

LEGEND

- DDC-6 ● Soil Boring with Standard Penetration Tests and/or Unstirred (Shelby) Tube Samples
- P-1 □ Existing Piezometer
- SS-7 ▲ Previous Test Boring
- M-9 ☒ Existing Monitoring Well

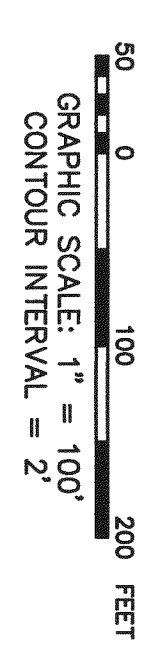
- NOTES:**
- The topographic mapping presented on this drawing was provided to Stantec by TVA Surveying and Project Services. This plan view was prepared to support development of the geotechnical exploration program and should not be used for construction.
 - The geotechnical information and data furnished 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.) *
DDC-1	604,506.22	1,414,783.57	414.0
DDC-2	604,501.15	1,415,066.81	413.0
DDC-3	604,166.23	1,414,718.47	432.0
DDC-4	603,748.18	1,414,522.12	400.0
DDC-5	603,758.70	1,414,582.12	414.0
DDC-6	603,799.14	1,414,870.18	440.0
DDC-7	603,846.82	1,415,081.19	431.0
DDC-8	603,860.21	1,415,156.83	415.0
DDC-9	603,867.24	1,415,249.28	404.0
DDC-10	603,139.85	1,414,639.98	403.0
DDC-11	603,157.70	1,414,697.64	415.0
DDC-12	603,170.62	1,414,772.24	430.0
DDC-13	603,229.00	1,415,100.04	430.0
DDC-14	603,233.88	1,415,176.27	414.0
DDC-15	603,240.72	1,415,250.58	408.0
DDC-16	602,907.05	1,414,986.55	429.0

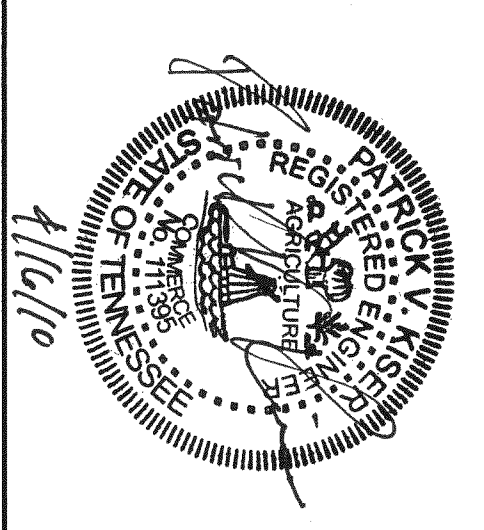
* Approximate Elevations from Plan Contours

RECORD DRAWING



PLOT DATE: 04/16/2010 USER: SLPACHARN, PRAYUTH (BILLY)
 V:\1726\ACTIVE\172679048\ENVIRONMENTAL_DRAWING\GEOTECH\ASH DREDGE CELL\RECORD_VFROM_LEX\10W508-01.DWG

For Supporting Design Calculations see
 FPA\JO\FESC\X\00000020100007



Stantec
 Stantec Consulting
 100 Woodwood Pl., Ste. 420
 Brentwood, Tennessee
 37027-5044
 Fax: 615.885.1102
 www.stantec.com

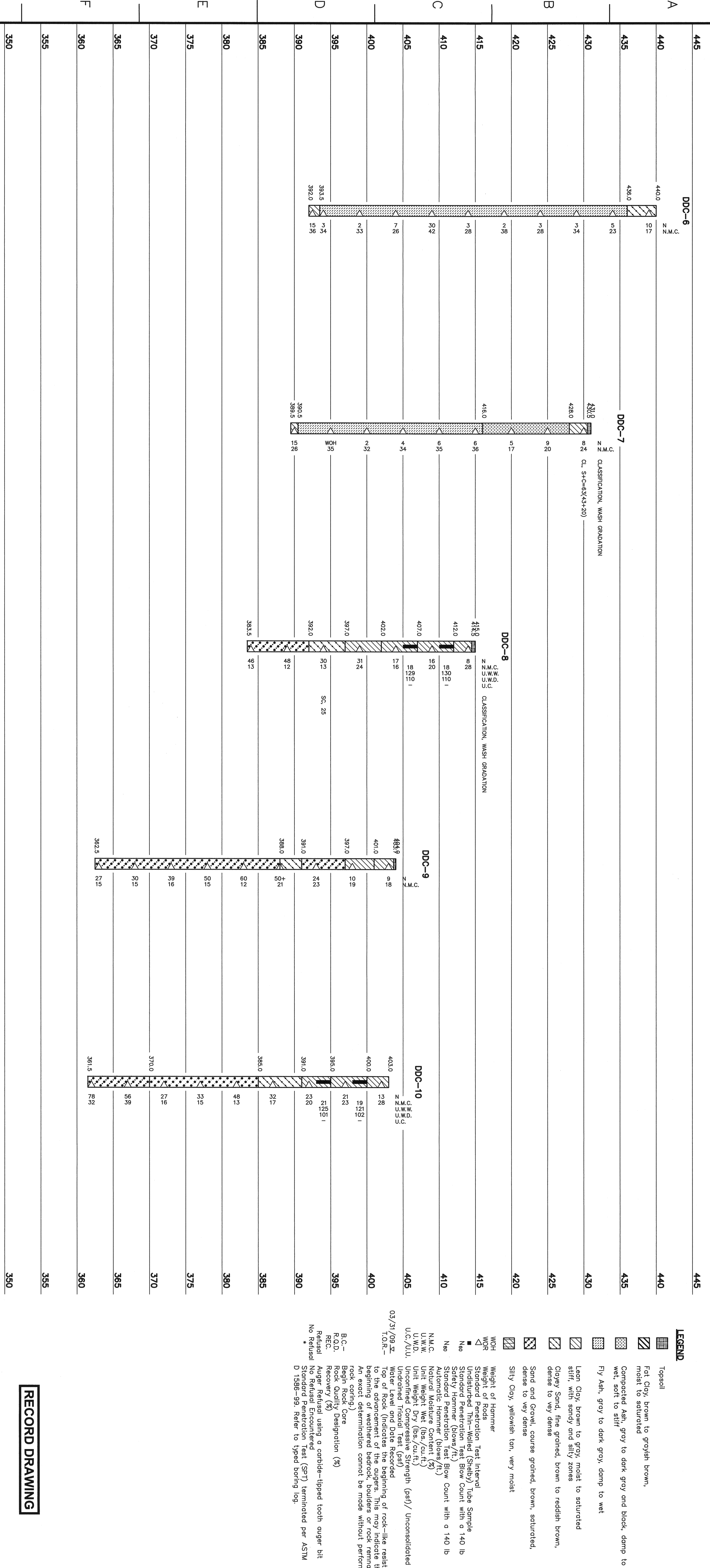
YARD ASH DREDGE CELL - EAST OF GAS TURBINE GEOTECHNICAL EXPLORATION DUPONT ROAD DREDGE CELL BORING LAYOUT

DESIGNED BY	CHECKED BY	DATE	APPROVED BY
F. KESER	H. JAVARICO	04/16/10	F. KESER

DESIGNED BY	CHECKED BY	DATE	APPROVED BY
F. SLPACHARN	H. JAVARICO	04/16/10	F. KESER

JOHNSONVILLE FOSSIL PLANT
 TENNESSEE VALLEY AUTHORITY
 FOSSIL AND HYDRO ENGINEERING

STATTEC TASK COMPLETED BY: 0 REV NO: 0
 PLOT FACTOR: XX W_LTA
 C.A.D. DRAWING DO NOT ALTER MANUALLY



LOGS OF BORINGS
SCALE: 1"=5' (VERTICAL ONLY)

CONSOLIDATED UNDRAINED TRIAXIAL TEST RESULTS

Location	DDC-8	DDC-8	DDC-15
Depth	3.1'-3.6'	8.6'-9.1'	3.5'-4.0'
σ			
τ			
c		520.00 p.s.f.	

NOTES:
1. 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 of 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.
2. The subsurface 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, Engineer or Geotechnical Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom by the Contractor. The information is made available in order that the Contractor may have ready access to the same information available to the Owner, Engineer and Geotechnical Engineer and is not part of this contract.

For Supporting Design Calculations see
FPQJOFESDDX00000201000007

Stantec Consulting Services Inc.
100 Westwood Pl., Ste. 400
Brentwood, Tennessee
Tel: 615.886.1144
Fax: 615.886.1102
www.stantec.com

**JOHNSONVILLE FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING**

REVISIONS:
R-1 03/31/09
R-2 04/19/10

SCALE: AS SHOWN

YARD ASH DREDGE CELL - EAST OF GAS TURBINE
GEOTECHNICAL EXPLORATION
DUPONT ROAD DREDGE CELL
LOGS OF BORINGS

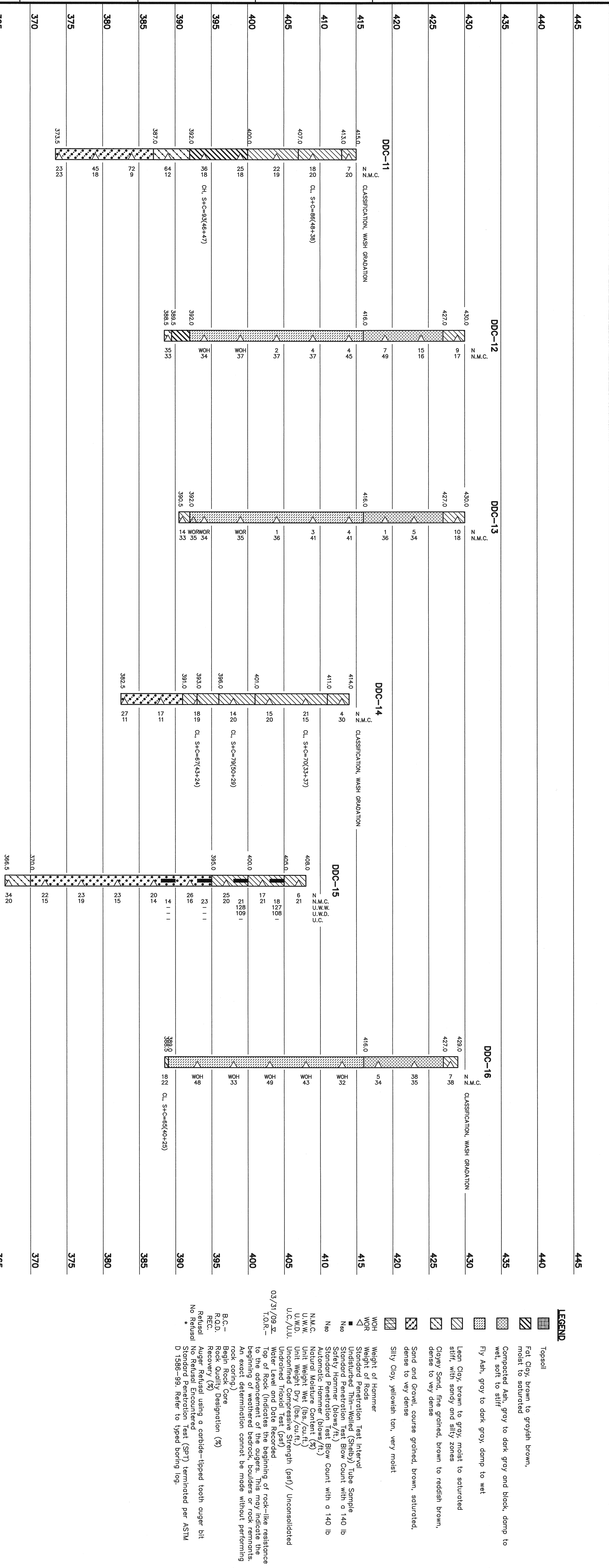
DESIGNED BY: P. SISKIND
CHECKED BY: S. FIELD
APPROVED BY: H. JARAMILA
DATE: 04/19/10

PROJECT: JOHNSONVILLE FOSSIL PLANT
DRAWN BY: P. SISKIND
DATE: 04/19/10

SCALE: 1"=5' (VERTICAL ONLY)

STANTEC 0
TASK COMPLETED BY: REV NO:

PLOT FACTOR: XX
W: LVA
C.A.D. DRAWING
DO NOT ALTER MANUALLY



LOGS OF BORINGS
SCALE: 1"=5' (VERTICAL ONLY)

CONSOLIDATED UNDRAINED TRIAXIAL TEST RESULTS

Location	DDC-8	DDC-8	DDC-15
Depth	3.1'-3.6'	8.6'-9.1'	3.5'-4.0'
σ_c		30.6'	520.00 p.s.f.

RECORD DRAWING

- NOTES:**
- 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. The Contractor shall be responsible for any design borings are generally based on straight line interpolation. Actual conditions between borings are unknown and may differ from those shown.
 - The subsurface 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, Engineer or Geotechnical Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom by the Contractor. The Contractor shall be responsible for the design and construction of any foundation system. The Contractor may have ready access to the same information available to the Owner, Engineer and Geotechnical Engineer and is not part of this contract.

For Supporting Design Calculations see
PFGUOFFESCDX000000201000007

SCALE: AS SHOWN

YARD
ASH DREDGE CELL - EAST OF GAS TURBINE
GEOTECHNICAL EXPLORATION
DUPONT ROAD DREDGE CELL
LOGS OF BORINGS

Stantec Consulting
Services Inc.
160 Meadows Pl, Ste. 420
37027-5054
Tel. 615.885.1144
www.stantec.com

JOHNSONVILLE FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
FOSSIL AND HYDRO ENGINEERING

DESIGNED BY: P. HESER	DRAWN BY: P. SUTCHAKIAN	CHECKED BY: H. AYARDO	REVIEWED BY: H. AYARDO	APPROVED BY: P. HESER	ISSUED BY: T. JOHNSON
AUTOCAD R 2000	DATE: 30	C	10W508-04	R 0	

STANTEC
TASK COMPLETED BY: 0
REV. NO.

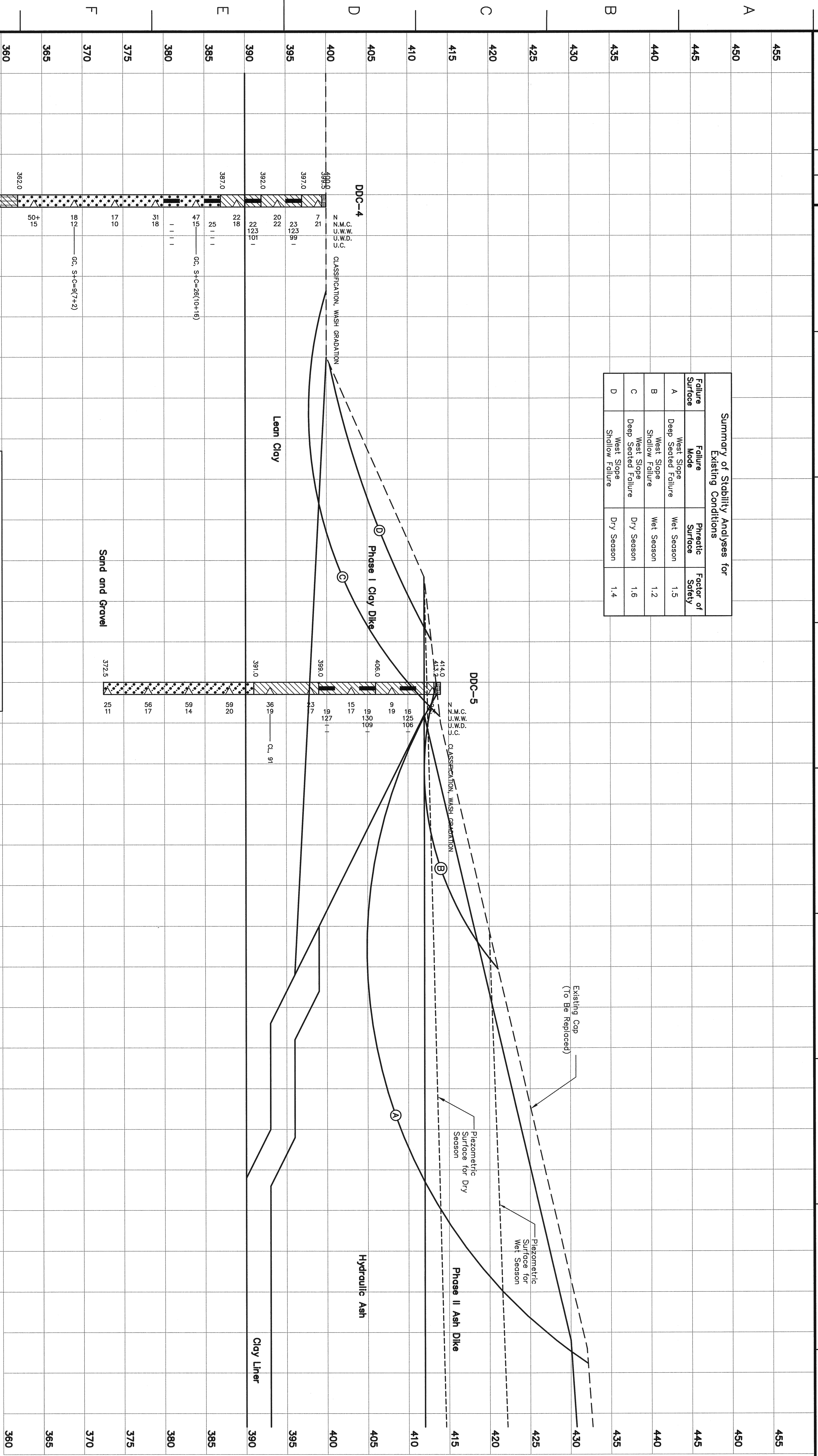
PLOT FACTORS: XX
W. T.V.A.
C.A.D. DRAWING
DO NOT ALTER MANUALLY

LEGEND

- Topsoil
- Fat Clay, brown to grayish brown, moist to saturated
- Compacted Ash, gray to dark gray and black, damp to wet, soft to stiff
- Fly Ash, gray to dark gray, damp to wet
- Lean Clay, brown to gray, moist to saturated stiff, with sandy and silty zones
- Clayey Sand, fine grained, brown to reddish brown, dense to very dense
- Sand and Gravel, coarse grained, brown, saturated, dense to very dense
- Silty Clay, yellowish tan, very moist
- Weight of Hammer
- Standard Penetration Test Interval
- Standard Penetration Test Blow Count with a 140 lb Society Hammer (blows/ft.)
- Automatic Hammer (blows/ft.)
- Natural Moisture Content (%)
- Unit Weight Wet (lbs./cu.ft.)
- Unit Weight Dry (lbs./cu.ft.)
- Undrained Compressive Strength (psf) / Unconsolidated Undrained Triaxial Test (psf)
- Water Level and Date Recorded
- Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring)
- Begin Drushy Designation (%)
- Recovery (%)
- Auger Refused using a carbide-tipped tooth auger bit
- No Refusal
- Standard Penetration Test (SPT) Terminated per ASTM D 1586-99. Refer to Speed boring log.

Summary of Stability Analyses for Existing Conditions

Failure Surface	Failure Mode	Practic Surface	Factor of Safety
A	West Slope Deep Seated Failure	Wet Season	1.5
B	West Slope Shallow Failure	Wet Season	1.2
C	West Slope Deep Seated Failure	Dry Season	1.6
D	West Slope Shallow Failure	Dry Season	1.4

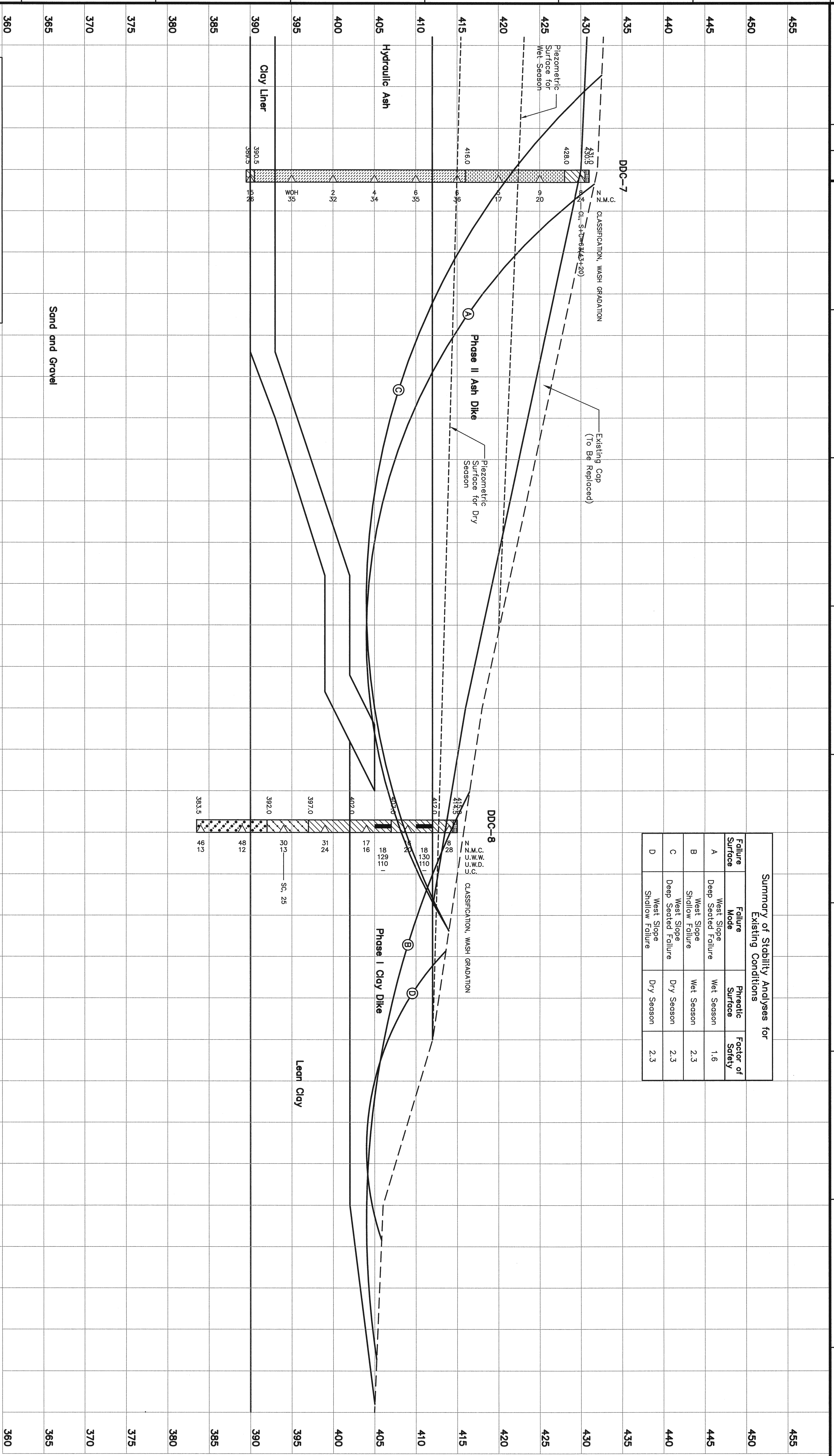


Parameter Table

Material Type	Sat Unit Wt, γ_{sat}	Cohesion, c	Friction Angle, ϕ
Phase I Clay Berm	125 pcf	0 pcf	30°
Phase II Ash Berm	110 pcf	0 pcf	27°
Hydraulic Ash	105 pcf	0 pcf	25°
Lean Clay	120 pcf	0 pcf	28°
Sand and Gravel	130 pcf	0 pcf	35°
Clay Cap	115 pcf	0 pcf	28°

LEGEND

- Topsoil
- Fat Clay, brown to grayish brown, moist to saturated
- Compacted Ash, gray to dark gray and black, damp to wet, soft to stiff
- Fly Ash, gray to dark gray, damp to wet
- Lean Clay, brown to gray, moist to saturated stiff, with sandy and silty zones
- Clayey Sand, fine grained, brown to reddish brown, dense to very dense
- Sand and Gravel, coarse grained, brown, saturated, dense to very dense
- Silty Clay, yellowish tan, very moist
- Weight of Hammer
- Standard Penetration Test Interval
- Undrained Thin-Walled (Sheelby) Tube Sample
- Standard Penetration Test Blow Count with a 140 lb Safety Hammer (blows/ft.)
- Automatic Hammer (blows/ft.)
- Natural Moisture Content (%)
- Unit Weight: Wet (lbs./cu.ft.)
- Unit Weight: Dry (lbs./cu.ft.)
- Uncorrected Compressive Strength (psf) / Unconsolidated Undrained Triaxial Test (psf)
- Water Level and Date Recorded
- Top of Rock (indicates the beginning of resistance to penetration)
- Beginning of weathered bedrock boulders or rock remnants (rock coring)
- Auger Refusal
- No Refusal Encountered
- Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.
- B.C.- Rock Quality Designation (%)
- R.O.D. Recovery (%)
- REC. Refusal



Parameter Table			
Material Type	Sat Unit Wt, γ_{sat}	Cohesion, c	Friction Angle, ϕ
Phase I Clay Berm	125 pcf	0 pcf	30°
Phase II Ash Berm	110 pcf	0 pcf	27°
Hydraulic Ash	105 pcf	0 pcf	25°
Lean Clay	120 pcf	0 pcf	28°
Sand and Gravel	130 pcf	0 pcf	35°
Clay Cap	115 pcf	0 pcf	28°

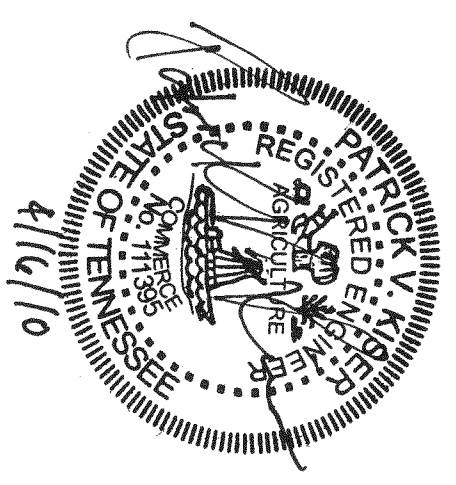
Summary of Stability Analyses for Existing Conditions			
Failure Surface	Failure Mode	Phreatic Surface	Factor of Safety
A	West Slope Deep Seated Failure	Wet Season	1.6
B	West Slope Shallow Failure	Wet Season	2.3
C	West Slope Deep Seated Failure	Dry Season	2.3
D	West Slope Shallow Failure	Dry Season	2.3

LEGEND	
	Topsoil
	Fat Clay brown to grayish brown, moist to saturated
	Compacted Ash, gray to dark gray and black, damp to wet, soft to stiff
	Fly Ash, gray to dark gray, damp to wet
	Lean Clay brown to gray, moist to saturated stiff, with sandy and silty zones
	Clayey Sand, fine grained, brown to reddish brown, dense to very dense
	Sand and Gravel, coarse grained, brown, saturated, dense to very dense
	Silty Clay, yellowish tan, very moist

WOH Weight of Hammer
W Weight of Rods
W₁ Weight of Pile-Weight (Shelly) Tube Sample
U Undisturbed Penetration Test Blow Count with a 140 lb Standard Hammer (blows/ft.)
N₆₀ Automatic Hammer (blows/ft.)
N₁₀₀ Standard Penetration Test Blow Count with a 140 lb Automatic Hammer (blows/ft.)
N.M.C. Natural Moisture Content (%)
U.W.W. Unit Weight Wet (lbs./cu.ft.)
U.W.D. Unit Weight Dry (lbs./cu.ft.)
U.C./U.U. Uncolored Triaxial Test (psf) / Unconsolidated Undrained Triaxial Test (psf)
03/31/09 Water Level and Date Recorded
T.O.R. Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring)
R.C.D. Ream Drill Core
R.E.C. Reamer Refused using a corbita-tipped tooth auger bit
Refused No Refusal Encountered
No Refusal Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

RECORD DRAWING

For Supporting Design Calculations see
 PFG00FTES00X0000020100007



Stantec
 Stantec Consulting Services Inc.
 180 Westwood Pk. Ste. 420
 Knoxville, TN 37927-0044
 TEL 615.986.1144
 www.stantec.com

NO.	DATE	ISSUED BY	CHKD BY	APP'D BY	REVISION	
1	02/19/10	PK	RS	HR	HR	TJ

SCALE: AS SHOWN

EXCEPT AS NOTED

YARD ASH DREDGE CELL - EAST OF GAS TURBINE
GEOTECHNICAL EXPLORATION
DUPONT ROAD DREDGE CELL
LOGS OF BORINGS

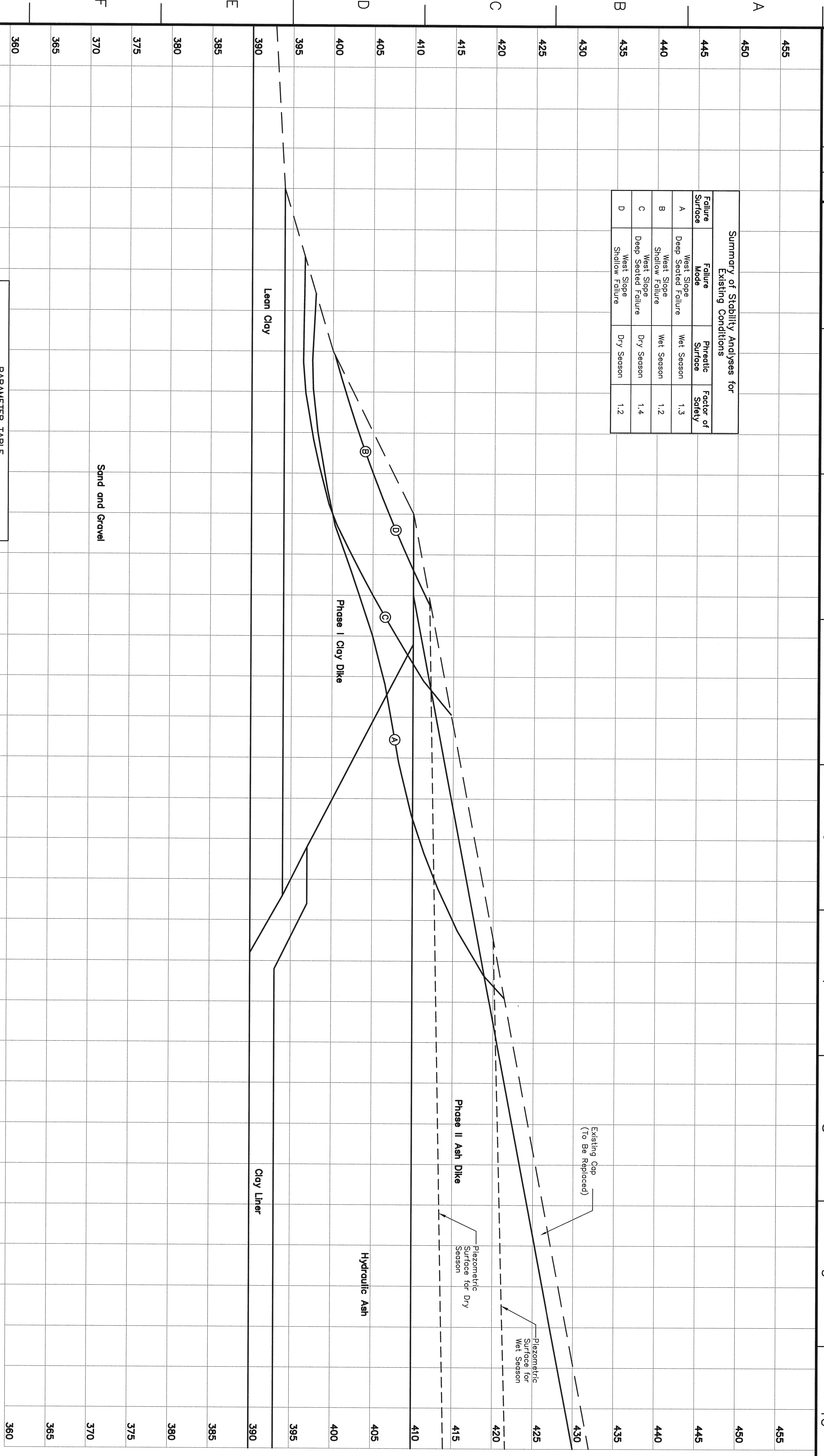
DESIGNED BY	SKETCH BY	SUPERVISED BY	REVIEWED BY	APPROVED BY	ISSUED BY
P. KISER	P. SLPACHARN	S. FELD	H. AYARDO	H. AYARDO	P. KISER

JOHNSONVILLE FOSSIL PLANT
TENNESSEE VALLEY AUTHORITY
 FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 DATE 04/19/10 3D C 10W508-06 R 0

Summary of Stability Analyses for Existing Conditions

Failure Surface	Failure Mode	Predictive Surface	Factor of Safety
A	West Slope Deep Seated Failure	Wet Season	1.3
B	West Slope Shallow Failure	Wet Season	1.2
C	West Slope Deep Seated Failure	Dry Season	1.4
D	West Slope Shallow Failure	Dry Season	1.2



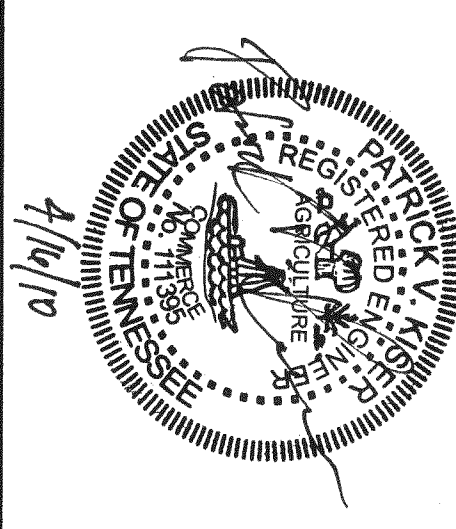
PARAMETER TABLE

Material Type	Sat Unit Wt, γ_{sat}	Cohesion, c	Friction Angle, ϕ
Phase I Clay Berm	125 pcf	0 pcf	30°
Phase II Ash Berm	110 pcf	0 pcf	27°
Hydraulic Ash	105 pcf	0 pcf	25°
Lean Clay	120 pcf	0 pcf	28°
Sand and Gravel	130 pcf	0 pcf	35°
Clay Cap	115 pcf	0 pcf	28°

- LEGEND**
- Topsoil
 - Fat Clay, brown to grayish brown, moist to saturated
 - Compacted Ash, gray to dark gray and block, damp to wet, soft to stiff
 - Fly Ash, gray to dark gray, damp to wet
 - Lean Clay, brown to gray, moist to saturated stiff, with sandy and silty zones
 - Clayey Sand, fine grained, brown to reddish brown, dense to very dense
 - Sand and Gravel, coarse grained, brown, saturated, dense to very dense
 - Silty Clay, yellowish tan, very moist
 - WOR
 - Weight of Rammer
 - Standard Penetration Test Interval
 - Undisturbed Thin-Walled (Shelby) Tube Sample
 - Standard Penetration Test Blow Count with a 140 lb Safety Hammer (blows/ft.)
 - Standard Penetration Test Blow Count with a 140 lb Automatic Hammer (blows/ft.)
 - N.M.C. Natural Moisture Content (%)
 - U.W.D. Unit Weight Dry (lbs./cu.ft.)
 - U.C./U.U. Unconfined Compressive Strength (psf) / Unconsolidated Undrained Triaxial Test (psf)
 - Water Level and Date Recorded
 - Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of cemented bedrock, boulders or rock remnants. As rock determination cannot be made without performing rock coring) Core
 - B.C. - Beclin Rock Core
 - R.O.D. Rock Quality Designation (%)
 - REC. Recovery (%)
 - Auger Refusal using a carbide-tipped tooth auger bit
 - No Refusal No Refusal Encountered
 - Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

RECORD DRAWING

For Supporting Design Calculations see
 FFG40FTFSCDX000000201000007



Statintec
 STATINTEC CONSULTING
 SERVICES INC. Ste. 420
 37027-5044
 Brentwood, Tennessee
 Fax: 615.882.1102
 www.statintec.com

YARD
 ASH DREDGE CELL - EAST OF GAS TURBINE
 GEOTECHNICAL EXPLORATION
 DUPONT ROAD DREDGE CELL
 LOGS OF BORINGS

DESIGNED BY	DRAWN BY	CHECKED BY	DATE	SCALE	PROJECT	NO.	DATE	BY	NO.	DATE	BY	NO.
P. KISSER	P. SELVACHARI	H. APARICIO	04/18/10	AS SHOWN	HRSA II	HRSA	PKK	TJ				

JOHNSONVILLE FOSSIL PLANT
 TENNESSEE VALLEY AUTHORITY
 FOSSIL AND HYDRO ENGINEERING



LEGEND

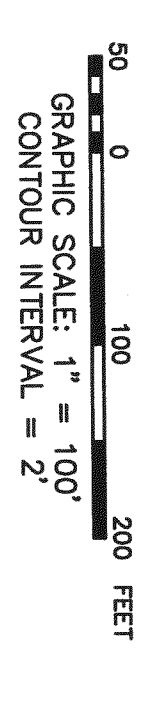
- P-12/PZ-16 New Piezometer (PZ)
- P-1 Existing Piezometer
- SS-7 Previous Test Boring
- M-9 Existing Monitoring Well

- NOTES:**
- The topographic mapping presented on this drawing was provided to Stantec by TVA Surveying and Project Services. This plan view was prepared to support development of the geotechnical exploration program and should not be used for construction.
 - 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.

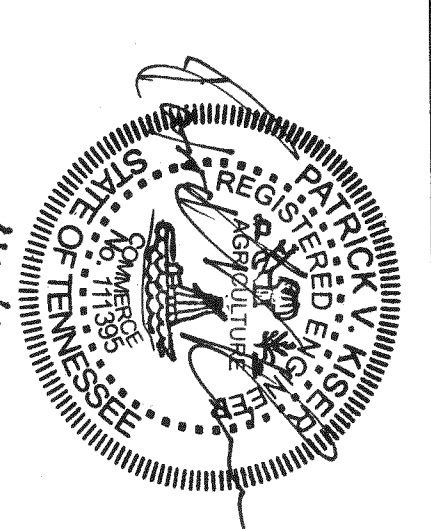
INSTRUMENTATION LOCATION TABLE

Boring	Northing	Easting	Top of Cap Elev. (ft.)	Ground Elev. (ft.)	Surface Elev. (ft.)
P-1	603,767.52	1,414,602.03	422.7	416.8	416.8
P-2	603,781.00	1,414,657.72	434.4	431.2	431.2
P-3	604,041.49	1,414,895.97	441.2	437.9	437.9
P-4	604,233.71	1,415,132.35	420.1	415.9	415.9
P-5	604,233.01	1,415,074.38	433.5	430.7	430.7
P-6	603,804.26	1,414,845.44	442.6	439.6	439.6
P-7	603,188.22	1,414,934.13	439.6	436.3	436.3
P-8/PZ-3	604,074.54	1,414,663.34	435.3	432.8	432.8
P-9/PZ-7	603,834.16	1,415,064.64	435.7	432.9	432.9
P-10/PZ-12	603,160.75	1,414,779.25	433.7	430.7	430.7
P-11/PZ-13	603,210.69	1,415,082.20	435.0	432.1	432.1
P-12/PZ-16	602,991.68	1,414,974.82	435.2	432.5	432.5

RECORD DRAWING



For Supporting Design Calculations see
 PFG40FESC000000201000007



Stantec Consulting
 Services Inc.
 100 Westwood Pl., Ste. 420
 Brentwood, Tennessee
 Tel. 615.885.1144
 Fax 615.885.1102
 www.stantec.com

SCALE: 1"=100'

NO.	DATE	BY	CHKD.	APPD.	PROJECT	AS NOTED
1	04/18/10	EVK	SPS	HRB	HRB	EVK
2	04/19/10	HRB	HRB	HRB	HRB	HRB

EXCEPT AS NOTED

YARD DREDGE CELL - EAST OF GAS TURBINE
 GEOTECHNICAL EXPLORATION
 DUPONT ROAD DREDGE CELL
 INSTRUMENTATION LAYOUT

JOHNSONVILLE FOSSIL PLANT
 TENNESSEE VALLEY AUTHORITY
 FOSSIL AND HYDRO ENGINEERING

ISSUED BY: T. JOHNSON
 APPROVED BY: P. HESER
 REVISION BY: H. JARBOO
 CHECKED BY: S. FIELD
 DRAWN BY: P. SILPACHARN

AUTOCAD R 2000 04/19/10 30 C 10W508-08 R 0