	98,468	-	50,517	-	7.96	473,718
			Fill For Underdrain System	3,525.00 cy	0.250	881.25 mh	25,368	-	-	10,571	-	10.20	35,939
			1081 Crushed Stone, 6" Depth (110 pcf)	3,272.00 tn	0.150	490.80 mh	14,128	29,699	-	4,172	-	14.67	47,999
			Cut For Lateral Outlet Pipes	551.00 cy	0.200	110.20 mh	3,172	-	-	937	-	7.46	4,109
			6" Dia Non- Perforated HDPE Lateral Outlet Pipes	7,436.00 lf	0.200	1,487.20 mh	40,590	12,308	-	6,314	-	7.96	59,212
			Fill For Lateral Outlet Pipes	441.00 cy	0.250	110.25 mh	3,174	-	-	1,322	-	10.20	4,496
			1081 Crushed Stone, 6" Depth (110 pcf)	409.00 tn	0.150	61.35 mh	1,766	3,712	-	521	-	14.67	6,000
			Gypsum Disposal Stack (Wet Sluice)	***5,535,853.00 cy***		-	-	-	-	-	-	***0.00***	***0***
			Wet Cast Gypsum Gypsum Dike	1,011,347.00 cy	375.000	2,696.93 cd	792,065	-	-	1,884,452	-	2.65	2,676,517
			Cut Rim Ditches	114,575.00 cy	375.000	305.53 cd	89,733	-	-	213,489	-	2.65	303,221
			Life Of Gypsum Disposal Stack	***20.00 yrs***		-	-	-	-	-	-	***0.00***	***0***
			O & M			*39,940.32 hrs*	*1,320,101*	*144,187*		*2,179,787*			*3,644,075*
			Gyp On Peninsula Cst			**39,940.32 hrs**	**1,320,101**	**144,187**		**2,179,787**			**3,644,075**

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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
			14			***39,940.32 hrs***	***1,320,101***	***144,187***		***2,179,787***			***3,644,075***
17													
	Ph 2 Base Construct												
		O & M											
			QA/QC For Construction Of Diposal Facility	1.00 ls		-	-	-	470,247	-	-	470,246.87	470,247
			O & M			*hrs*			*470,247*				*470,247*
			Ph 2 Base Construct			**0.00 hrs**	**0**	**0**	**470,247**	**0**			**470,247**
			17			***0.00 hrs***	***0***	***0***	***470,247***	***0***			***470,247***
20													
	Ph 2 Initial Constr												
		O & M											
			Dredge Ash	451,295.00 cy		-	-	-	709,588	-	-	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	12,199	-	6,258	-	7.96	58,686
			Geotextile For Underdrain	6,142.00 sy	0.021	126.34 mh	3,604	12,437	-	430	-	2.68	16,471
			#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
			O & M			*2,206.14 hrs*	*60,777*	*43,972*	*709,588*	*10,427*			*824,763*
			Ph 2 Initial Constr			**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***
22													
	Ph 2 Operationl 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	196.30 cd	475,359	-	-	396,462	-	3.42	971,821
			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	11,495.00 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
			O & M			*17,574.59 hrs*	*570,156*	*68,589*	*2,098,277*	*412,725*			*3,149,748*
			Ph 2 Operationl 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 Operationl Cost												
		O & M											
			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	490,659	-	-	409,223	-	3.42	899,883
			Dredge Ash	1,509,673.00 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)	2,403.00 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
			O & M			*18,140.47 hrs*	*588,514*	*70,801*	*2,373,715*	*426,011*			*3,459,041*
			Ph 2 Operationl 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 Operationl Cost												
		O & M											
			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	423,046	-	-	352,832	-	3.42	775,879
			Dredge Ash	1,344,916.00 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	10,230.00 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" Diarreter	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
			O & M			*15,640.64 hrs*	*507,414*	*61,041*	*2,114,661*	*367,306*			*3,050,423*
			Ph 2 Operationl 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***

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Estimate Totals

Labor	13,202,243		391,429.105	hrs			
Material	3,660,722						
Subcontract	16,834,222						
Equipment	10,531,333		260,044.520	hrs			
Other	2,347,901						
	45,596,421	46,596,421					
Engineered Materials - Ph 2			100.000	%		C	
Adjustment - Engr Materials			(100.000)	%		C	
		46,596,421					
Environmental Costs			100.000	%		C	
Adjustment Environmental			(100.000)	%		C	
		46,596,421					
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	7,834
FPG Proj Cntrl Cost - Phase 2	977		0.006	% @	42.00	A	23
FPG Proj Cntrl 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	960		0.006	% @	42.00	A	23
Engr Contgcy@15% - Phase 2	89,999		0.547	% @	42.00	A	2,143
	689,999	47,286,420					
Rounding	580					L	
	580	47,287,000					
	Total	***47,287,000***					

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