Stantec Consulting Services Inc.
10509 Timberwood Circle Suite 100
Louisville, KY 40223-5301
Tel: (502) 212-5000
Fax: (502) 212-5055

February 15, 2012 ltr_002_175551015

Mr. Michael S. Turnbow
Tennessee Valley Authority
1101 Market Street, LP 2G-C
Chattanooga, Tennessee 37402-2801

Re: Results of Pseudostatic Slope Stability Analysis
Active CCP Disposal Facilities
BRF, COF, GAF, JSF, JOF, KIF, PAF, and WCF

Dear Mr. Turnbow:

As requested, Stantec Consulting Services Inc. (Stantec) has conducted pseudostatic slope stability analyses for ground motion levels corresponding to a return period of 2,500 years to support the U.S. Environmental Protection Agency's assessment of TVA's CCP disposal facilities. The results for Bull Run (BFR), Colbert (COF), Gallatin (GAF), John Sevier (JSF), Johnsonville (JOF), Kingston (KIF), Paradise (PAF), and Widows Creek (WCF) are provided in this letter.

Approach

The analyses were performed for current conditions using pseudostatic stability methods, where the added inertial load from an earthquake is assumed to be represented by a simple horizontal pseudostatic coefficient. Specifics related to the analyses/approach are as follows:

- Subsurface data was obtained from the Stantec's recent geotechnical studies performed in 2009 and 2010 time frame.
- SLOPE/W software (from GEO-SLOPE International, Inc.) was used to perform the calculations.
- One existing SLOPE/W cross-section model per disposal facility was selected from the previous studies for analysis. For simplicity and conservatism, the selected sections represent the facility's lowest current static (long-term) factor of safety. The SLOPE/W models were updated to reflect any significant mitigations or operational changes that have occurred since completion of Stantec's geotechnical studies.
- Undrained shear strength parameters were used.
- Ground motion levels corresponding to a return period of 2,500 years (or approximate exceedance probability of 2% in 50 years) was used for selection of a horizontal seismic coefficient. For simplicity, the horizontal seismic coefficient was selected to equal the total hazard peak ground acceleration (rock) for 2,500 year return periods as shown in plant-

specific tables (Tables 13 through 23) of TVA's March 28, 2011 region-specific seismic hazard study performed by AMEC Geomatrix, Inc.

- A target factor of safety (FS) of 1.0 was considered for comparing results.

Results

The results of the pseudostatic stability analyses are enclosed (summary spreadsheet, SLOPE/W cross-sections, and plan views showing cross-section locations). The results indicate factors of safety greater than or equal to the target of 1.0.

Stantec appreciates the opportunity to provide these services. If you have questions, or if we can provide additional information, please let us know.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Randy L. Roberts, PE
Principal

Enclosures

/cdm

Pseudostatic Stability Analysis Summary - TVA Active CCP Disposal Facilities

BRF, COF, GAF, JSF, JOF, KIF, PAF, WCF

Plant	CCP Disposal Facility		Cross-Section	2,500 yr Return	
	Name	Type		PGA (g)	Factor of Safety
BRF	Gypsum Disposal Area 2A	Wet Stack	I	0.131	1.0
	Fly Ash Disposal Area 2	Impoundment	S		1.4
	Bottom Ash Disposal Area 1	Stack	D		1.1
COF	Disposal Area 5 Stack	Stack	I	0.138	1.0
	Disposal Area 5 Stilling Basin	Impoundment	J		1.2
	Ash Pond 4	Impoundment	D		1.0
GAF	Ash Pond A	Impoundment	K	0.108	1.0
	Ash Pond E	Impoundment	B		1.3
JSF	Bottom Ash Pond	Impoundment	I	0.115	2.2
JOF	Ash Disposal Area 2	Impoundment	K	0.254	1.0
KIF	Stilling Pond	Impoundment	132+37	0.115	1.0
PAF	Slag Ponds 2A and 2B	Impoundment	Typical	0.157	1.1
	Scrubber Sludge Complex	Impoundment	G		1.0
	Peabody Ash Pond	Impoundment	A		1.0
WCF	Gypsum Stack	Wet Stack	F	0.1	1.5
	Dredge Cell (Old Scrubber Sludge Pond)	Impoundment	D		1.1
	Main Ash Pond	Impoundment	J		1.4

Bull Run Fossil Plant
(BRF)

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

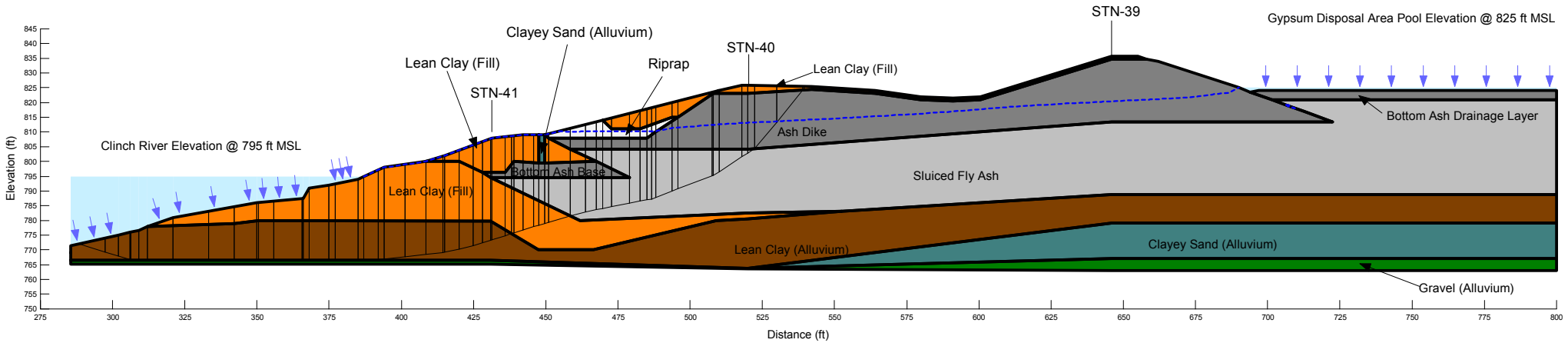
Section I - Gypsum Disposal Area 2A
Bull Run Fossil Plant
Clinton, Tennessee

Note:
The results of the analysis shown here are based on available subsurface information, laboratory test results, and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Material Type	Unit Weight	Cohesion	Friction Angle
Sluiced Fly Ash	105 pcf	100 psf	18.4 °
Lean Clay (Fill)	126 pcf	700 psf	17.6 °
Gravel (Alluvium)	135 pcf	100 psf	30 °
Clayey Sand (Alluvium)	112 pcf	100 psf	23 °
Lean Clay (Alluvium)	123 pcf	350 psf	21.1 °
Bottom Ash Base	105 pcf	0 psf	33 °
Ash Dike	105 pcf	0 psf	33 °
Rip Rap	115 pcf	0 psf	40 °

Factor of Safety: 1.0

Horizontal Seismic Coefficient Kh = 0.131 g
2500 year Return Period Event



Date of Assessment - 11/4/2011

Project No. 175551015

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

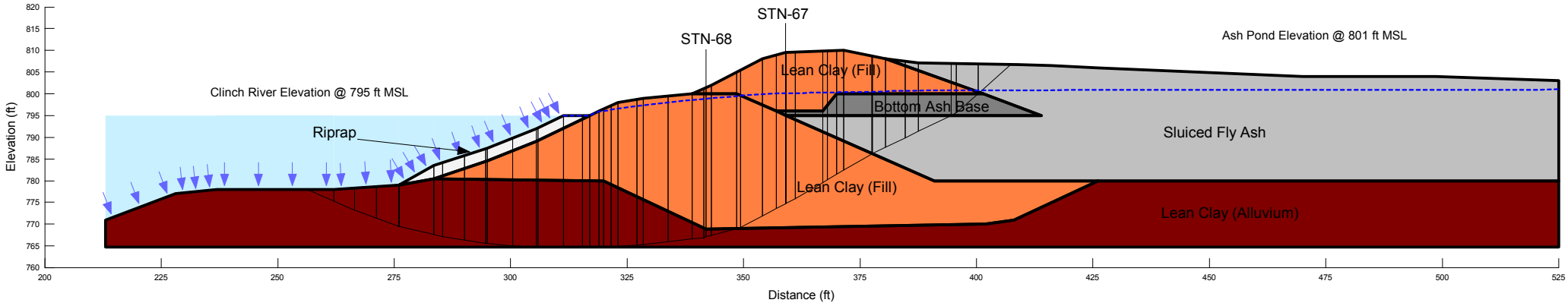
Section S - Fly Ash Disposal Area 2
Bull Run Fossil Plant
Clinton, Tennessee

Material Type	Unit Weight	Cohesion	Friction Angle
Sluiced Fly Ash	105 pcf	100 psf	18.4 °
Lean Clay (Fill)	126 pcf	700 psf	17.6 °
Lean Clay (Alluvium)	123 pcf	350 psf	21.1 °
Bottom Ash Base	105 pcf	0 psf	33 °
Rip-Rap	105 pcf	0 psf	40 °

Note:
The results of the analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warrenties can be made regarding the continuity of subsurface conditions between the borings.

Additional remediation measures taken from URS plans dated 08/13/2010

Factor of Safety: 1.4
Horizontal Seismic Coefficient Kh = Value: 0.131 g
2500-year Return Period Event



Date of Assessment - 11/4/2011

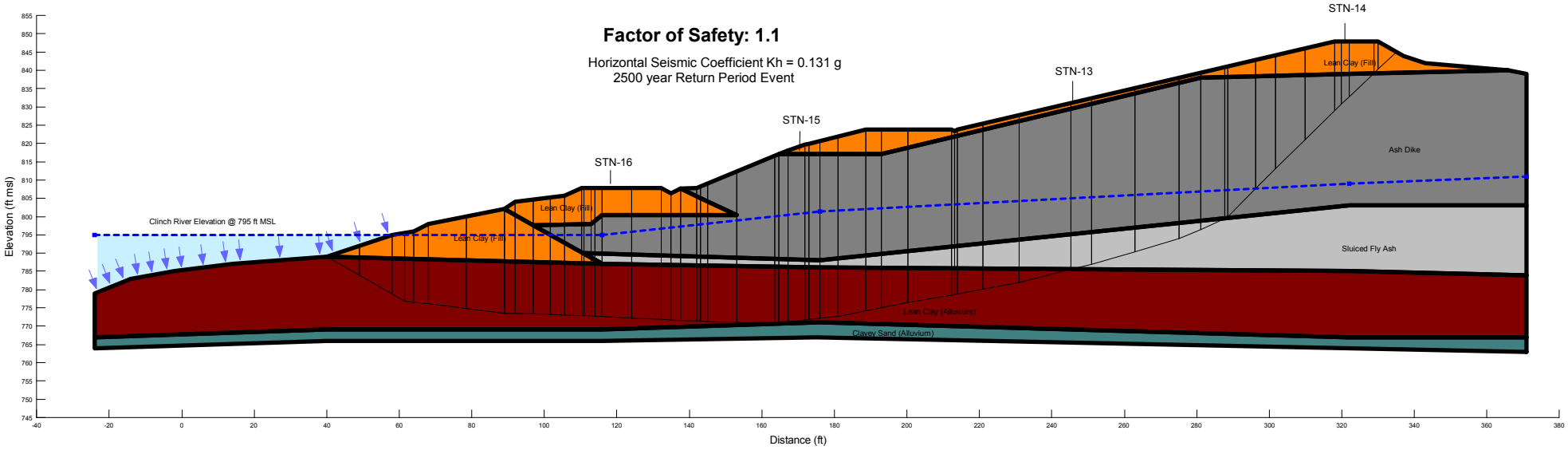
Project No. 175551015

DRAFT
Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

Section D - Bottom Ash Disposal Area 1
Bull Run Fossil Plant
Clinton, Tennessee

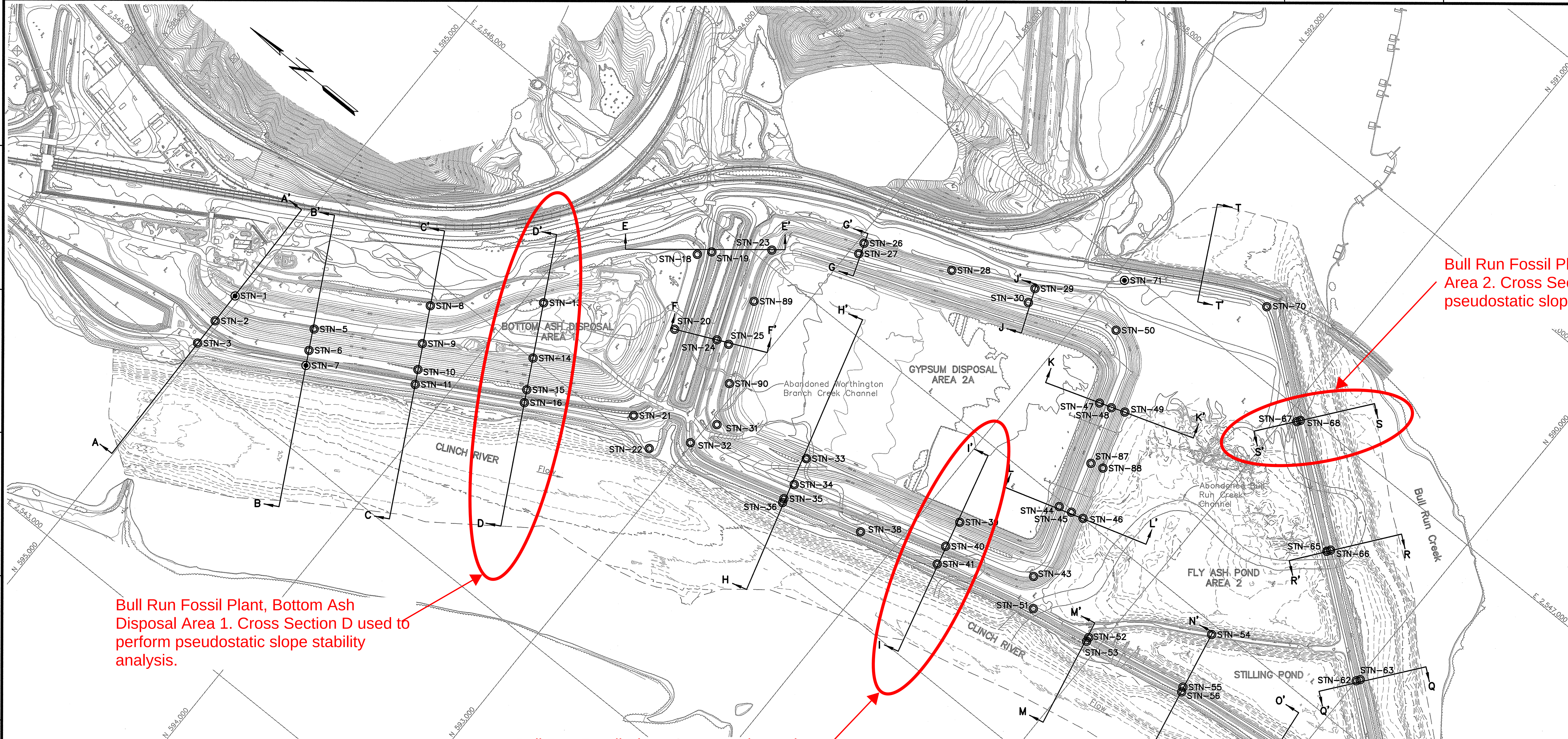
Note:
The results of the analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warrenties can be made regarding the continuity of subsurface conditions between the borings.

Material Type	Unit Weight	Cohesion	Friction Angle
Lean Clay (Fill) - Lower Confinement	126	1000 psf	0 °
Lean Clay (Fill) - Higher Confinement	126	50 psf	17.6 °
Ash Dike	105	0 psf	33 °
Sluiced Ash	105	100 psf	18.4 °
Lean Clay (Alluvium) - Lower Confinement	123	528 psf	0 °
Lean Clay (Alluvium) - Higher Confinement	123	20.5 psf	21.1 °
Clayey Sand (Alluvium)	112	100 psf	23°



Date of Assessment - 11/22/2011

Project No. 175551015



FOR INFORMATION ONLY

This Record Drawing which has been previously submitted to TVA is provided for Information Only.

LEGEND

- ◎ Soil Boring with Undisturbed (Shelby) Tube Samples and/or Standard Penetration Tests
- ◉ Soil Boring with Undisturbed (Shelby) Tube Samples and/or Standard Penetration Tests and Rock Core

NOTES:

1. The topographic mapping presented on this drawing was developed by TVA Surveying and Project Services, in April, 2009. This plan view was prepared to support development of the geotechnical exploration program and should not be used for construction.
2. A hydrographic survey was performed on the Clinch River in September, 2009 and on the Area 2 ponds in February, 2006.
3. The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

BORING LOCATION TABLE

Boring	Northing	Easting	Elev. (ft.)	Boring	Northing	Easting	Elev. (ft.)
STN-1	595,024.10	2,544,375.85	832.4	STN-39	591,840.77	2,545,638.39	835.7
STN-2	595,022.62	2,544,232.15	819.4	STN-40	591,821.33	2,545,513.41	825.8
STN-3	595,020.59	2,544,104.02	810.2	STN-41	591,800.67	2,545,427.16	809.7
STN-5	594,652.96	2,544,484.24	841.0	STN-43	591,427.25	2,545,657.42	825.0
STN-6	594,610.05	2,544,394.75	818.2	STN-44	591,537.09	2,545,975.54	835.7
STN-7	594,577.54	2,544,332.94	809.5	STN-45	591,478.25	2,545,990.45	824.8
STN-8	594,312.72	2,544,896.21	821.0	STN-46	591,420.20	2,546,001.83	808.2
STN-9	594,232.56	2,544,740.10	837.5	STN-47	591,691.40	2,546,454.06	835.7
STN-10	594,173.80	2,544,636.59	817.9	STN-48	591,636.19	2,546,471.30	825.8
STN-11	594,140.80	2,544,576.48	808.6	STN-49	591,576.97	2,546,494.42	808.5
STN-13	593,923.78	2,545,228.66	831.3	STN-50	591,841.40	2,546,757.19	825.1
STN-14	593,802.44	2,545,004.48	848.7	STN-51	591,336.60	2,545,543.56	809.8
STN-15	593,734.18	2,544,875.42	818.1	STN-52	591,060.68	2,545,599.52	809.8
STN-16	593,705.67	2,544,823.03	808.0	STN-53	591,057.48	2,545,580.54	801.3
STN-18	593,524.13	2,545,835.46	821.7	STN-54	590,638.72	2,545,959.39	810.1
STN-19	593,480.64	2,545,884.32	810.2	STN-55	590,589.87	2,545,693.73	810.1
STN-20	593,389.26	2,545,507.73	819.6	STN-56	590,580.44	2,545,673.06	800.2
STN-21	593,286.66	2,545,087.68	808.0	STN-58	590,091.97	2,545,756.90	810.3
STN-22	593,138.35	2,545,015.84	799.0	STN-59	590,089.21	2,545,731.11	800.0
STN-23	593,275.52	2,546,061.35	835.0	STN-60	589,601.84	2,545,827.99	810.2
STN-24	593,211.79	2,545,589.93	809.9	STN-61	589,536.98	2,545,830.43	799.9
STN-25	593,158.33	2,545,607.45	826.2	STN-62	590,000.07	2,546,208.94	809.4
STN-26	592,971.96	2,546,347.19	817.3	STN-63	589,989.70	2,546,223.76	801.2
STN-27	592,960.52	2,546,295.43	831.3	STN-65	590,472.00	2,546,579.19	809.1
STN-28	592,587.48	2,546,501.20	816.8	STN-66	590,462.23	2,546,593.73	799.8
STN-29	592,243.83	2,546,673.33	816.8	STN-67	590,946.92	2,546,949.33	809.5
STN-30	592,227.12	2,546,605.60	826.2	STN-68	590,938.03	2,546,963.83	800.8
STN-31	592,969.83	2,545,291.84	823.8	STN-70	591,380.61	2,547,267.77	809.4
STN-32	593,010.17	2,545,153.51	808.2	STN-71	591,954.22	2,546,956.25	809.1
STN-33	592,559.31	2,545,426.43	836.1	STN-87	591,549.15	2,546,217.62	825.3
STN-34	592,527.95	2,545,300.77	825.6	STN-88	591,493.79	2,546,234.83	808.6
STN-35	592,523.92	2,545,221.40	808.9	STN-89	593,192.06	2,545,830.78	836.1
STN-36	592,517.47	2,545,204.09	800.5	STN-90	593,043.65	2,545,471.40	838.4
STN-38	592,160.74	2,545,322.53	808.6				

Northing, Easting and Ground Surface Elevations were provided by TVA, Power Systems Operations, Surveying and Project Services.
Horizontal Datum: NAD 27 (Tennessee Lambert)
Vertical Datum: NGVD29

RECORD DRAWING

For Supporting Design Calculations see FPGBRFFESCDX00000020100002

HUGO R. APARICIO · REGISTERED ENGINEER · AGRICULTURE · COMMERCE · No. 113685 · STATE OF TENNESSEE

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV CD
R –	–	–	–	–	–	–	–	–	–	–	–
R 0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ	–	–	–
RECORD DRAWING											

DISCIPLINE INTERFACE

SCALE: 1"=200' EXCEPT AS NOTED

YARD

GEOTECHNICAL EXPLORATION BORING LAYOUT

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON

Stantec Consulting Services Inc.
100 Westwood Pl., Ste. 420
Brentwood, Tennessee
37027-5044
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BULL RUN FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE 04/09/10 | 49 | C | 10W507-01 | R 0

STANTEC | 0
TASK COMPLETED BY: | REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

PLOT DATE: 04/09/2010 USER: BOND, PJ

Colbert Fossil Plant
(COF)

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

Section I - Disposal Area 5
Colbert Fossil Plant
Tuscumbia, Alabama

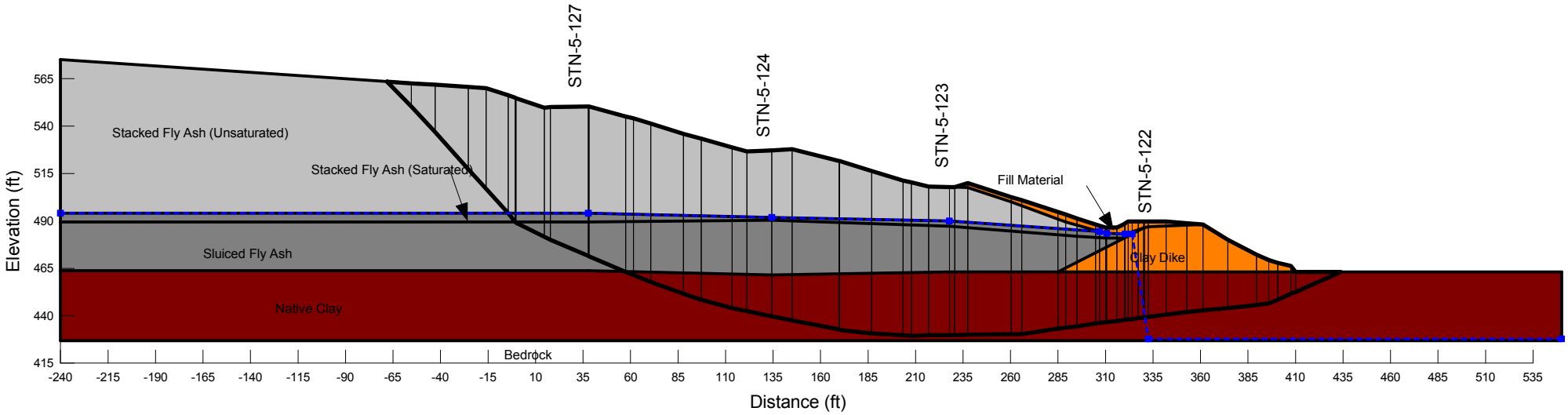
Material Type	Unit Weight	Cohesion	Friction Angle
Stacked Fly Ash (Unsaturated)	105 pcf	0 psf	32 °
Stacked Fly Ash (Saturated)	105 pcf	0 psf	32 °
Sluiced Fly Ash	85 pcf	400 psf	15 °
Fill Material	125 pcf	200 psf	19 °
Clay Dike	125 pcf	200 psf	19 °
Native Clay	125 pcf	290 psf	19 °

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Additional remediation measures taken from URS plans dated 7/09/2010.

Factor of Safety: 1.0

Horizontal Sesmic Coefficient Kh = 0.138 g
2500-year Return Period Event



Date of Assessment - 11/22/2011

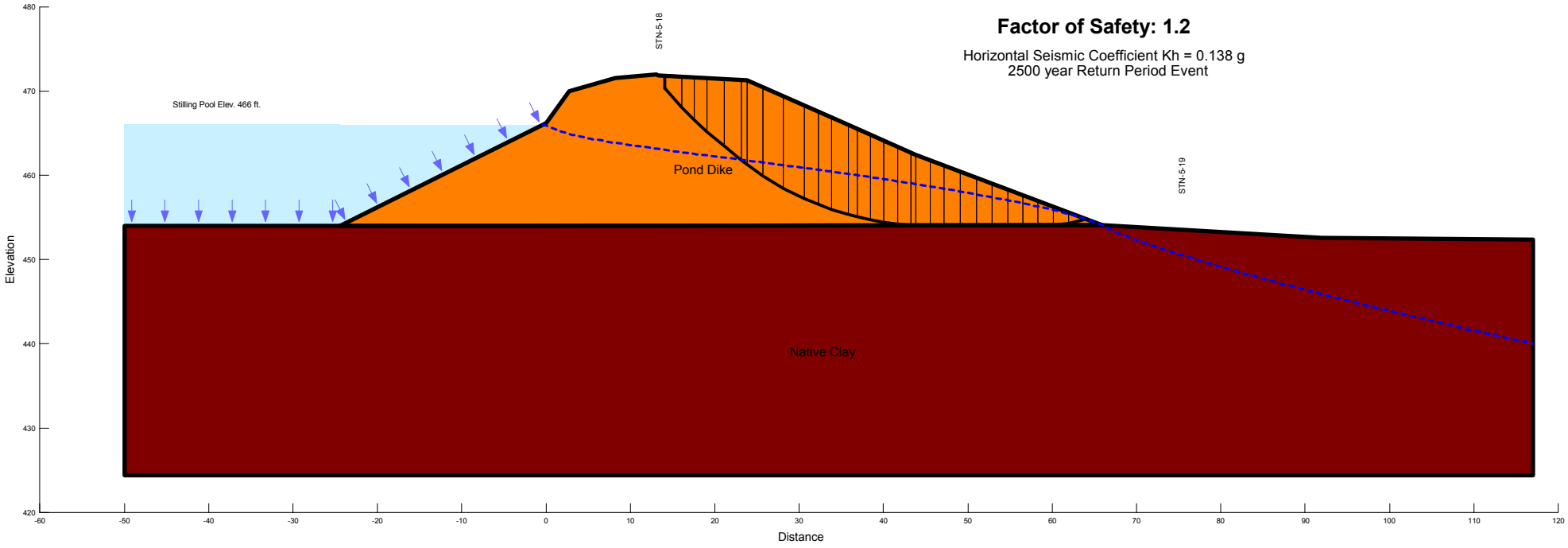
Project No. 175551015

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

Section J - Disposal Area 5 Stilling Basin
Colbert Fossil Plant
Tuscumbia, Alabama

Note:
The results and analysis shown here are based on available subsurface information, laboratory test results, and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Material Type	Unit Weight	Cohesion	Friction Angle
Native Clay	125 pcf	290 psf	19 °
Pond Dike	125 pcf	200 psf	19 °



Date of Assessment - 11/28/2011

Project No. 175551015

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

Section D - Ash Pond 4
Colbert Fossil Plant
Tennessee Valley Authority

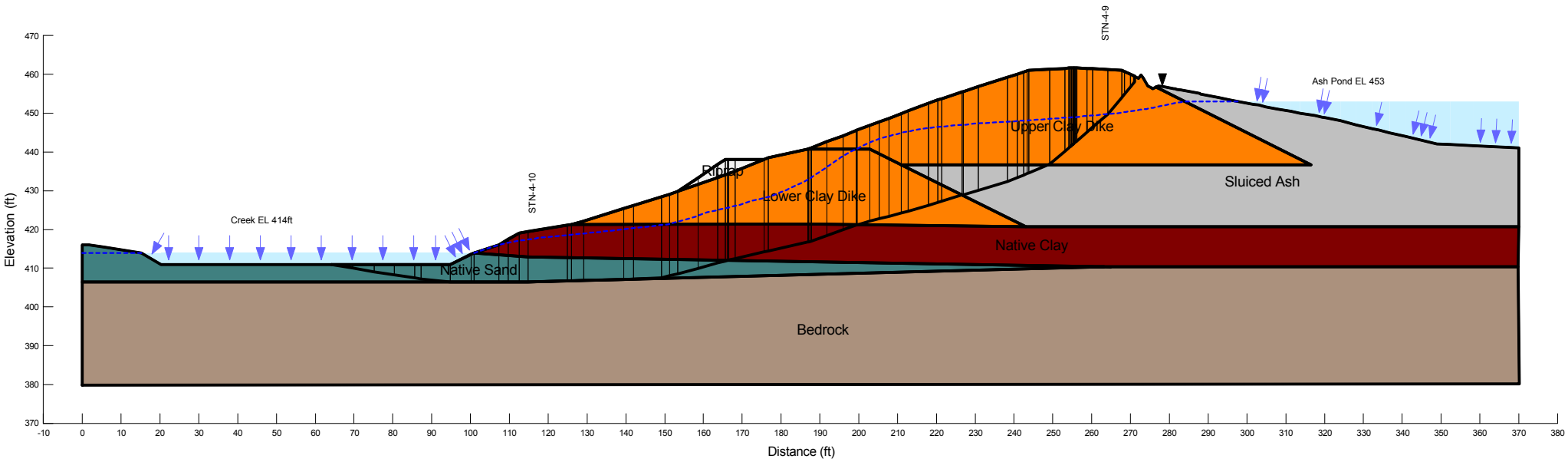
Note:
The results of the analysis shown here are based on available subsurface information, laboratory test results, and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Additional remediation measures taken from URS plans dated 05/20/2010.

Material Type	Unit Weight	Cohesion	Friction Angle
Native Clay	129 pcf	700 psf	14 °
Upper Clay Dike	126 pcf	750 psf	12 °
Lower Clay Dike	127 pcf	400 psf	14 °
Sluiced Ash	85 pcf	400 psf	10 °
Native Sand	110 pcf	0 psf	30 °

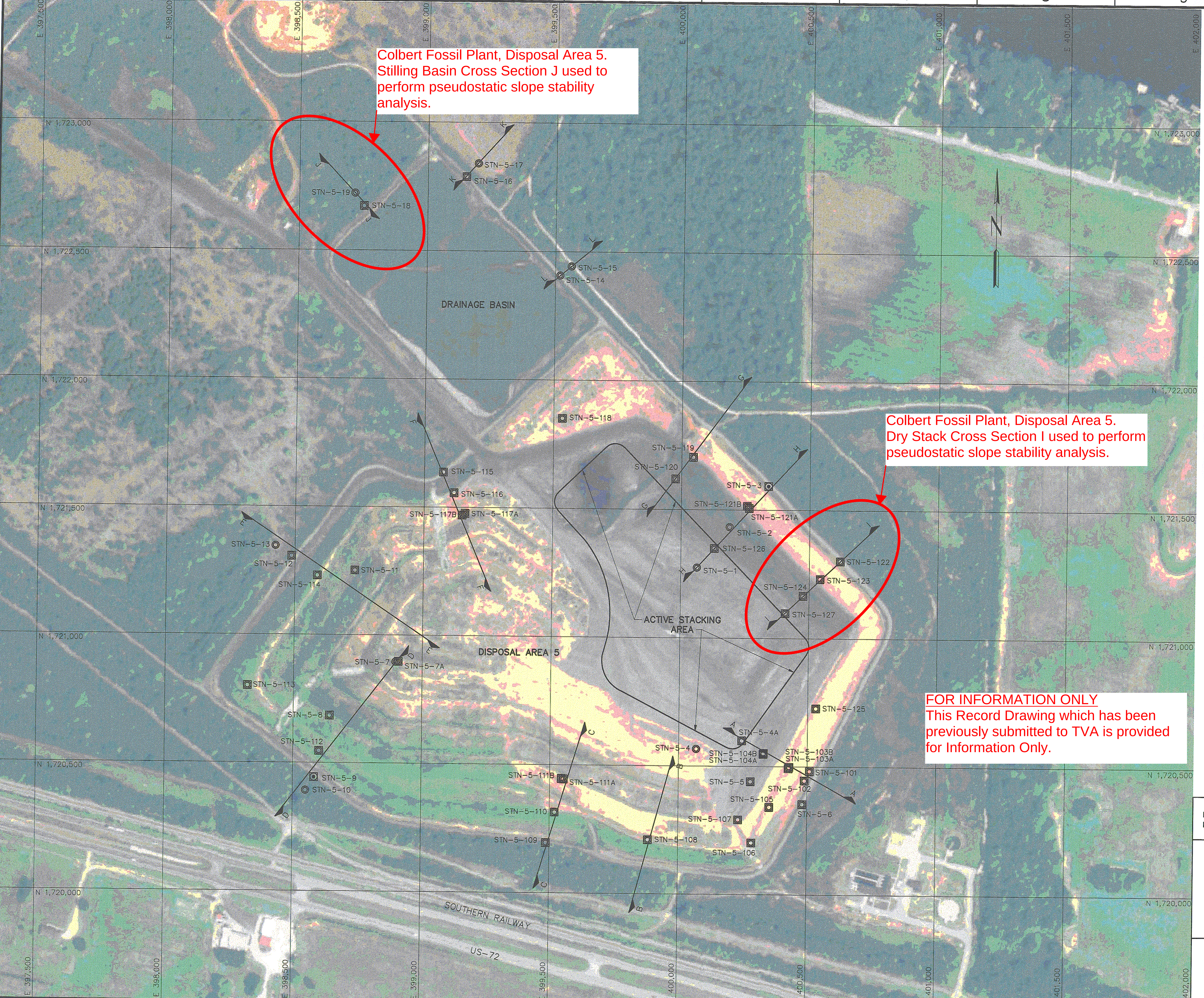
Factor of Safety: 1.0

Horizontal Seismic Coefficient Kh = 0.138 g
2500-year Return Period Event



Date of Assessment - 11/4/2011

Project No. 175551015



LEGEND

- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Sampling
- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling (Piezometer Installed)
- Soil Boring With Continuous Standard Penetration Tests And/or Shelby Tube Sampling, Rock Core, And Piezometer Installed
- 7 — 7 Cross Section

BORING LOCATION TABLE

Boring	Northing	Eeasting	Elev. (ft.)
STN-5-1	1,721,274.40	400,063.00	552.91
STN-5-2	1,721,432.78	400,188.85	529.19
STN-5-3	1,721,592.79	400,338.67	487.54
STN-5-4	1,720,567.21	400,067.66	559.98
STN-5-4A	1,720,600.17	400,244.82	550.70
STN-5-5	1,720,441.17	400,279.90	529.71
STN-5-6	1,720,353.73	400,481.02	488.06
STN-5-7	1,720,895.57	398,896.12	564.52
STN-5-7A	1,720,897.20	398,906.71	565.34
STN-5-8	1,720,684.92	398,641.15	517.92
STN-5-9	1,720,444.22	398,582.58	480.52
STN-5-10	1,720,393.13	398,549.64	459.65
STN-5-11	1,721,251.58	398,733.51	515.53
STN-5-12	1,721,306.21	398,486.91	477.77
STN-5-13	1,721,346.27	398,424.36	452.26
STN-5-14	1,722,407.30	399,518.43	475.88
STN-5-15	1,722,443.72	399,562.30	462.85
STN-5-16	1,722,788.34	399,149.51	475.84
STN-5-17	1,722,840.75	399,195.10	458.60
STN-5-18	1,722,671.43	398,752.90	472.18
STN-5-19	1,722,721.58	398,717.11	453.41
STN-5-101	1,720,482.33	400,509.25	486.97
STN-5-102	1,720,445.72	400,489.29	486.80
STN-5-103A	1,720,493.35	400,426.84	508.95
STN-5-103B	1,720,498.42	400,429.29	509.48
STN-5-104A	1,720,548.28	400,328.22	530.46
STN-5-104B	1,720,551.74	400,330.04	530.75
STN-5-105	1,720,341.58	400,353.20	507.40
STN-5-106	1,720,202.10	400,284.88	505.40
STN-5-107	1,720,292.02	400,232.46	527.19
STN-5-108	1,720,211.06	399,882.93	509.29
STN-5-109	1,720,195.76	399,486.17	481.82
STN-5-110	1,720,315.43	399,519.59	509.44
STN-5-111A	1,720,445.15	399,553.23	529.32
STN-5-111B	1,720,446.66	399,545.11	529.34
STN-5-112	1,720,546.53	398,601.38	497.91
STN-5-113	1,720,800.24	398,321.28	499.24
STN-5-114	1,721,230.71	398,587.74	497.51
STN-5-115	1,721,636.94	399,073.55	477.77
STN-5-116	1,721,557.19	399,115.86	491.58
STN-5-117A	1,721,475.92	399,159.40	512.79
STN-5-117B	1,721,469.59	399,148.35	512.84
STN-5-118	1,721,850.73	399,533.21	499.18
STN-5-119	1,721,703.92	400,044.78	504.54
STN-5-120	1,721,619.44	399,976.15	525.76
STN-5-121A	1,721,506.28	400,264.15	508.23
STN-5-121B	1,721,514.55	400,256.18	507.94
STN-5-122	1,721,301.29	400,620.41	486.86
STN-5-123	1,721,231.75	400,542.54	508.11
STN-5-124	1,721,165.96	400,476.56	527.23
STN-5-125	1,720,727.47	400,531.28	509.03
STN-5-126	1,721,349.47	400,129.73	554.68
STN-5-127	1,721,097.71	400,407.87	550.45

RECORD DRAWING

75 0 150 300 FEET
GRAPHIC SCALE: 1"=150'

For Supporting Design Calculations see FPGCOFFESCDX00000020100002

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV CD
R –	–	–	–	–	–	–	–	–	–	–	–
R 0	03/24/10	PC	RP	PC	RLR	RLR	RLR	TJ	–	–	–
RECORD DRAWING											

DISCIPLINE INTERFACE

SCALE: 1"=150' EXCEPT AS NOTED

YARD
DISPOSAL AREA NO. 5

GEOTECHNICAL EXPLORATION
BORING AND STABILITY
CROSS SECTION PLAN

ALABAMA LICENSED No. 30563 PROFESSIONAL ENGINEER RANDY LEE ROBERTS 3/24/10

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
P. COOPER	R. PETTY	P. COOPER	R. ROBERTS	R. ROBERTS	R. ROBERTS	T. JOHNSON

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COLBERT FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE 03/24/10 | 37 | C | 10W707-02 | R 0

STANTEC | 0
TASK COMPLETED BY: | REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

PLOT DATE: 03/24/2010

37 C 10W707-02

BORING LOCATION TABLE			
BORING	NORTHING	EASTING	ELEVATION
STN-4-1	1,723,599.52	394,359.89	460.2
STN-4-2	1,723,632.72	394,289.32	439.4
STN-4-3	1,723,645.94	394,253.91	427.3
STN-4-4	1,723,316.42	394,738.76	460.4
STN-4-5	1,723,366.01	394,798.52	439.5
STN-4-6	1,723,373.16	394,864.54	419.8
STN-4-7	1,722,880.08	394,960.81	460.8
STN-4-8	1,722,943.49	395,089.90	421.6
STN-4-9	1,722,306.36	395,260.37	461.2
STN-4-10	1,722,357.09	395,401.10	420.9
STN-4-11	1,721,882.96	395,485.31	461.3
STN-4-12	1,721,504.87	395,746.27	446.2
STN-4-13	1,721,330.83	395,874.15	425.3
STN-4-14	1,721,420.08	395,715.53	461.9
STN-4-15	1,721,219.13	395,347.89	460.5
STN-4-16	1,721,126.23	395,351.96	435.1
STN-4-17	1,721,539.59	394,582.90	476.8
STN-4-18	1,721,402.10	394,555.64	461.1
STN-4-19	1,721,352.01	394,475.66	440.3
STN-4-20	1,721,987.93	394,461.02	482.3
STN-4-21	1,721,985.14	394,262.71	460.2
STN-4-22	1,721,957.70	394,065.63	438.0
STN-4-23	1,722,728.47	394,227.94	461.1
STN-4-24	1,722,823.19	394,138.84	444.5

LEGEND

- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Sampling
- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling, And Piezometer Installation
- Soil Boring With Continuous Standard Penetration Tests And/or Shelby Tube Sampling, Rock Core, And Piezometer Installation

NOTES

1. Topographic and survey information provided by the Tennessee Valley Authority.
2. The Boring Logs And Related Information Shown On This Drawing Depict Approximate Subsurface Conditions Only At The Specific Boring Locations Noted And At The Time Of Drilling. Conditions At Other Locations May Differ From Those Occurring At The Boring Locations. Also, The Passage Of Time May Result In A Change In The Subsurface Conditions At The Boring Locations. Any Correlations Shown Between Borings Are Generally Based On Straight Line Interpolation. Actual Conditions Between Borings Are Unknown And May Differ From Those Shown.

FOR INFORMATION ONLY
This Record Drawing which has been previously submitted to TVA is provided for Information Only.

RECORD DRAWING

100 0 200 400 FEET
GRAPHIC SCALE: 1"=200'

PLOT DATE: 01/22/2010 USER: PETTY, RICHARD
V:\1755\ACTIVE\175559016\GEOTECHNICAL\DRAWING\REV0_R\10W706-02-R0.DWG

For Supporting Design Calculations see FPGCOFFESCDX0000002010001

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV CD
R –	–	–	–	–	–	–	–	–	–	–	–
R 0	01/22/10	PC	SB	PC	RLR	RLR	RLR	TJ	–	–	–

RECORD DRAWING

DISCIPLINE INTERFACE 1 2 3 4

SCALE: 1"=200' EXCEPT AS NOTED

YARD
ASH POND 4

GEOTECHNICAL EXPLORATION
BORING AND STABILITY
CROSS–SECTION PLAN

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
P. COOPER	S. BRADSHAW	P. COOPER	R. ROBERTS	R. ROBERTS	R. ROBERTS	T. JOHNSON

ALABAMA LICENSED No. 30593 PROFESSIONAL ENGINEER RANDY LEE ROBERTS
1/22/10

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COLBERT FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000	DATE 01/22/10	37	C	10W706–02	R 0

STANTEC	0
TASK COMPLETED BY:	REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

37 C 10W706–02

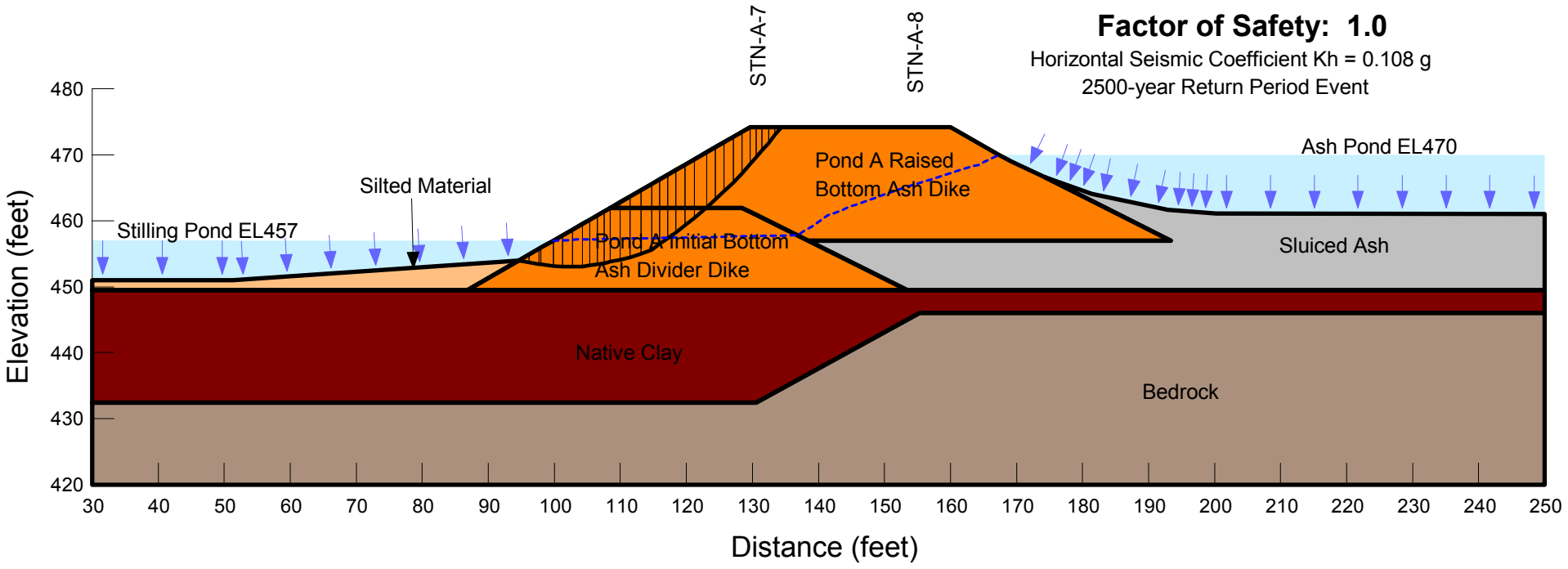
Gallatin Fossil Plant (GAF)

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

Section K - Ash Pond A
Gallatin Fossil Plant
Gallatin, Tennessee

Material Type	Unit Weight	Cohesion	Friction Angle
Pond A Initial Bottom Ash Divider Dike	105 pcf	0 psf	33 °
Pond A Raised Bottom Ash Dike	105 pcf	0 psf	34 °
Sluiced Ash	85 pcf	400 psf	10 °
Native Clay	125 pcf	550 psf	13 °
Silted Material	85 pcf	400 psf	10 °

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.



Date of Assessment - 11/4/2011

Project No. 175551015

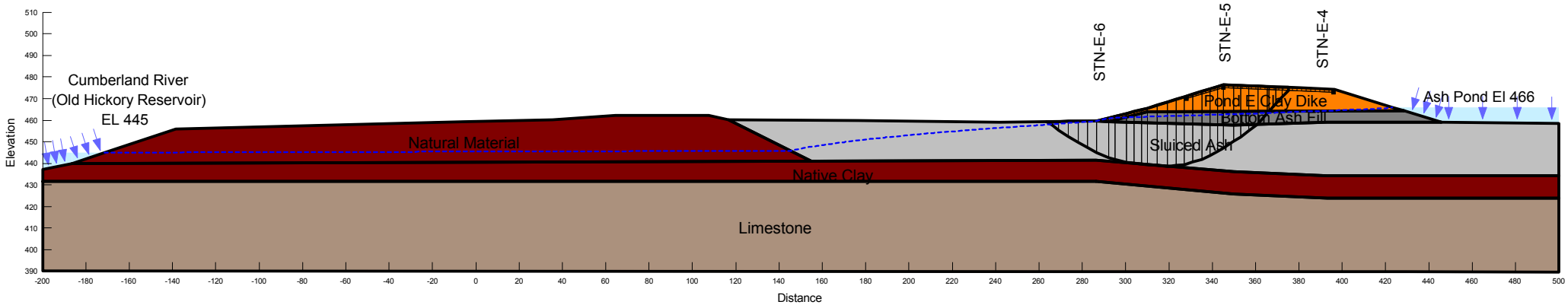
Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

Section B - Ash Pond E
Gallatin Fossil Plant
Gallatin, Tennessee

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Material Type	Unit Weight	Cohesion	Friction Angle
Pond E Clay Dike	125 pcf	400 psf	15 °
Bottom Ash Fill	100 pcf	0 psf	34 °
Sluiced Ash	85 pcf	400 psf	10 °
Native Clay	125 pcf	550 psf	13 °

Factor of Safety: 1.3
Horizontal Seismic Coefficient Kh = 0.108 g
2500-year Return Period Event



Date of Assessment - 11/4/2011

Project No. 175551015

MATCHLINE (See Sheet 02)

LEGEND

- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling
- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling And Rock Core
- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling And Piezometer Location
- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling And Rock Core And Piezometer Location
- A A' Cross Section

NOTES

1. Topographic and survey information provided by the Tennessee Valley Authority.
2. The boring logs and related information shown on this drawing depict approximate subsurface conditions only at the specific boring locations noted and at the time of drilling. Conditions at other locations may differ from those occurring at the boring locations. Also, the passage of time may result in a change in the subsurface conditions at the boring locations. Any correlations shown between borings are generally based on straight line interpolation. Actual conditions between borings are unknown and may differ from those shown.

BORING LOCATION TABLE

BORING	NORTHING	EASTING	ELEVATION (ft.)
STN-A-1	707,019.68	1,879,799.57	472.8
STN-A-2	706,994.16	1,879,810.94	473.3
STN-A-3	707,510.75	1,880,731.90	472.9
STN-A-4	707,498.65	1,880,758.47	473.8
STN-A-5	708,368.74	1,881,417.01	473.7
STN-A-6	708,353.42	1,881,433.71	474.0
STN-A-7	708,921.58	1,881,894.55	474.5
STN-A-8	708,907.06	1,881,914.61	474.8
STN-A-9	709,132.64	1,882,470.74	472.4
STN-A-10	709,085.67	1,882,461.16	474.1
STN-C-1	707,402.48	1,879,680.01	462.0

FOR INFORMATION ONLY
This Record Drawing which has been previously submitted to TVA is provided for Information Only.

RECORD DRAWING

GRAPHIC SCALE: 1"=200' (100 0 200 400 FEET)

For Supporting Design Calculations see FPGGAFFESCDX00000020100001

R 0 05/27/10 PC RP PC RLR RLR RLR TJ — RECORD DRAWING

SCALE: 1"=200' EXCEPT AS NOTED

YARD
ASH POND/STILLING POND COMPLEX
GEOTECHNICAL EXPLORATION
BORING LAYOUT

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
P. COOPER	R. PETTY	P. COOPER	R. ROBERTS	R. ROBERTS	R. ROBERTS	T. JOHNSON

Randy Lee Roberts, Registered Engineer, State of Tennessee, 5/27/10

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GALLATIN FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

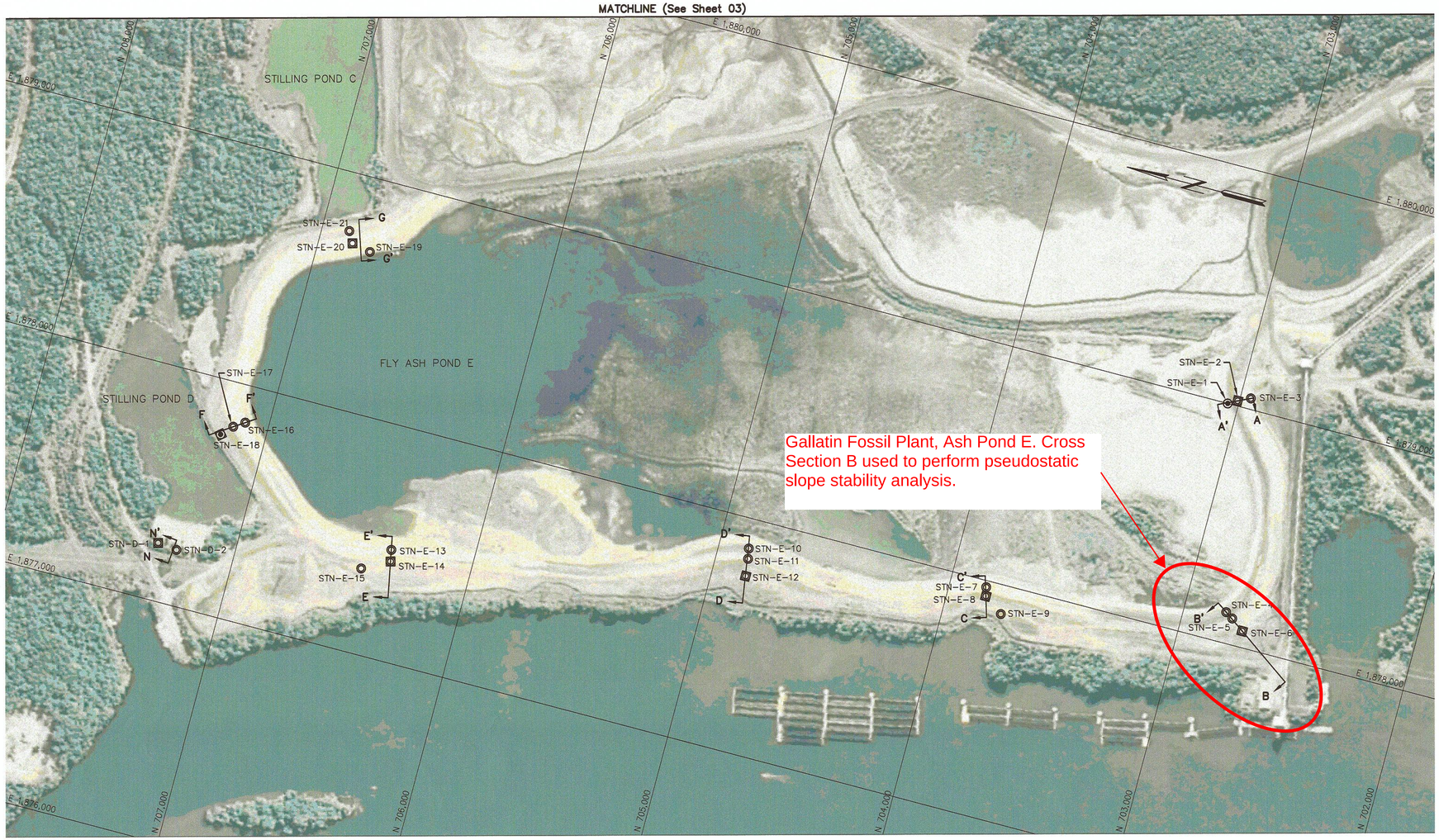
AUTOCAD R 2000 | DATE 05/27/10 | 39 | C | 10W504-03 | R 0

STANTEC | 0
TASK COMPLETED BY: | REV NO.

PLOT FACTOR:XX W_TVA

C.A.D. DRAWING DO NOT ALTER MANUALLY

MATCHLINE (See Sheet 03)



LEGEND

- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling
- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling And Rock Core
- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling And Piezometer Location
- Soil Boring With Continuous Standard Penetration Tests And/Or Shelby Tube Piston Sampling And Rock Core And Piezometer Location
- A A' Cross Section

NOTES

1. Topographic and survey information provided by the Tennessee Valley Authority.
2. The boring logs and related information shown on this drawing depict approximate subsurface conditions only at the specific boring locations noted and at the time of drilling. Conditions at other locations may differ from those occurring at the boring locations. Also, the passage of time may result in a change in the subsurface conditions at the boring locations. Any correlations shown between borings are generally based on straight line interpolation. Actual conditions between borings are unknown and may differ from those shown.

BORING LOCATION TABLE

BORING	NORTHING	EASTING	ELEVATION (ft.)
STN-D-1	707,328.99	1,877,246.92	460.8
STN-D-2	707,245.18	1,877,237.96	460.4
STN-E-1	703,045.88	1,879,000.10	474.1
STN-E-2	703,007.37	1,879,022.21	475.7
STN-E-3	702,955.21	1,879,046.66	459.6
STN-E-4	702,820.82	1,878,131.27	474.3
STN-E-5	702,788.65	1,878,111.48	476.1
STN-E-6	702,733.38	1,878,070.14	459.6
STN-E-7	703,843.80	1,877,971.87	475.1
STN-E-8	703,835.47	1,877,934.64	476.5
STN-E-9	703,753.39	1,877,876.25	451.8
STN-E-10	704,870.32	1,877,862.37	474.9
STN-E-11	704,863.36	1,877,828.40	476.1
STN-E-12	704,854.47	1,877,754.46	455.3
STN-E-13	706,353.41	1,877,474.21	474.3
STN-E-14	706,343.79	1,877,425.50	477.0
STN-E-15	706,458.09	1,877,364.00	463.4
STN-E-16	707,101.38	1,877,842.04	474.9
STN-E-17	707,146.54	1,877,811.85	475.4
STN-E-18	707,190.77	1,877,765.92	461.6
STN-E-19	706,774.43	1,878,687.08	472.8
STN-E-20	706,856.53	1,878,704.54	476.0
STN-E-21	706,883.00	1,878,751.72	461.6

RECORD DRAWING

100 0 200 400 FEET
GRAPHIC SCALE: 1"=200'

FOR INFORMATION ONLY
This Record Drawing which has been previously submitted to TVA is provided for Information Only.

For Supporting Design Calculations see FPGGAFFESCDX000000020100001

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV ID
R 0	05/27/10	PC	RP	PC	RLR	RLR	RLR	TJ	–	–	–
RECORD DRAWING											

SCALE: 1"=200' EXCEPT AS NOTED

RANDY LEE ROBERTS — REGISTERED ENGINEER — STATE OF TENNESSEE — 5/27/10

YARD
ASH POND/STILLING POND COMPLEX

GEOTECHNICAL EXPLORATION
BORING LAYOUT

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
P. COOPER	R. PETTY	P. COOPER	R. ROBERTS	R. ROBERTS	R. ROBERTS	T. JOHNSON

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GALLATIN FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000	DATE 05/27/10	39	C	10W504-02	R 0

STANTEC | 0
TASK COMPLETED BY: | REV NO.

PLOT FACTOR: XX W_TVA

C.A.D. DRAWING DO NOT ALTER MANUALLY

PLOT DATE: 05/25/2010 USER: BRADSHAW, STEVEN
V:\1750\ACTIVE\10750504\GEOTECHNICAL\DRAWING\REVG_RECORD\10W504-02-R0.DWG

John Sevier Fossil Plant (JSF)

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

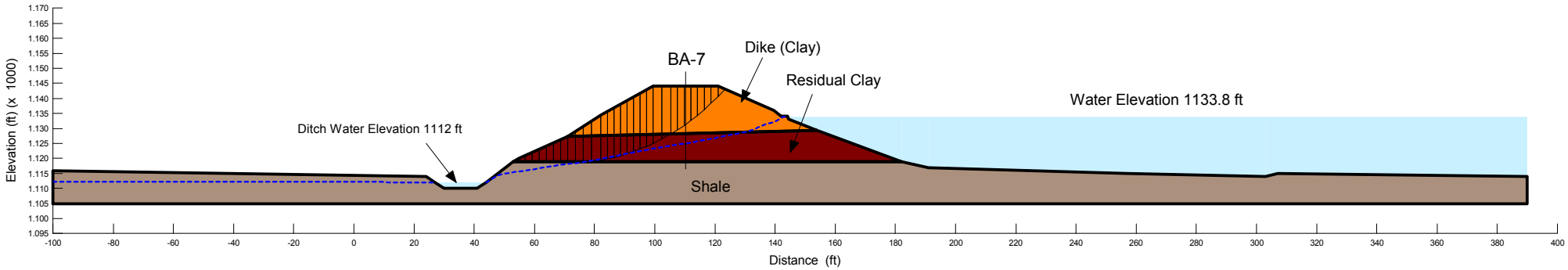
Section I - Bottom Ash Pond
John Sevier Plant
Rogersville, Tennessee

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results, and approximate soil properties. No warranties can be made regarding the continuity of subsurfacea conditons betweeen the borings.

Material Type	Unit Weight	Cohesion	Friction Angle
Dike (Clay)	126 pcf	715 psf	10.6 °
Residual Clay	120 pcf	1000 psf	11.6 °
Bedrock (Shale)	N/A	N/A	N/A

Factor of Safety: 2.2

Horizontal Seismic Coefficient Kh = 0.115 g
2500-year Return Period Event



Date of Assessment - 11/4/2011

Project No. 175551015

10W507-01 | C | 41

BORING LOCATION TABLE

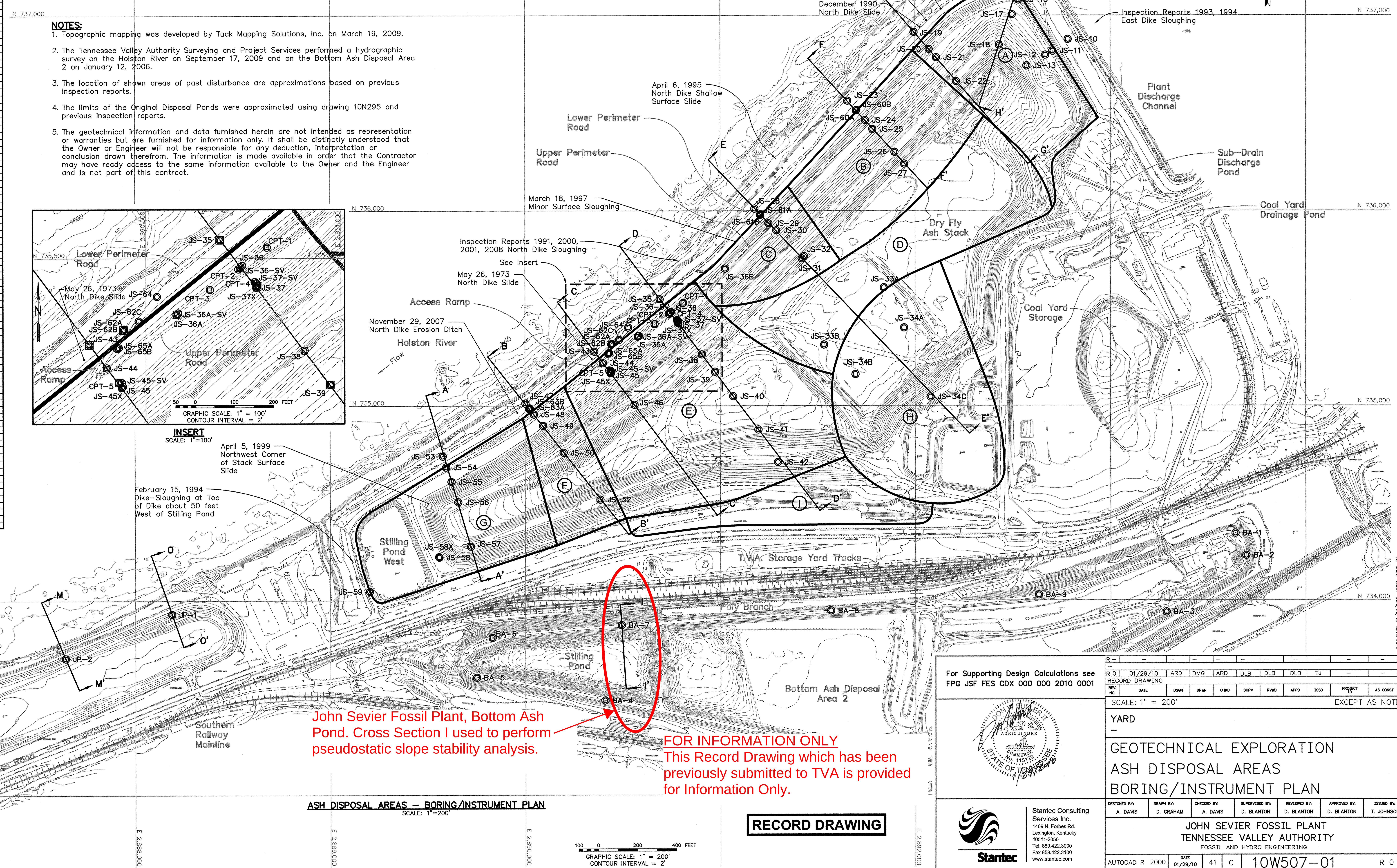
BORING	NORTHING	EASTING	ELEV. (FT.)	BORING TYPE
BA-1	734,343.87	2,893,639.94	1,145.4	Sample / Piezometer
BA-2	734,229.93	2,893,695.53	1,145.9	Sample / Piezometer
BA-3	733,939.03	2,893,286.73	1,145.3	Sample / Piezometer
BA-4	733,486.11	2,890,407.91	1,145.2	Sample
BA-5	733,604.48	2,889,750.33	1,144.9	Sample / Piezometer
BA-6	733,808.75	2,889,830.63	1,145.1	Sample
BA-7	733,872.97	2,890,492.40	1,144.3	Sample
BA-8	733,946.71	2,891,566.83	1,145.2	Sample / Piezometer
BA-9	734,027.41	2,892,632.01	1,144.7	Sample
JP-1	733,930.64	2,888,187.78	1,105.4	Sample
JP-2	733,703.71	2,887,641.90	1,105.7	Sample
JP-3	733,483.09	2,886,974.16	1,105.8	Sample / Piezometer
JP-4	733,323.27	2,886,393.14	1,105.6	Sample / Piezometer
JP-4A	733,325.38	2,886,401.23	1,105.3	Shelby Tubes
JP-5	732,679.06	2,886,045.57	1,104.5	Sample / Piezometer
JP-6	732,862.78	2,886,526.80	1,106.3	Sample / Piezometer
JS-10	736,877.33	2,892,782.32	1,085.0	Sample / Piezometer
JS-11	736,817.60	2,892,703.95	1,115.3	Sample/ Slope Inclinometer
JS-12	736,796.96	2,892,666.90	1,114.8	Sample / Piezometer
JS-13	736,741.69	2,892,570.62	1,132.5	Sample / Piezometer
JS-15	737,186.07	2,892,539.85	1,084.1	Sample / Piezometer
JS-16	737,079.51	2,892,528.69	1,115.7	Sample/ Slope Inclinometer
JS-17	737,004.19	2,892,496.33	1,114.5	Sample / Piezometer
JS-18	736,848.84	2,892,429.18	1,136.3	Sample / Piezometer
JS-19	736,913.99	2,891,993.30	1,077.3	Sample / Piezometer
JS-20	736,826.84	2,892,070.81	1,113.8	Sample/ Slope Inclinometer
JS-21	736,784.15	2,892,107.96	1,111.0	Sample / Piezometer
JS-22	736,662.66	2,892,209.60	1,134.7	Sample / Piezometer
JS-23	736,562.81	2,891,652.34	1,075.1	Sample / Piezometer
JS-24	736,463.59	2,891,743.40	1,113.4	Sample/ Slope Inclinometer
JS-25	736,417.96	2,891,781.01	1,108.1	Sample / Piezometer
JS-26	736,300.23	2,891,894.54	1,141.8	Sample / Slope Inclinometer
JS-27	736,239.87	2,891,944.24	1,158.3	Sample / Temporary Piezometer
JS-28	736,010.84	2,891,176.23	1,074.5	Sample / Piezometer
JS-29	735,935.78	2,891,247.73	1,111.5	Sample/ Slope Inclinometer
JS-30	735,899.72	2,891,288.23	1,105.6	Sample / Piezometer
JS-31	735,755.45	2,891,418.56	1,151.1	Sample/ Slope Inclinometer
JS-32	735,766.70	2,891,431.00	1,150.6	Temporary Piezometer
JS-33A	735,606.69	2,891,839.21	1,152.4	Sample
JS-33B	735,313.55	2,891,533.03	1,155.3	Sample
JS-34A	735,400.64	2,891,943.07	1,156.4	Sample
JS-34B	735,161.98	2,891,694.15	1,156.3	Sample
JS-34C	735,045.58	2,892,079.28	1,120.4	Sample / Piezometer
JS-35	735,547.59	2,890,689.83	1,078.9	Sample / Piezometer
JS-36	735,478.03	2,890,742.60	1,108.5	Sample/ Slope Inclinometer
JS-36-SV	735,481.63	2,890,746.85	1,108.4	Shear Vane Test/Shelby Tubes
JS-36A	735,355.98	2,890,578.53	1,106.2	Sample/ Slope Inclinometer
JS-36A-SV	735,359.66	2,890,582.51	1,106.4	Shear Vane Test/Shelby Tubes
JS-36B	735,703.43	2,891,025.07	1,110.8	Sample/ Slope Inclinometer
JS-37	735,429.18	2,890,784.99	1,103.8	Piezometer
JS-37-SV	735,436.98	2,890,782.91	1,102.3	Shear Vane Test/Shelby Tubes
JS-37X	735,425.46	2,890,782.69	1,104.4	Sample
JS-38	735,263.83	2,890,906.40	1,151.5	Sample/ Slope Inclinometer
JS-39	735,175.12	2,890,973.42	1,181.3	Sample / Temporary Piezometer
JS-40	735,048.86	2,891,066.57	1,170.2	Sample
JS-41	734,877.81	2,891,195.60	1,154.6	Sample
JS-42	734,710.66	2,891,295.11	1,138.2	Sample / Piezometer
JS-43	735,279.02	2,890,354.76	1,081.5	Sample / Piezometer
JS-44	735,219.55	2,890,399.56	1,103.2	Sample/ Slope Inclinometer
JS-45	735,171.68	2,890,440.72	1,101.3	Piezometer
JS-45-SV	735,181.14	2,890,438.31	1,100.1	Shear Vane Test/Shelby Tubes
JS-45X	735,168.74	2,890,438.03	1,101.5	Sample
JS-46	735,006.11	2,890,560.28	1,144.7	Sample/ Slope Inclinometer
JS-47	735,013.36	2,890,001.65	1,078.2	Sample / Piezometer
JS-48	734,956.57	2,890,044.99	1,101.3	Sample/ Slope Inclinometer
JS-49	734,898.66	2,890,091.75	1,098.8	Sample / Piezometer
JS-50	734,760.24	2,890,196.57	1,138.7	Sample / Piezometer
JS-52	734,518.95	2,890,384.61	1,136.8	Sample / Piezometer
JS-53	734,742.01	2,889,577.25	1,081.4	Sample / Piezometer
JS-54	734,685.87	2,889,594.68	1,100.2	Sample/ Slope Inclinometer
JS-55	734,611.13	2,889,621.92	1,097.4	Sample / Piezometer
JS-56	734,506.50	2,889,656.35	1,131.0	Sample / Piezometer
JS-57	734,277.92	2,889,720.99	1,130.1	Sample / Piezometer
JS-58	734,222.32	2,889,559.16	1,100.2	Piezometer
JS-58X	734,224.38	2,889,557.53	1,100.1	Sample
JS-59	734,047.10	2,889,202.69	1,099.3	Sample / Piezometer
JS-60A	736,513.29	2,891,697.31	1,089.5	Sample
JS-60B	736,515.46	2,891,699.27	1089.5	Shelby Tubes / Piezometer
JS-61A	735,980.74	2,891,206.58	1,089.7	Sample / Piezometer
JS-61B	735,978.47	2,891,204.07	1089.1	Shelby Tubes
JS-62A	735,318.64	2,890,444.05	1,090.0	Sample
JS-62B	735,316.23	2,890,442.25	1,090.0	Shelby Tubes / Piezometer
JS-62C	735,339.49	2,890,481.47	1,088.2	Sample
JS-63A	734,985.29	2,890,020.63	1,089.4	Sample
JS-63B	734,987.89	2,890,023.29	1089.4	Shelby Tubes / Piezometer
JS-64	735,402.40	2,890,528.11	1,082.3	Sample
JS-65A	735,271.28	2,890,430.29	1,095.1	Sample / Shelby Tubes
JS-65B	735,269.06	2,890,426.10	1,094.7	Shelby Tubes
CPT-1	735,528.42	2,890,809.86	1,109.5	Cone Penetration Test
CPT-2	735,472.49	2,890,736.90	1,108.3	Cone Penetration Test
CPT-3	735,419.93	2,890,663.93	1,107.1	Cone Penetration Test
CPT-4	735,439.57	2,890,778.44	1,101.8	Cone Penetration Test
CPT-5	735,182.18	2,890,431.15	1,100.0	Cone Penetration Test

LEGEND

- Edge of River Pool
- Assumed Limits of Original Disposal Ponds
- (A) Original Disposal Pond Designation
- Soil Boring With Standard Penetration Tests
- Soil Boring With Standard Penetration Tests (Piezometer Installed)
- Soil Boring With Standard Penetration Tests (Slope Inclinometer Installed)
- Cone Penetration Test
- Shear Vane Test

NOTES:

1. Topographic mapping was developed by Tuck Mapping Solutions, Inc. on March 19, 2009.
2. The Tennessee Valley Authority Surveying and Project Services performed a hydrographic survey on the Holston River on September 17, 2009 and on the Bottom Ash Disposal Area 2 on January 12, 2006.
3. The location of shown areas of past disturbance are approximations based on previous inspection reports.
4. The limits of the Original Disposal Ponds were approximated using drawing 10N295 and previous inspection reports.
5. The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.



John Sevier Fossil Plant, Bottom Ash Pond. Cross Section I used to perform pseudostatic slope stability analysis.

FOR INFORMATION ONLY
This Record Drawing which has been previously submitted to TVA is provided for Information Only.

ASH DISPOSAL AREAS – BORING/INSTRUMENT PLAN
SCALE: 1"=200'

GRAPHIC SCALE: 1" = 200'
CONTOUR INTERVAL = 2'

RECORD DRAWING

For Supporting Design Calculations see FPG JSF FES CDX 000 000 2010 0001

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST
R 0	01/29/10	ARD	DMG	ARD	DLB	DLB	DLB	TJ	–	–

RECORD DRAWING

SCALE: 1" = 200' EXCEPT AS NOTED

YARD

GEOTECHNICAL EXPLORATION
ASH DISPOSAL AREAS
BORING/INSTRUMENT PLAN

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
A. DAVIS	D. GRAHAM	A. DAVIS	D. BLANTON	D. BLANTON	D. BLANTON	T. JOHNSON

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
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Fax 859.422.3100
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JOHN SEVIER FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE 01/29/10 | 41 | C | 10W507-01 | R 0

STANTEC | 0
TASK COMPLETED BY: | REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING DO NOT ALTER MANUALLY

Johnsonville Fossil Plant
(JOF)

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

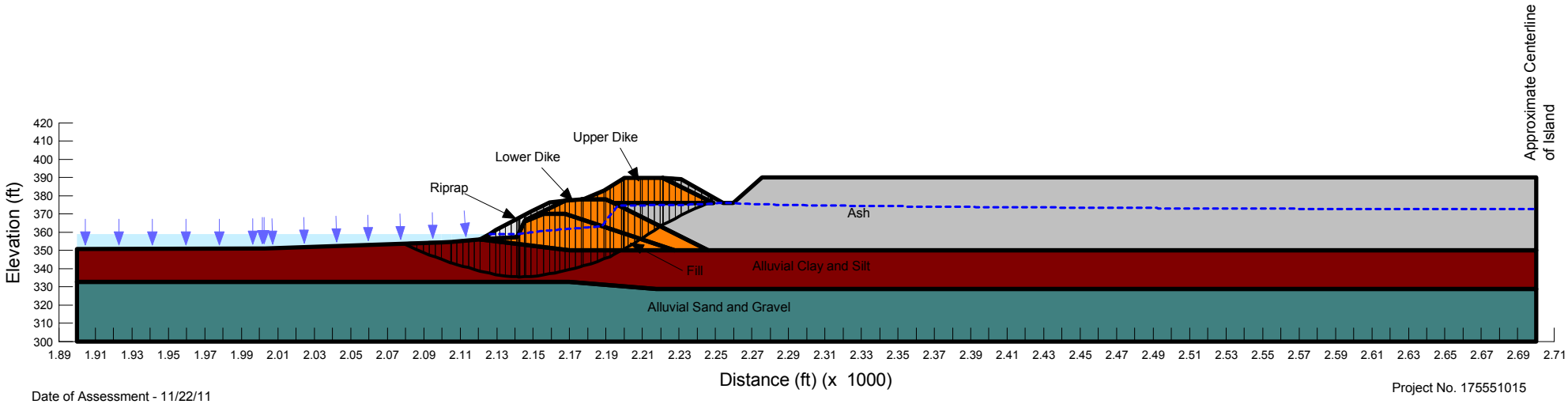
Section K - Ash Disposal Area No. 2
Johnsonville Fossil Plant
New Johnsonville, Tennessee

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Material Type	Unit Weight (pcf)	Cohesion (psf)	Friction Angle
Upper Dike	125	521	16.2 °
Lower Dike	125	533	20.1 °
Ash	100	0	10 °
Fill	124	630	17.8 °
Alluvial Clay and Silt	124	714	17.8 °
Alluvial Sand and Gravel	120	0	30 °
Riprap	100	0	38 °

Factor of Safety: 1.0

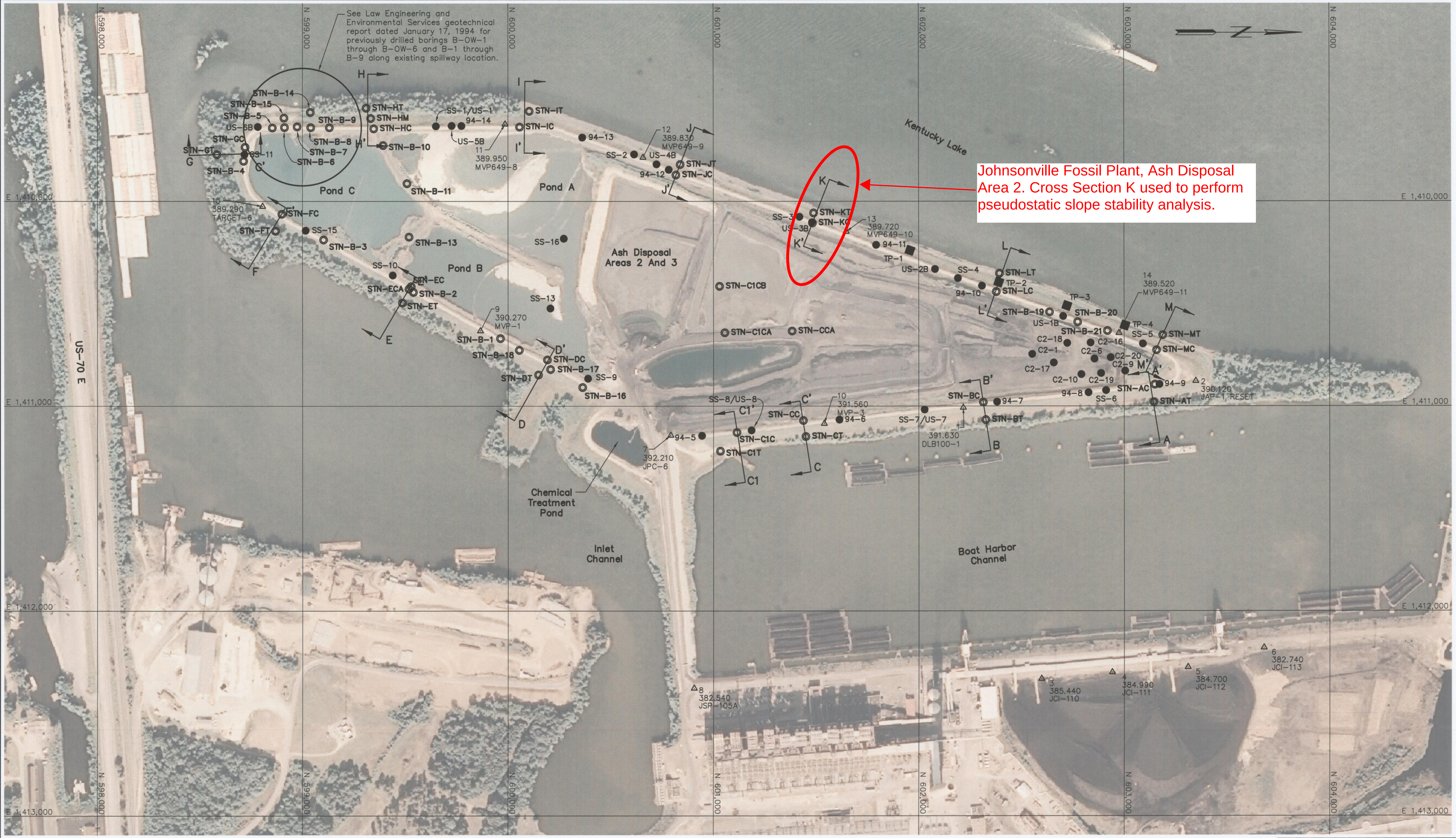
Horizontal Seismic Coefficient Kh = 0.254 g
2500-year Return Period Event



Date of Assessment - 11/22/11

Project No. 175551015

30 C XXWXXX-01



BORING LOCATION TABLE			
BORING	NORTHING	EASTING	ELEV. (FT.)
STN-AC	603,148.82	1,410,894.84	391.4
STN-AT	603,144.12	1,410,980.20	368.4
STN-BC	602,313.93	1,410,981.18	391.5
STN-BT	602,326.17	1,411,067.30	369.8
STN-C1C	601,113.79	1,411,129.20	391.5
STN-C1CA	601,054.92	1,410,641.77	394.0
STN-C1CB	601,029.42	1,410,415.09	398.4
STN-C1T	601,033.28	1,411,220.15	365.5
STN-CC	601,437.52	1,411,070.75	391.6
STN-CCA	601,382.49	1,410,633.59	394.6
STN-CT	601,449.55	1,411,148.76	368.9
STN-DC	600,191.17	1,410,774.31	390.0
STN-DT	600,147.64	1,410,847.53	365.3
STN-EC	599,528.35	1,410,416.19	390.2
STN-ECA	599,517.65	1,410,428.37	390.2
STN-ET	599,486.09	1,410,496.27	363.8
STN-FC	598,898.88	1,410,062.79	389.4
STN-FT	598,868.34	1,410,145.49	362.9
STN-GC	598,719.43	1,409,736.38	389.6
STN-GT	598,582.54	1,409,772.40	360.8
STN-HC	599,345.93	1,409,646.07	389.5
STN-HM	599,331.00	1,409,595.58	377.9
STN-HT	599,308.41	1,409,545.23	363.1
STN-IC	600,055.90	1,409,637.66	389.8
STN-IT	600,103.14	1,409,560.28	368.8
STN-JC	600,817.61	1,409,871.68	389.6
STN-JT	600,838.26	1,409,820.33	378.7
STN-KC	601,482.90	1,410,105.77	389.8
STN-KT	601,488.26	1,410,056.92	377.6
STN-LC	602,377.53	1,410,442.03	389.9
STN-LT	602,392.94	1,410,352.26	366.3
STN-MC	603,157.11	1,410,726.95	390.6
STN-MT	603,187.15	1,410,653.44	365.6
*STN-B-1			390.6
*STN-B-2			390.2
*STN-B-3			390.2
*STN-B-4			389.5
*STN-B-5			389.9
*STN-B-6			389.9
*STN-B-7			390.1
*STN-B-8			389.9
*STN-B-8A			389.9
*STN-B-9			389.7
*STN-B-10			389.1
*STN-B-11			389.6
*STN-B-12	Not Drilled		
*STN-B-13			390.1
*STN-B-14			367.3
*STN-B-15			378.9
*STN-B-16			389.6
*STN-B-17			389.1
*STN-B-18			391.0
*STN-B-19			388.3
*STN-B-20			388.9
*STN-B-21			389.2

*Borings not surveyed and elevations are approximate.

INSPECTION TEST PIT LOCATION TABLE			
BORING	NORTHING	EASTING	ELEV. (FT.)
TP-1	601,957.34	1,410,239.85	–
TP-2	602,389.71	1,410,395.38	–
TP-3	602,721.20	1,410,510.10	–
TP-4	603,003.70	1,410,606.32	–

*Test Pit Locations are approximate.

FOR INFORMATION ONLY
This Record Drawing which has been previously submitted to TVA is provided for Information Only.

RECORD DRAWING

BORINGS	REFERENCE
B-1 through B-9 and B-OW-1 through B-OW-6	Report of Geotechnical Exploration, Ash Pond Dike, New Johnsonville Plant, New Johnsonville, Tennessee, Law Engineering and Environmental Services, Inc., January 17, 1994.
94-5 through 94-14	Subsurface Exploration Data, TVA Borings at Johnsonville Fossil Plant, Johnsonville, Tennessee, Law Engineering and Environmental Services, Inc., October 11, 1994.
US-1B through US-6B	Johnsonville Steam Plant – Ash Pond – Soil and Foundation Exploration, J.C. McGraw, TVA Construction Services Branch, September 17, 1969.
SS-13, SS-15, SS-16	Johnsonville Groundwater Assessment, TVA Resource Group, Engineering Services, March 1995.
SS-1 through SS-11 and US-1, US-7 and US-8	Johnsonville Steam Plant – Ash Disposal Area No. 2 Dike Raising – Soil Exploration and Testing, G. Farmer, TVA Construction Services Branch, November 22, 1977.
C2-1 through C2-20	Report of Ash Pond Investigation, Johnsonville Fossil Plant, New Johnsonville, Tennessee, MACTEC Engineering and Consulting, December 4, 2003.

LEGEND

- Soil Boring with Undisturbed (Shelby) Tube Samples and/or Standard Penetration Tests
- Soil Boring from previous explorations by Others
- Excavated Inspection Test Pit
- TVA Survey Monument

NOTES:

1. Horizontal and vertical locations of 2009 borings provided by T.V.A. Location of previously drilled borings approximated from boring layouts provided in previous reports.
2. The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

100 0 200 400 FEET
GRAPHIC SCALE

For Supporting Design Calculations see ____________________

STEPHEN H. BICKEL REGISTERED ENGINEER AGRICULTURE COMMERCE No. 113134 STATE OF TENNESSEE

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1901 Nelson Miller Pky.
Louisville, Kentucky
40223-2177
Tel. 502.212.5000
Fax 502.212.5055
www.stantec.com

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV CD
R –	–	–	–	–	–	–	–	–	–	–	–
R 0	01/27/10	PC	JM	PC	SHB	SHB	SHB	TJ	–	–	–

DISCIPLINE INTERFACE 1 2 3 4

SCALE: 1"=200' EXCEPT AS NOTED

YARD
ASH DISPOSAL AREAS 2 AND 3

GEOTECHNICAL EXPLORATION
BORING LAYOUT

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
P. COOPER	J. MCKINNEY	P. COOPER	S. BICKEL	S. BICKEL	S. BICKEL	T. JOHNSON

JOHNSONVILLE FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE 01/27/10 | 30 | C | XXWXXX-01 | R 0

STANTEC | 0
TASK COMPLETED BY: | REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

PLOT DATE: 04/13/2010

Kingston Fossil Plant
(KIF)

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

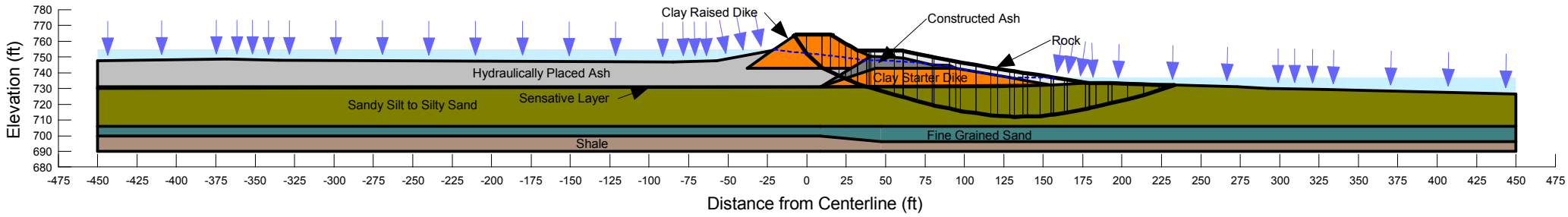
Section STA. 132+37
Kingston Fossil Plant
Harriman, Tennessee

Note:
The results of the analysis shown here are based on available subsurface information, laboratory test results, and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Material Type	Unit Weight	Cohesion	Friction Angle
Clay Raised Dike	125 pcf	65 psf	23 °
Constructed Ash	93 pcf	0 psf	30 °
Hydraulically Placed Ash	96 pcf	0 psf	10 °
Sandy Silt to Silty Sand	105 pcf	0 psf	27 °
Fine Grained Sand	122 pcf	0 psf	31 °
Clay Starter Dike	129 pcf	300 psf	26 °
Sensative Layer	127 pcf	c/p = 0.32	N/A
Rock	110 pcf	0 psf	38 °
Shale	N/A	N/A	N/A

Factor of Safety: 1.0

Horizontal Seismic Coefficient Kh = 0.115 g
2500-year Return Period Event



Date of Assessment - 11/4/2011

Project No 175551015

36	C	10W287-01

BORING LOCATION TABLE

Boring No.	Northing	Easting	Elevation (Feet)
STN-2	556804.57	2442329.32	751.20
STN-2B	556801.29	2442323.04	751.00
STN-3	556756.78	2442263.59	763.70
STN-3C	556763.50	2442257.42	763.80
STN-3D	556762.50	2442258.42	763.80
STN-3E	556764.10	2442559.45	763.80
STN-4	556625.56	2442047.01	763.30
STN-5	556611.15	2442365.31	764.90
STN-6	556416.17	2442407.10	763.40
STN-8	556248.52	2442540.30	752.20
STN-8A	556254.96	2442535.17	751.70
STN-9	556233.82	2442499.72	764.80
STN-9A	556234.82	2442499.81	764.80
STN-10	556162.76	2442251.63	765.00
STN-11	556034.83	2442535.05	763.20
STN-12	555873.09	2442622.48	765.10
STN-14	555685.58	2442733.21	753.10
STN-14B	555690.29	2442730.41	753.00
STN-15	555662.69	2442667.52	763.70
STN-15C	555671.50	2442690.88	765.30
STN-15D	555665.72	2442690.78	765.30
STN-15E	555694.24	2442681.34	765.00
STN-16	555501.40	2442725.94	764.50
STN-18	555204.87	2442894.11	751.00
STN-18A	555204.57	2442886.00	751.80
STN-19	555204.68	2442842.94	765.60
STN-19A	555204.68	2442843.94	765.60
STN-20	555168.84	2442666.59	762.90
STN-21	555076.61	2442149.85	765.00
STN-22	554990.27	2441723.40	765.00
STN-23	555020.22	2442857.46	764.70
STN-24	554803.45	2442843.16	765.10
STN-26	554624.86	2442889.00	750.00
STN-26B	554604.57	2442896.12	751.00
STN-27	554601.77	2442850.67	765.10
STN-27A	554600.64	2442840.21	765.00
STN-27B	554606.18	2442840.52	765.00
STN-27C	554607.18	2442840.92	765.00
STN-28	554406.25	2442841.10	764.80
STN-29	554155.15	2442854.72	764.70
STN-31	553954.94	2442758.22	749.50
STN-31A	553960.30	2442764.66	749.70
STN-32	553994.90	2442746.44	764.80
STN-32A	553996.72	2442757.13	764.80
STN-34	553882.51	2442381.24	764.70

BORING LOCATION TABLE

Boring No.	Northing	Easting	Elevation (Feet)
STN-36	553776.74	2442198.78	751.90
STN-36B	553753.47	2442155.66	751.50
STN-37	553799.90	2442184.40	763.80
STN-37C	553798.81	2442171.01	763.60
STN-37D	553798.26	2442168.95	763.60
STN-37E	553799.26	2442183.40	763.80
STN-38	553730.83	2441988.70	764.10
STN-41	553583.10	2441510.71	752.70
STN-41A	553584.59	2441512.86	751.80
STN-42	553623.48	2441513.69	764.70
STN-42A	553624.48	2441512.69	764.70
STN-43	554004.68	2441548.50	765.90
STN-43A	554005.71	2441549.61	765.90
STN-45	553740.50	2441308.40	763.90
STN-47	553747.39	2441146.83	753.40
STN-47B	553742.43	2441143.28	753.80
STN-48	553773.29	2441154.53	765.30
STN-48C	553770.51	2441164.28	765.30
STN-49	553921.85	2441024.39	763.10
STN-50	553631.96	2440496.85	741.60
STN-50A	553632.98	2440497.85	741.60
STN-51	553696.02	2440548.46	750.40
STN-52	553992.98	2440817.40	753.20
STN-53	554011.12	2440902.46	763.90
STN-53A	554012.14	2440904.05	763.90
STN-54	555263.94	2441476.12	765.00
STN-55	554943.73	2442287.49	764.10
STN-56	554555.61	2441998.50	765.80
STN-59	556075.53	2442603.06	752.20
STN-60	555886.92	2442663.31	752.50
STN-61	555513.59	2442792.80	752.50
STN-62	555020.69	2442907.23	749.80
STN-63	554822.75	2442910.57	750.00
STN-64	554411.29	2442911.08	749.40
STN-65	554147.51	2442915.09	748.60
STN-66	553888.83	2442564.24	750.90
STN-69	553607.58	2441718.01	752.30
STN-71	553840.20	2440981.04	752.00
STN-72	556243.56	2442498.40	765.70
STN-73	556264.59	2442544.34	763.90
STN-74	555189.21	2442848.63	766.20
STN-74	555184.59	2442849.41	766.20
STN-75	555194.95	2442895.83	753.40
STN-76	553923.59	2442380.21	762.00
STN-77	553847.01	2442405.85	754.90

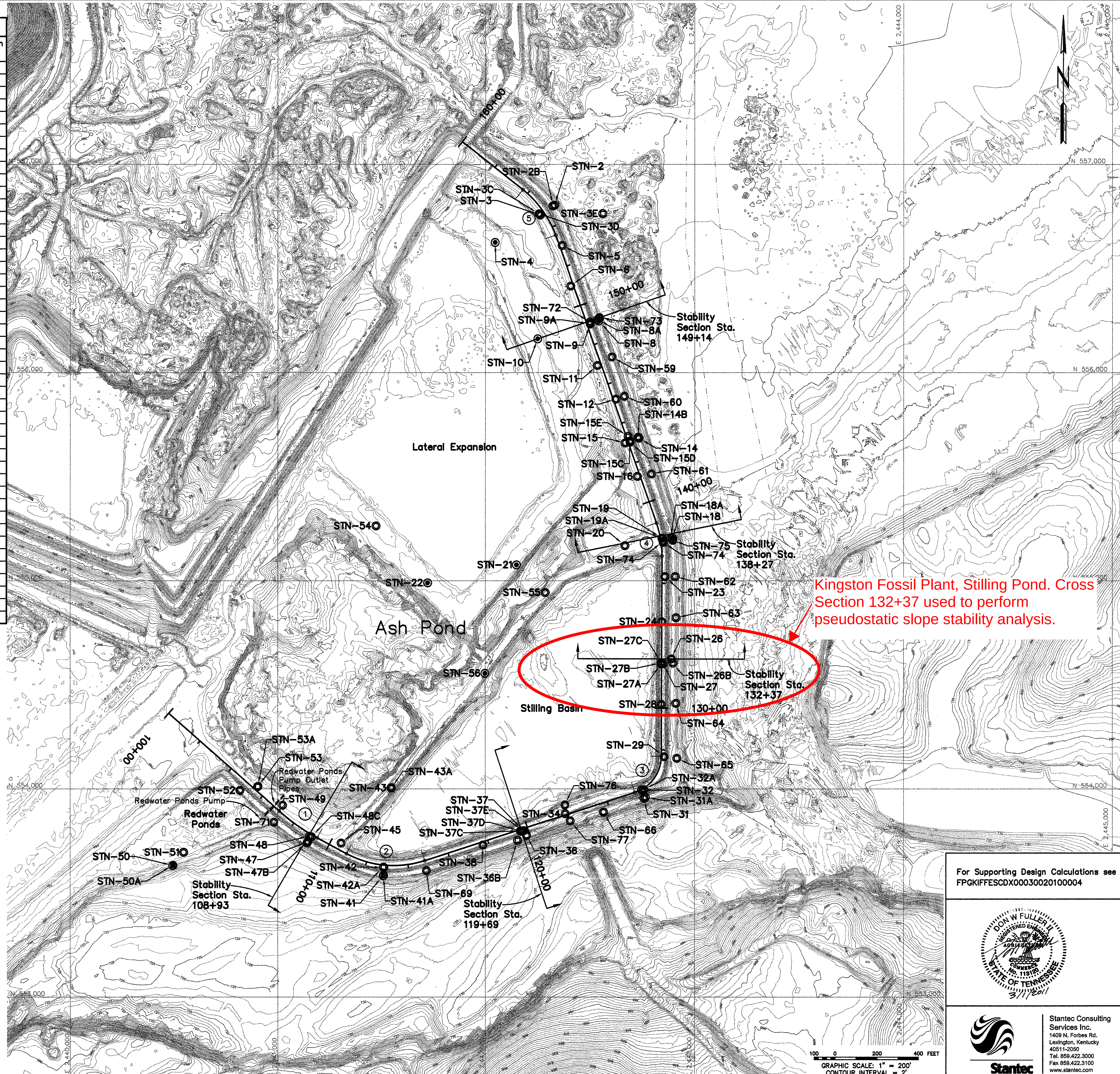


TABLE OF BASELINE COORDINATES

Station	Baseline	Northing	Easting
100+00.00	Begin Project Baseline	554,363.86	2,440,477.77
160+00.00	End Project Baseline	557,109.43	2,441,888.38

BASELINE CURVE DATA

①
P.I. Sta. = 108+20.74
Northing = 553,819.18
Easting = 2,441,091.71
Δ = 13°20'06"
R = 974.68'
T = 113.94'
L = 226.85'
E = 6.64'
P.C. Sta. = 107+06.80
P.T. Sta. = 109+33.65

②
P.I. Sta. = 112+99.93
Northing = 553,591.92
Easting = 2,441,514.77
Δ = 46°19'10"
R = 479.84'
T = 205.26'
L = 387.92'
E = 42.06'
P.C. Sta. = 110+94.67
P.T. Sta. = 114+82.59

③
P.I. Sta. = 126+71.85
Northing = 554,024.61
Easting = 2,442,840.47
Δ = 71°45'50"
R = 182.94'
T = 132.33'
L = 229.13'
E = 42.85'
P.C. Sta. = 125+39.52
P.T. Sta. = 127+68.65

④
P.I. Sta. = 138+12.12
Northing = 555,200.41
Easting = 2,442,843.77
Δ = 19°21'32"
R = 479.84'
T = 81.84'
L = 162.13'
E = 6.93'
P.C. Sta. = 137+30.28
P.T. Sta. = 138+92.41

⑤
P.I. Sta. = 154+96.30
Northing = 556,792.40
Easting = 2,442,289.43
Δ = 32°28'34"
R = 479.84'
T = 139.75'
L = 271.98'
E = 19.94'
P.C. Sta. = 153+56.55
P.T. Sta. = 156+28.53

LEGEND

- Soil Boring with Undisturbed (Shelby) Tube Samples and/or Standard Penetration Tests
- Soil Boring with Undisturbed (Shelby) Tube Samples and/or Standard Penetration Tests and Rock Core
- Previously Drilled by AECOM
- Cone Penetration Test

NOTES

1. Topographic mapping was generated from a LIDAR survey performed on January 8, 2009 by Tuck Mapping Solutions, Inc. This plan was developed for discussion purposes only and is not to be used for construction.
2. The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

FOR INFORMATION ONLY
This Record Drawing which has been previously submitted to TVA is provided for Information Only.

RECORD DRAWING

For Supporting Design Calculations see FPGKIFFESCDX00030020100004

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV CD
R –	–	–	–	–	–	–	–	–	–	–	–
R 0	03/01/11	JDP	TJ	TC	DWF	–	MST	JCK	–	–	–
RECORD DRAWING											

DISCIPLINE INTERFACE 1 2 3 4

SCALE: 1"=200' EXCEPT AS NOTED

YARD
DIKE C

BUTTRESS DESIGN
BORING PLAN AND BASELINE LAYOUT

DON W FULLER II — REGISTERED ENGINEER — AGRICULTURE COMMERCE — No. 113120 — STATE OF TENNESSEE — 3/1/2011

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
J.D. PINEAU	T. JOHNSON	T. CRILLY	D.W. FULLER	–	M.S. TURNBOW	J.C. KAMMEYER

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KINGSTON FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000	DATE 03/01/11	36	C	10W287-01	R 0

STANTEC	0
TASK COMPLETED BY:	REV NO.

PLOT FACTOR:200
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

PLOT DATE: 02/24/2011

Paradise Fossil Plant
(PAF)

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

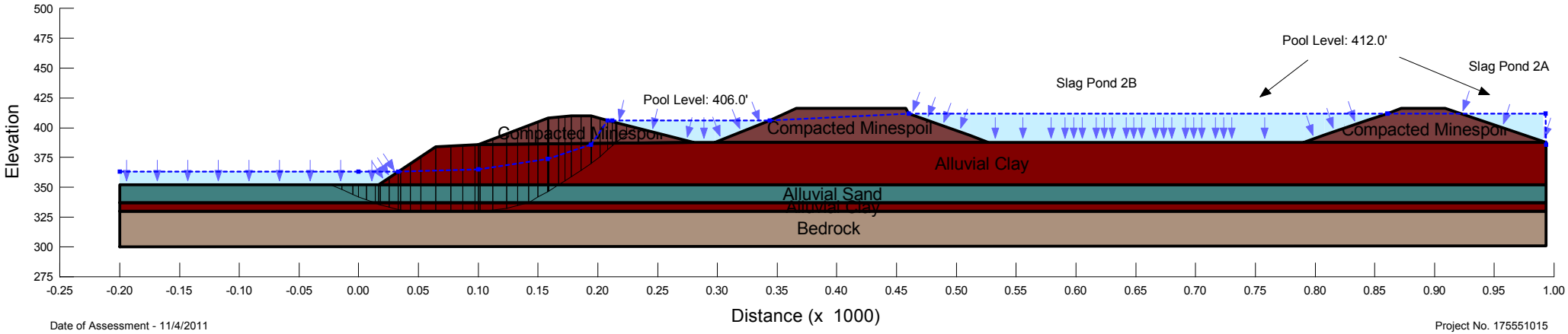
Section - Slag Pond 2B
Paradise Fossil Plant
Drakesboro, Kentucky

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Material Type	Unit Weight	Cohesion	Friction Angle
Compacted Minespoil	125 pcf	120 psf	22.6 °
Alluvial Clay	125 pcf	975 psf	12.9 °
Alluvial Sand	120 pcf	1000 psf	19.2 °

Factor of Safety: 1.1

Horizontal Sesmic Coefficient Kh = 0.157 g
2500 year Return Period Event



Date of Assessment - 11/4/2011

Project No. 175551015

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

Section G - Scrubber Sludge Complex
Paradise Fossil Plant
Drakesboro, Kentucky

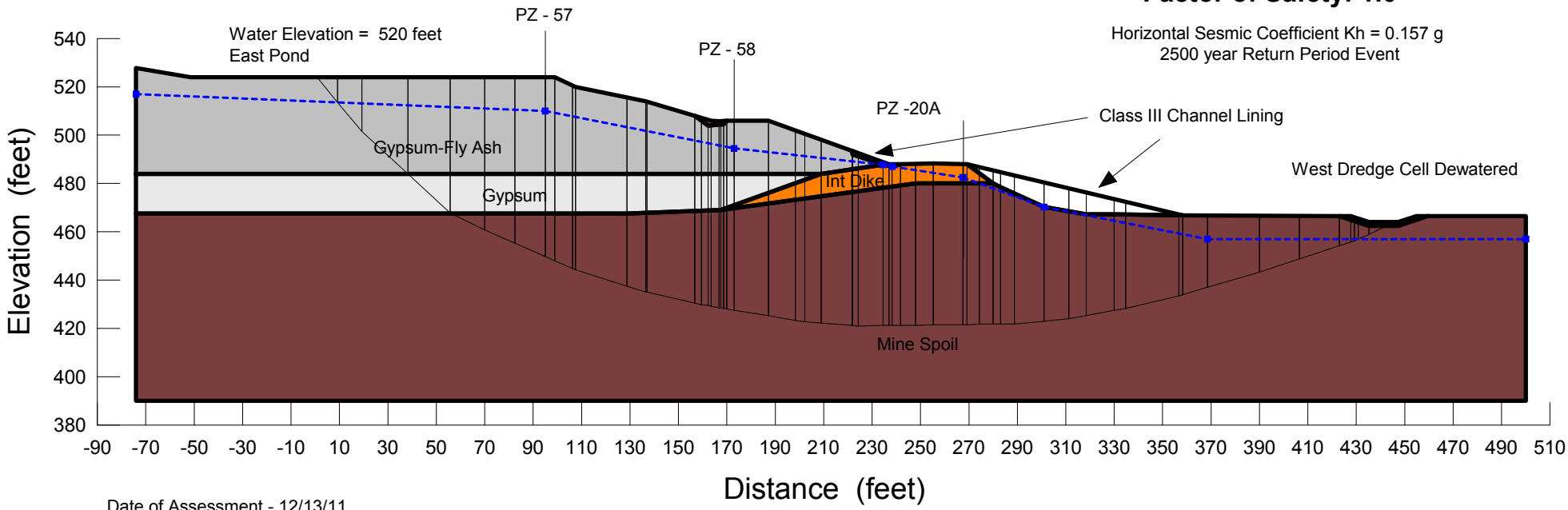
Stantec

Material Type	Unit Weight	Cohesion	Friction Angle
Gypsum	120	0	35
Gypsum-Fly Ash	115	0	35
Mine Spoil	135	400	18
Compacted Mine Spoil	135	120	22.6
Int Dike	110	120	22.6
Class III Channel	110	0	40

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Factor of Safety: 1.0

Horizontal Sesmic Coefficient Kh = 0.157 g
2500 year Return Period Event



Date of Assessment - 12/13/11

Project No. 175551015

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

Section A - Peabody Ash Pond
Paradise Fossil Plant
Drakesboro, Kentucky

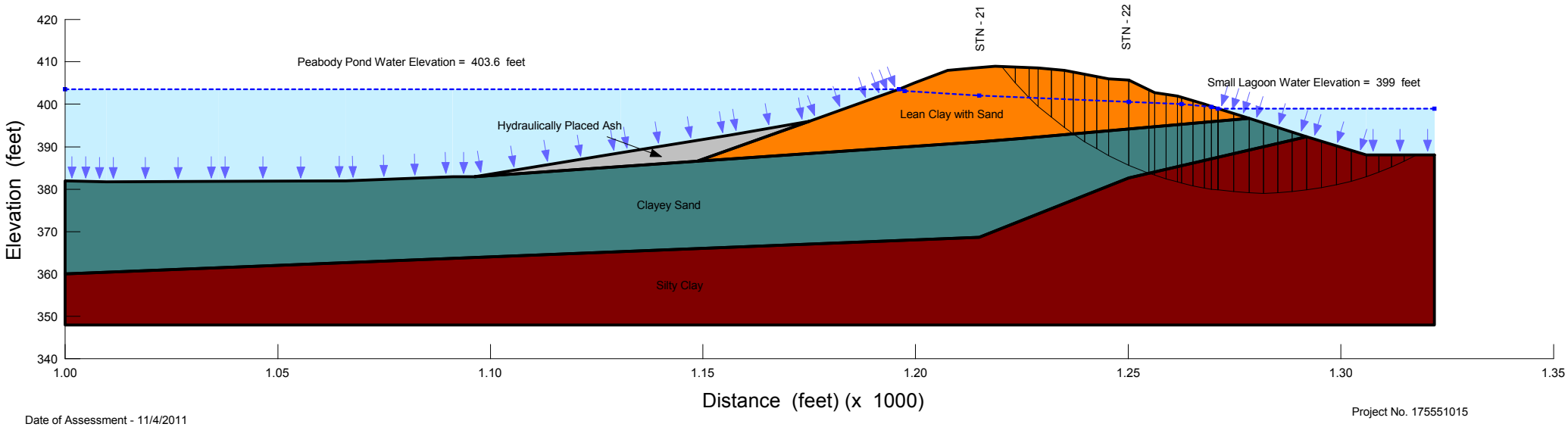
Stantec

Material Type	Unit Weight	Cohesion	Friction Angle
Lean Clay with Sand	139 pcf	0 psf	25 °
Hydraulically Placed Ash	107 pcf	100 psf	18.4 °
Clayey Sand	133 pcf	120 psf	21 °
Silty Clay	129 pcf	120 psf	20 °

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Factor of Safety: 1.0

Horizontal Seismic Coefficient Kh = 0.157 g
2500 year Return Period Event



Date of Assessment - 11/4/2011

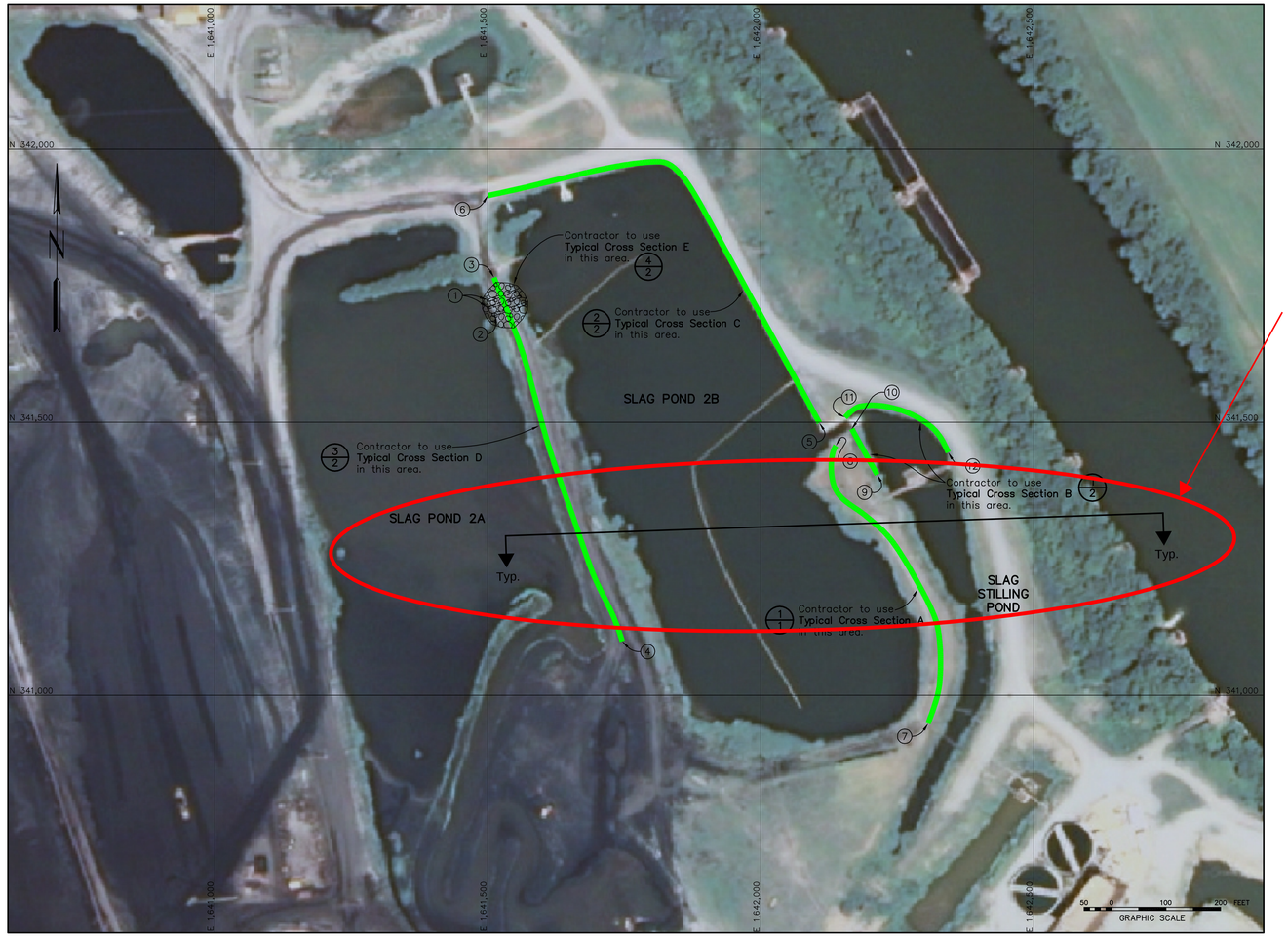
Project No. 175551015

KEYNOTES

1. Existing 48" Pipe (2).
2. Existing 60" Pipe.
3. Begin Slope Improvements (Both sides)
   N 341,765.19
   E 1,641,511.25
4. End Slope Improvements (Both sides)
   N 341,099.61
   E 1,641,746.04
5. Begin Class II Channel Lining at Concrete Flume (Pool side, Slag Pond 2B)
   N 341,499.29
   E 1,642,107.18
6. End Class II Channel Lining (Pool side, Slag Pond 2B)
   N 341,915.20
   E 1,641,500.55
7. Begin Class II Channel Lining (Pool side, Slag Pond 2B)
   N 340,948.45
   E 1,642,306.10
8. End Class II Channel Lining at concrete flume (Pool side, Slag Pond 2B)
   N 341,482.01
   E 1,642,120.86
9. Begin Class III Channel Lining (Pool side, Slag Stilling Pond)
   N 341,404.43
   E 1,642,212.95
10. End Class III Channel Lining at Concrete Flume (Pool side, Slag Stilling Pond)
    N 341,487.93
    E 1,642,166.15
11. Begin Class III Channel Lining at Concrete Flume (Pool side, Slag Stilling Pond)
    N 341,509.20
    E 1,642,154.45
12. End Class III Channel Lining (Pool side, Slag Stilling Pond)
    N 341,445.91
    E 1,642,343.78

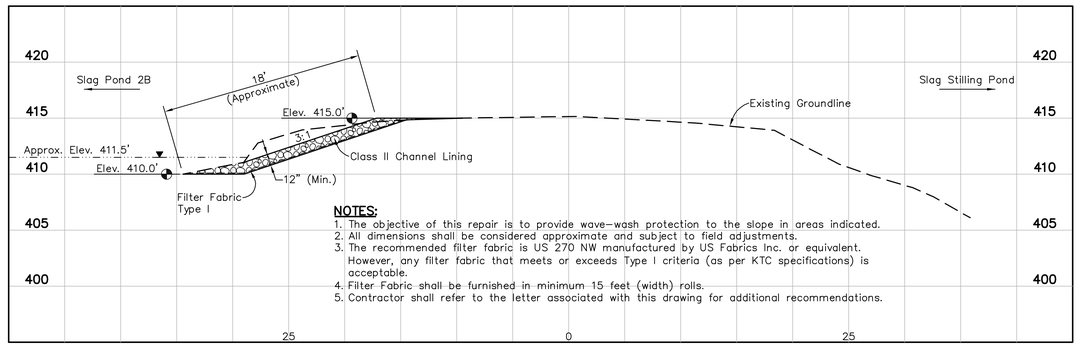
NOTES:

1. Horizontal datum of coordinates shown is NAD27 Kentucky State Plane South Zone (feet).
2. Vertical datum is NGVD29.



PLAN – COAL YARD SLAG POND 2B AND SLAG STILLING POND
SCALE: 1"=100'

Paradise Fossil Plant, Slag Ponds 2A and 2B. Approximate Location of Cross Section (Typical) used to perform pseudostatic slope stability analysis.



NOTES:
1. The objective of this repair is to provide wave-wash protection to the slope in areas indicated.
2. All dimensions shall be considered approximate and subject to field adjustments.
3. The recommended filter fabric is US 270 NW manufactured by US Fabrics Inc. or equivalent. However, any filter fabric that meets or exceeds Type I criteria (as per KTC specifications) is acceptable.
4. Filter Fabric shall be furnished in minimum 15 feet (width) rolls.
5. Contractor shall refer to the letter associated with this drawing for additional recommendations.

1/1 TYPICAL CROSS SECTION A – SLOPE IMPROVEMENT WITH CLASS II CHANNEL LINING (SLAG POND 2B)
SCALE: 1"=5'

NOTE:
Slope improvements involving cut within 10 feet of structures shall be avoided. The slope may be improved through the placement of Class II Channel Lining where feasible under the direction of TVA.

EXCESS MATERIAL DISPOSAL NOTE:
Excess material produced by improvements shown hereon shall be disposed of at a disposal facility on-site as directed by the TVA PAF plant personnel.

UTILITY NOTE:
The location, sizes and types of any utilities or substructures shown hereon shall be considered approximate. Stantec does not warranty or guarantee that the utility information shown hereon is accurate or complete. Any Contractor, Owner or designer using information shown is hereby forewarned that any excavation upon this site may result in the discovery of additional underground utilities not shown hereon.

Prior to any design or construction in the vicinity of any improvements shown hereon, the Contractor shall coordinate with TVA PAF Plant personnel to determine the location of all utilities within the area. The Contractor shall be responsible for locating all utilities, making arrangements regarding relocation and/or protection as necessary, and maintaining utility service throughout the course of the work.

Ponds located within the fenced portions of the Plant are situated in areas with numerous above-ground and underground utilities.

FOR INFORMATION ONLY
This Drawing which has been previously submitted to TVA is provided for Information Only.

Section or Detail No.
Sheet Where Shown
REFERENCE KEY

PLOT DATE: 12/21/2009 USER: JOHNSON, TRACY
V:\1758\ACTIVE\175660914\ENVIRONMENTAL\DRAWINGS\SLAG_POND_2A2B_SHORELINE\REVS_PCV\10W709-01-REV.DWG

R –	–	–	–	–	–	–	–	–	–	–	–
–											
R 0	12/21/09	MMM	BFS	JDK	ELC	ELC	ELC	TJ	–	–	–

ISSUED FOR CONSTRUCTION

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV ID
											1
											2
											3
											4

DISCIPLINE: INTERFACE

SCALE: AS SHOWN EXCEPT AS NOTED

YARD
–

COAL YARD SLAG PONDS 2A, 2B AND SLAG STILLING POND – SLOPE IMPROVEMENTS–PLAN AND SECTIONS

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
M. MEEHAN	B. SAMS	J. KEELING	E. CAUDILL	E. CAUDILL	E. CAUDILL	T. JOHNSON

PARADISE FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

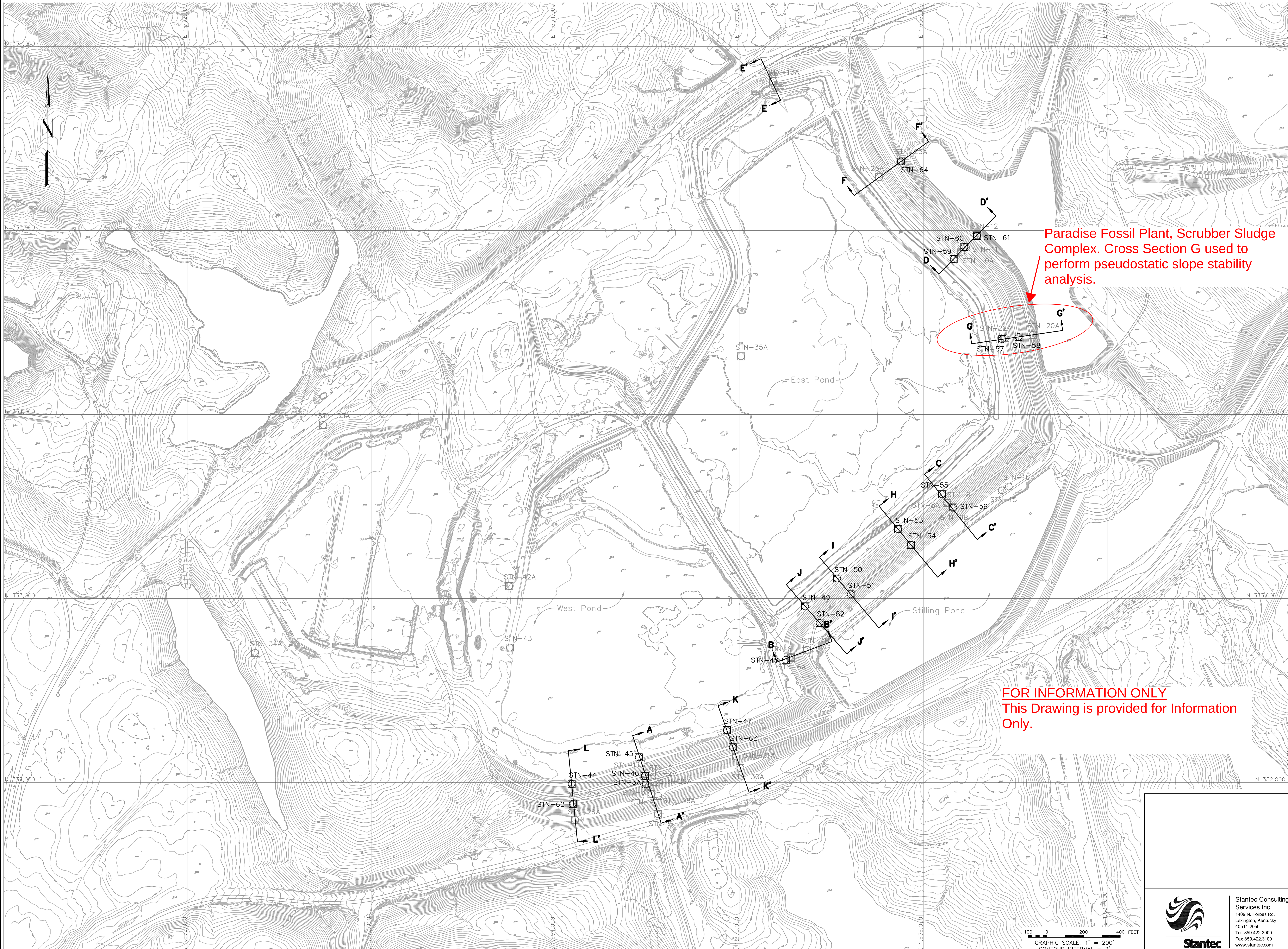
Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
Tel. 859.422.3000
Fax 859.422.3100
www.stantec.com

AUTOCAD R 2000	DATE 12/21/09	64	C	10W709–01	R 0

STANTEC	0
TASK COMPLETED BY:	REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY



NOTES:

1. THE TOPOGRAPHIC BASEMAP SHOWN ON THIS DRAWING WAS DEVELOPED BY STANTEC USING AN ELECTRONIC DRAWING PROVIDED BY TVA IN MARCH, 2010. THE INFORMATION IS BELIEVED TO BE APPROXIMATE AND SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.
2. THE GEOTECHNICAL INFORMATION AND DATA FURNISHED HEREIN ARE NOT INTENDED AS REPRESENTATION OR WARRANTIES BUT ARE FURNISHED FOR INFORMATION ONLY. IT SHALL BE DISTINCTLY UNDERSTOOD THAT THE OWNER OR ENGINEER WILL NOT BE RESPONSIBLE FOR ANY DEDUCTION, INTERPRETATION OR CONCLUSION DRAWN THERE FROM. THE INFORMATION IS MADE AVAILABLE IN ORDER THAT THE CONTRACTOR MAY HAVE READY ACCESS TO THE SAME INFORMATION AVAILABLE TO THE OWNER AND THE ENGINEER AND IS NOT PART OF THIS CONTRACT.

INSTRUMENTATION LOCATION TABLE

INSTRUMENT	NORTHING	EASTING	GROUND SURFACE ELEVATION (FEET)	PIEZOMETER TIP ELEVATION (FEET)
STN-1*	332,102.89	1,634,466.78	509.9	NA
STN-2	332,046.91	1,634,482.61	494.3	437.1
STN-2A	332,046.91	1,634,482.61	494.3	468.9
STN-3*	331,980.02	1,634,505.77	483.5	NA
STN-3A*	331,989.56	1,634,489.16	489.8	NA
STN-4	331,937.06	1,634,520.16	467.6	420.7
STN-5	331,826.79	1,634,555.94	452.0	399.3
STN-6	332,682.25	1,635,277.08	510.9	413.1
STN-6A	332,677.36	1,635,279.66	511.0	472.6
STN-7B	332,721.84	1,635,366.07	486.8	474.4
STN-8*	333,522.45	1,636,128.32	510.2	NA
STN-8A	333,519.21	1,636,124.51	510.2	452.3
STN-9B	333,490.39	1,636,156.12	497.5	455.5
STN-10A	334,881.85	1,636,204.33	514.0	465.7
STN-11*	334,909.50	1,636,230.61	504.5	NA
STN-12	334,974.78	1,636,288.23	494.4	464.4
STN-13A	335,811.89	1,635,182.62	525.1	504.0
STN-15*	333,588.73	1,636,423.97	480.9	NA
STN-16*	333,609.25	1,636,462.16	481.1	NA
STN-20A	334,433.28	1,636,592.28	489.7	470.7
STN-22A	334,417.64	1,636,443.36	519.4	490.4
STN-23A	335,379.92	1,635,873.53	501.8	470.0
STN-25A	335,289.98	1,635,757.90	523.3	489.5
STN-26A	331,796.20	1,634,106.29	471.4	454.1
STN-27A	331,884.74	1,634,097.38	492.2	470.3
STN-28A	331,927.41	1,634,557.82	470.2	454.2
STN-29A	332,004.37	1,634,537.00	489.1	470.9
STN-30A	332,077.28	1,635,004.16	470.5	455.6
STN-31A	332,141.29	1,634,981.22	487.0	468.9
STN-33A	333,944.10	1,632,737.00	527.2	478.3
STN-34A	332,705.10	1,632,367.00	510.9	485.6
STN-35A	334,316.70	1,635,007.00	520.4	496.6
STN-42	333,067.40	1,633,747.00	515.5	470.7
STN-42A	333,067.40	1,633,747.00	515.7	500.7
STN-43	332,733.20	1,633,751.00	513.5	487.9
STN-44	331,991.72	1,634,086.60	510.0	498.1
STN-45	332,136.33	1,634,450.96	517.0	501.0
STN-46	332,034.92	1,634,483.72	496.1	486.1
STN-47	332,284.56	1,634,929.95	516.5	490.5
STN-48	332,667.56	1,635,250.39	519.9	485.1
STN-49	332,956.89	1,635,356.31	523.9	501.0
STN-50	333,108.69	1,635,530.13	524.0	502.0
STN-51	333,022.54	1,635,602.72	498.9	486.9
STN-52	332,867.62	1,635,433.99	495.9	481.5
STN-53	333,376.37	1,635,860.86	523.5	504.1
STN-54	333,291.99	1,635,930.41	500.6	487.1
STN-55	333,566.60	1,636,099.43	523.7	514.7
STN-56	333,494.76	1,636,161.26	500.0	482.0
STN-57	334,409.01	1,636,426.68	524.9	511.9
STN-58	334,422.92	1,636,515.29	506.7	480.1
STN-59	334,845.21	1,636,162.73	525.6	512.0
STN-60	334,911.36	1,636,220.95	508.0	496.7
STN-61	334,971.36	1,636,290.43	494.4	485.4
STN-62	331,883.99	1,634,092.50	491.9	480.1
STN-63	332,191.18	1,634,962.04	494.5	487.0
STN-64	335,375.88	1,635,876.57	502.0	485.4

* DENOTES SLOPE INCLINOMETER

LEGEND

- EXISTING PIEZOMETER (INSTALLED SEPT. 2010)
- EXISTING SLOPE INCLINOMETER (INSTALLED SEPT. 2010)
- EXISTING PIEZOMETER (PREVIOUSLY INSTALLED)
- EXISTING SLOPE INCLINOMETER (PREVIOUSLY INSTALLED)

SCALE: 1"=200' EXCEPT AS NOTED

YARD
SCRUBBER SLUDGE COMPLEX

GEOTECHNICAL EXPLORATION INSTRUMENTATION PLAN

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
–	–	–	–	–	–	–

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PARADISE FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE – | 64 | C | XXWXXX–01 | R 0

STANTEC | 0
TASK COMPLETED BY: | REV NO.

PLOT FACTOR:200
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

NOTES:

1. The topographic basemap shown on this drawing was developed by Stantec using electronic drawings titled "PA000112.dwg and PA000008.dwg" provided by TVA. The information is believed to be approximate and should not be used for construction purposes.
2. The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn there-from. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

BORING LOCATION TABLE

Boring	Northing	Easting	Elevation (Feet)
STN-1	334,559.32	1,641,085.25	411.2
STN-2	334,677.03	1,641,570.83	408.6
STN-3	334,754.96	1,642,063.67	408.5
STN-4	334,653.35	1,642,483.20	407.9
STN-5	334,543.94	1,643,012.25	407.9
STN-6	334,117.67	1,642,904.88	407.8
STN-7	334,110.95	1,642,925.61	401.4
STN-8	333,625.59	1,642,796.92	408.4
STN-9	333,133.89	1,642,703.74	407.8
STN-11	332,681.40	1,642,510.51	408.4
STN-12	332,482.84	1,642,158.00	408.5
STN-14	332,172.87	1,641,803.35	408.3
STN-15	331,736.99	1,641,846.45	407.9
STN-16	331,729.49	1,641,903.96	400.1
STN-17	331,715.59	1,641,415.12	407.8
STN-18	331,767.22	1,641,030.49	408.0
STN-20	331,411.04	1,640,675.64	408.3
STN-21	331,553.80	1,640,209.81	408.6
STN-22	331,536.19	1,640,178.58	405.7

LEGEND

STN-1 ○ Soil Boring with Standard Penetration Tests and/or Undisturbed (Shelby) Tube Samples

STN-3 ◉ Soil Boring with Standard Penetration Tests and/or Undisturbed (Shelby) Tube Samples and Rock Core

FOR INFORMATION ONLY
This Record Drawing which has been previously submitted to TVA is provided for Information Only.

RECORD DRAWING

For Supporting Design Calculations see FPGPAFFESCDX00000020100006

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV CD
R 0	08/18/10	SV	JRF	SV	SV	SV	HRA	TJ	–	–	–
RECORD DRAWING											

SCALE: 1"=200' EXCEPT AS NOTED

YARD

–

PEABODY ASH POND GEOTECHNICAL EXPLORATION BORING LAYOUT

STATE OF KENTUCKY HUGO R. APARICIO 17148 LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
S. VEMURI	R. FLYNN	S. VEMURI	S. VEMURI	S. VEMURI	H. APARICIO	T. JOHNSON

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PARADISE FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE 08/18/10 | 64 | C | 10W710-01 | R 0

STANTEC | 0
TASK COMPLETED BY: | REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING DO NOT ALTER MANUALLY

DISCIPLINE INTERFACE 1 2 3 4

PLOT DATE: 08/18/2010

Widows Creek Fossil Plant (WCF)

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

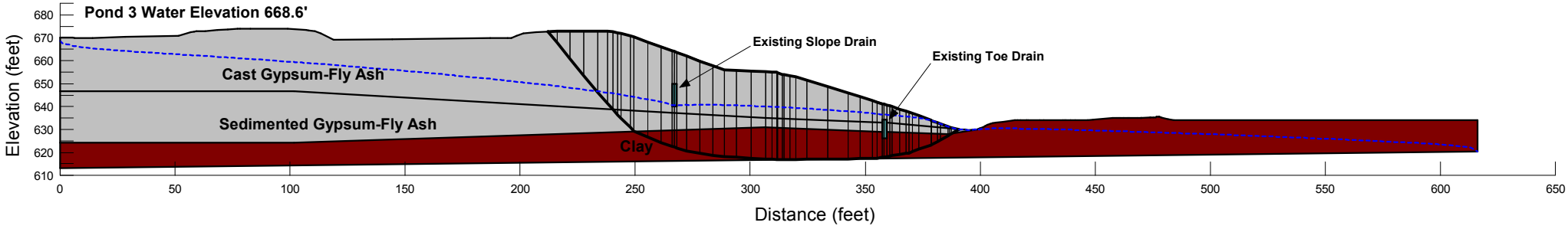
Section F - Gypsum Stack
Widows Creek Fossil Plant
Stevenson, Alabama

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Material Type	Unit Weight	Cohesion	Friction Angle
Cast Gypsum-Fly Ash	113 pcf	0 psf	40 °
Sedimented Gypsum-Fly Ash	112 pcf	0 psf	41 °
Sand Drains	110 pcf	0 psf	33 °
Clay	123 pcf	650 psf	15.7 °

Factor of Safety: 1.5

Horizontal Sesmic Coefficient Kh = 0.1 g
2500 year Return Period Event



Date of Assessment - 11/4/2011

Project No. 175551015

Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

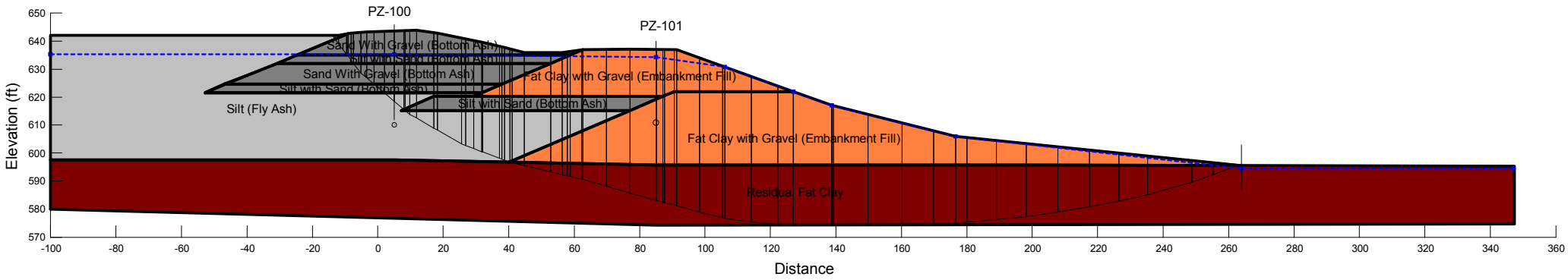
Section D - Dredge Cell (Old Scrubber Sludge Pond)
Widows Creek Fossil Plant
Stevenson, Alabama

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Material Type	Unit Weight	Cohesion	Friction Angle
Residual Fat Clay	125 pcf	650 psf	15.7 °
Silt with Sand (Bottom Ash)	112 pcf	0 psf	33 °
Silt (Fly Ash)	112 pcf	0 psf	21.8 °
Sand With Gravel (Bottom Ash)	119 pcf	0 psf	33 °
Fat Clay with Gravel (Embankment Fill)	125 pcf	1375 psf	14.2 °

Factor of Safety: 1.1

Horizontal Sesmic Coefficient Kh = 0.1 g
2500 year Return Period Event



Date of Assessment - 11/04/2011

Project No. 175551015

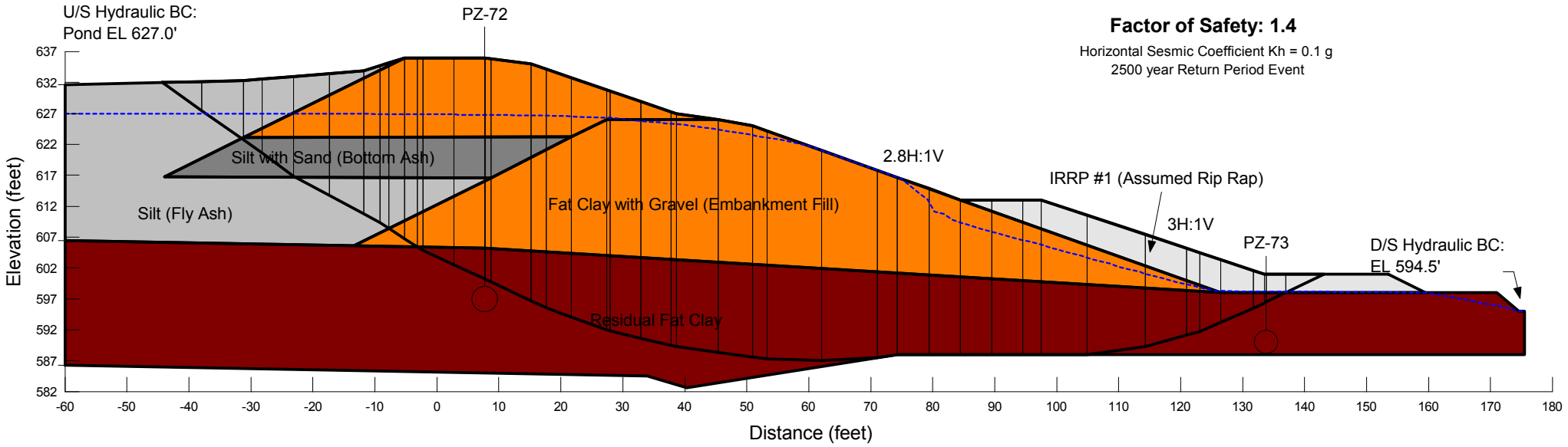
Pseudostatic Slope Stability Analysis
CCP Storage Facilities - Existing Conditions
Tennessee Valley Authority Fossil Plants

Section J - Main Ash Pond
Widows Creek Fossil Plant
Stevenson, Alabama

Note:
The results of analysis shown here are based on available subsurface information, laboratory test results and approximate soil properties. No warranties can be made regarding the continuity of subsurface conditions between the borings.

Additional remediation measures taken from URS plans dated 8/14/2010.

Material Type	Unit Weight	Cohesion	Friction Angle
Sand with Gravel (Bottom Ash)	119 pcf	0 psf	33 °
Rip Rap	115 pcf	0 psf	40 °
Silt (Fly Ash)	112 pcf	0 psf	21.8 °
Residual Fat Clay	125 pcf	650 psf	15.7 °
Fat Clay with Gravel (Embankment Fill)	125 pcf	1375 psf	14.2 °



Date of Assessment - 11/4/2011

Project No. 175551015

BORING LOCATION TABLE			
Boring	Northing	Easting	Elev. (ft.)
***STN-28	1,600,650.1	527,741.0	651.31
***STN-29	1,600,590.1	527,790.4	623.86
***STN-31	1,601,984.7	527,265.3	672.62
***STN-32	1,602,037.1	528,528.5	656.24
***STN-33	1,602,037.0	528,587.9	640.20
***STN-34	1,603,809.7	528,724.1	674.11
***STN-35	1,603,831.0	528,927.7	656.13
***STN-36	1,603,833.8	529,007.1	631.94
***STN-37	1,603,319.9	527,464.9	626.95
***STN-38	1,602,372.3	526,925.2	675.50
***STN-39	1,602,374.5	526,839.7	655.19
***STN-40	1,602,379.2	526,750.0	621.38
***STN-41	1,601,812.5	527,159.8	657.76
***STN-42	1,601,813.4	527,067.0	659.04
***STN-43	1,601,979.2	527,240.0	672.69
***STN-44	1,601,640.7	527,161.8	655.78
***STN-45	1,601,630.6	527,063.0	655.20
***STN-46	1,601,239.7	527,133.1	654.70
***STN-47	1,601,297.4	527,118.9	655.53
***STN-48	1,601,416.0	527,060.8	654.92
***STN-49	1,601,258.4	527,058.8	655.03
***STN-50	1,601,244.1	527,059.0	654.94
***STN-51	1,601,651.7	526,940.3	621.13
***STN-52	1,601,757.5	526,939.5	621.65
***CPT-10	1,601,250.6	526,991.4	629.0
***CPT-11	1,601,253.2	527,098.3	655.0
***CPT-12	1,601,629.8	526,995.7	629.0
***CPT-13	1,601,650.8	527,105.0	655.0
***V-9	1,601,630.2	527,103.0	655.0
***V-10	1,601,235.3	527,092.3	655.0
*TH-1	1,600,610.0	527,279.3	643.43
*TH-2	1,600,584.4	527,243.0	650.48
*TH-3	1,601,322.1	527,292.9	643.55
*TH-4	1,601,303.2	527,810.5	639.89
*TH-5	1,601,646.1	528,409.3	642.09
*TH-6	1,600,568.4	527,615.1	648.88
*TH-7	1,601,553.5	528,589.9	638.64
**SPT-1	1,601,472.4	527,068.5	649.90
**SPT-2	1,602,279.9	527,011.4	661.89
**SPT-3	1,603,928.4	528,728.1	659.79
**SPT-4	1,602,891.0	528,555.7	663.34
**SPT-5	1,603,183.6	527,840.9	660.18
**SPT-6	1,601,092.3	527,910.1	660.50

* Boring drilled in 1991.
** Boring drilled in 2004.
*** Boring drilled in 2009.

NOTES:

1. Topographic mapping was developed from a composite of a LiDAR survey which was originally performed in NAD 83 and later shifted to NAD 27 Datum by Tuck Mapping Solutions, Inc. on January 9, 2009 (post-event) and surveys performed by TVA on October 30, 2006, January 14, 2009 and February 23, 2009.
2. The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.
3. See sheet 2 for baseline curve data and table of baseline coordinates.

RECORD DRAWING

FOR INFORMATION ONLY
This Record Drawing which has been previously submitted to TVA is provided for Information Only.

Widows Creek Fossil Plant, Gypsum Stack. Cross Section F used to perform pseudostatic slope stability analysis.

LEGEND

- STN-47 ◉ Soil Boring with Undisturbed (Shelby) Tube Samples and Rock Core
- STN-52 ○ Rock Sounding
- STN-34 ◎ Soil Boring with Standard Penetration Tests and/or Undisturbed (Shelby) Tube Samples
- CPT-10 ▣ Cone Penetration Test with Piezometer
- V-10 ⊗ Vane Shear Test Location
- *TH-7 ◎ Existing Test Boring, 1991
- **SPT-3 ◎ Existing Test Boring, 2004

GRAPHIC SCALE: 1" = 100'
CONTOUR INTERVAL = 2'

For Supporting Design Calculations see FPGWCFFESCDX00000020100005

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST
R 0	02/05/10	GKA	PJB	RDF	HRA	JSM	JSM	TJ	–	–
ISSUED FOR REVIEW										

SCALE: 1"=100' EXCEPT AS NOTED

YARD
–

GYPSUM STACK GEOTECHNICAL EXPLORATION BORING LAYOUT

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
K. ANDERSON	P. BOND	R. FULLER	H. APARICIO	J. MONTGOMERY	J. MONTGOMERY	T. JOHNSON

WIDOWS CREEK FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE 02/05/10 | 34 | C | 10W515-04 | R 0

Stantec Consulting Services Inc.
1409 N. Forbes Rd.
Lexington, Kentucky
40511-2050
Tel. 859.422.3000
Fax 859.422.3100
www.stantec.com

STANTEC	0
TASK COMPLETED BY:	REV NO.

PLOT FACTOR:100
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

Widows Creek Fossil Plant, Main Ash Pond. Cross Section J used to perform pseudostatic slope stability analysis.

Widows Creek Fossil Plant, Dredge Cell. Cross Section D used to perform pseudostatic slope stability analysis.

FOR INFORMATION ONLY
This Record Drawing which has been previously submitted to TVA is provided for Information Only.

SURVEY CONTROL TABLE

Survey Point	Northing	Easting	Elevation (Feet)
TBM-1	1,600,675.13	526,198.77	636.75
TBM-2	1,600,424.81	528,228.01	616.34
TBM-3	1,600,650.11	527,741.06	651.46
TBM-4	1,601,258.43	527,058.79	654.99
TBM-5	1,602,374.57	526,839.67	655.19
IPC(SET)	1,602,197.57	526,907.77	676.73

BORING LOCATION TABLE

Boring	Northing	Easting	Elevation (Feet)
V-1	1,600,947.0	523,864.1	636.0
V-2	1,599,381.1	523,453.6	636.4
V-3	1,597,268.3	522,789.7	636.0
V-4	1,599,385.6	525,014.6	645.9
V-5	1,599,662.8	526,325.4	647.6
V-6	1,597,855.6	526,911.6	645.0
V-7	1,597,691.2	527,181.6	601.5
V-8	1,597,661.0	525,832.6	646.1
CPT-1	1,601,668.3	524,646.2	636.6
CPT-2	1,601,097.5	523,912.5	636.7
CPT-3	1,600,179.8	523,743.4	636.0
CPT-4	1,599,361.5	523,455.3	636.4
CPT-5	1,597,807.1	523,159.9	642.4
CPT-6	1,597,127.6	522,770.4	647.3
CPT-7	1,597,948.6	527,145.3	638.2
CPT-8	1,597,477.5	526,046.5	646.5
CPT-9	1,597,756.7	527,123.4	604.3
STN-48	1,601,416.0	527,060.8	654.9
STN-62	1,596,738.1	523,522.1	635.8
STN-63	1,597,711.8	525,777.5	646.1
STN-64	1,597,643.0	525,718.1	638.1
STN-65	1,597,882.0	526,948.3	645.0
STN-66	1,597,739.2	527,065.2	606.3
STN-67	1,598,989.4	526,868.9	647.0
STN-68	1,599,083.7	526,995.0	611.4
STN-69	1,599,634.0	526,360.9	647.6
STN-70	1,599,720.3	526,482.8	613.3
STN-71	1,600,703.4	526,190.1	636.6
STN-72	1,601,431.1	525,775.3	636.6
STN-73	1,601,547.9	525,835.7	598.5
STN-74	1,601,909.1	524,916.3	635.7
STN-75	1,601,484.2	524,146.7	636.7
STN-76	1,601,519.8	524,124.6	624.5
STN-77	1,600,807.9	523,621.0	636.1
STN-78	1,599,698.1	523,281.1	636.8
STN-79	1,599,704.9	523,225.1	622.8
STN-80	1,598,668.7	523,078.9	637.2
STN-81	1,598,675.7	523,024.0	625.5
STN-82	1,597,723.5	522,758.9	636.9
STN-83	1,597,747.8	522,694.6	624.9
STN-84	1,596,588.0	523,031.0	639.3
STN-85	1,596,520.8	523,008.4	614.6
STN-86	1,596,518.5	523,011.9	617.6
STN-87	1,596,587.8	523,211.1	637.4
STN-88	1,596,511.6	523,232.4	618.5
STN-89	1,597,963.8	524,804.6	636.3
STN-90	1,597,204.1	525,851.5	613.2
STN-91	1,596,746.8	523,027.9	641.1
STN-92	1,596,741.8	522,972.4	640.1
STN-93	1,598,456.4	524,812.1	641.8
STN-94	1,598,399.5	524,769.6	639.0
STN-95	1,597,673.7	525,803.4	646.1
STN-96	1,597,293.4	526,298.6	647.6
STN-97	1,597,191.9	526,271.3	638.6
STN-98	1,597,091.5	526,250.2	602.5
STN-99	1,597,803.4	526,989.8	638.4
STN-100	1,598,328.0	527,385.4	644.1
STN-101	1,598,404.3	527,426.8	638.8
STN-102	1,599,036.5	526,931.3	638.7
STN-103	1,599,683.2	526,424.2	638.9
STN-104	1,600,046.7	525,695.6	645.9
STN-105	1,600,094.3	525,640.4	637.6
STN-106	1,599,340.1	524,994.7	645.9
STN-107	1,599,407.0	524,937.4	636.7
STN-108	1,597,658.1	527,138.2	601.5
STN-109	1,597,251.2	526,800.7	603.2
STN-110	1,597,979.8	527,321.7	606.5
STN-111	1,598,157.7	527,525.4	604.9
STN-112	1,597,157.5	526,457.8	604.1
STN-113	1,596,076.0	525,525.5	611.9
STN-114	1,598,137.9	524,932.3	637.1
STN-115	1,598,115.3	524,962.2	636.9
STN-117	1,598,107.2	524,906.3	636.8
STN-118	1,598,082.9	524,937.4	636.7

NOTES:

1. Topographic mapping was provided by Tennessee Valley Authority (TVA) on April 1, 2009. The flight date for the Main Ash Pond Complex is February 4, 2008. The hydrographic survey for the Stilling Pond is dated June 26, 2008 through July 7, 2008. The hydrographic survey for the Main Ash Pond is dated October, 2009. The hydrographic survey for the Pump Pond Discharge Channel is dated June 23, 2008.
2. The Baseline depicted hereon was recreated from Drawing No. 10W7420 titled "Limestone and Ash Disposal Area" and 10W7463-01 titled "Ash Disposal Area Units 7 and 8".
3. The Project Baseline shown hereon is for illustrative purposes only, and should not be used by the Owner or Contractor.

LEGEND

- V-1⊗ Vane Shear Test Location
- CPT-1◎ Cone Penetration Test
- SB-89◉ Soil Boring with Standard Penetration Tests and/or Undisturbed (Shelby) Tube Samples with Rock Core
- SB-71◎ Soil Boring with Standard Penetration Tests and/or Undisturbed (Shelby) Tube Samples
- CPT-3◎ Existing Cone Penetration Test (2004 and 2003)
- B-1□ Existing Test Boring (2003)
- SS-7△ Existing Test Boring (SS Only, TVA 1980)
- US-7△ Existing Test Boring (SS & US, TVA 1980)
- V-1⊗ Existing Vane Shear Test Location (2003)
- TBM-1◔ Temporary Bench Mark (Panel Point Nail)
- TBM-2◔ Temporary Bench Mark (Panel Point Nail)
- TBM-3◔ Temporary Bench Mark (Top of PZ Well Cover, Stantec Gypsum Stack Boring STN-28, 2009)
- TBM-4◔ Temporary Bench Mark (Top of PZ Well Cover, Stantec Gypsum Stack, Boring STN-49, 2009)
- TBM-5◔ Temporary Bench Mark (Top of PZ Well Cover, (Stantec Gypsum Stack, Boring STN-39, 2009)
- IPC△ Iron Pin with Cap (Set)

GRAPHIC SCALE: 1" = 200'
CONTOUR INTERVAL = 1'

RECORD DRAWING

For Supporting Design Calculations see FPGWCFFESCDX00000020100004

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPD	ISSD	PROJECT ID	AS CONST	REV NO.
R 0	02/04/10	GKA	TJ	RDF	HRA	HRA	HRA	TJ	–	–	–
RECORD DRAWING											

DISCIPLINE INTERFACE

SCALE: 1"=200' EXCEPT AS NOTED

YARD

ASH POND
GEOTECHNICAL EXPLORATION
BORING LAYOUT

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
K. ANDERSON	T. JOHNSON	R. FULLER	H. APARICIO	H. APARICIO	H. APARICIO	T. JOHNSON

WIDOWS CREEK FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 | DATE 02/04/10 | 34 | C | 10W514-01 | R 0

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STANTEC | 0
TASK COMPLETED BY: | REV NO.

PLOT FACTOR:XX
W_TVA

C.A.D. DRAWING
DO NOT ALTER MANUALLY

PLOT DATE: 08/05/2010 USER: JOHNSON, TRACY
V:\1755\ACTIVE\175599903\GIS\TECHNICAL\DRAWING\GEOTECH\REVD_RECORD\10W514-01-RLDWG