CTL Engineering Inc.
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AN EMPLOYEE OWNED COMPANY

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Established 1927

December 26, 2006

Kokosing Construction Company, Inc.
6235 Westerville Road
Westerville, Ohio 43081

Attention: Mr. Michael Hullinger

Reference: Subsurface Investigation
Buckeye Ethanol Plant
South Point, Ohio
CTL Project No. 06050283COL

Dear Mr. Hullinger:

In accordance with your authorization to proceed, CTL Engineering, Inc. has completed the subsurface investigation at the above referenced site. Enclosed are three (3) copies of the report.

Thank you for the opportunity to be of service to you on this project. If you have any questions, please contact our office.

Respectfully Submitted,

CTL ENGINEERING, INC.

for Roger Evans, P.E.
Project Engineer

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SUBSURFACE INVESTIGATION

SUBSURFACE INVESTIGATION
BUCKEYE ETHANOL PLANT
SOUTH POINT, OHIO
CTL PROJECT NO. 06050283COL

PREPARED FOR:

KOKOSING CONSTRUCTION COMPANY, INC.
6235 WESTERVILLE ROAD
WESTERVILLE, OHIO 43081

PREPARED BY:

CTL ENGINEERING, INC.
2860 FISHER ROAD
COLUMBUS, OHIO 43204

December 26, 2006

CTL ENGINEERING

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I. PROJECT LOCATION AND DESCRIPTION

The majority of the project site is a relatively flat area, located east of the Ohio River just north of South Point, Ohio. However, the grade falls approximately 60 feet down to the Ohio River on the western edge of the site. Most of the site is relatively open, however, old roadways, rail lines, parking lots and abandoned buildings are located across the site.

Details of the proposed construction have not been provided, however, it is understood that the river cell, the grain storage silos, and the DDGS storage building are to be heavily loaded. It is assumed that the other proposed structures will be lightly to moderately loaded, with expected maximum column load of 250 Kips or less, and maximum wall load will be 6 Kips per lineal foot or less.

II. SUBSURFACE INVESTIGATION

The drilling program included 3 deep borings for major structures (the river cell, the grain storage silos, and the DDGS storage building), and 8 additional borings for the remainder of the plant. The boring for the river cell was performed from a barge (provided by others) in the Ohio River. The boring locations are shown on the enclosed Boring Location Plan sheet. The 3 deep borings were extended to the underlying bedrock to depths in the range of 60.0 to 87.0 feet; the 8 remaining borings were extended to depths of 40.0 to 45.0 feet each.

The borings were drilled utilizing ATV- and truck-mounted drill rigs with hollow stem augers (HSA) between November 2, and November 15, 2006. Standard penetration tests were conducted in the borings using an automatic 140-pound hammer falling 30 inches to drive a 2-inch O.D. split barrel sampler for 18 inches. Rock coring was performed in boring B-1, drilled from a barge in the Ohio River, using an NX-size, double tube core barrel with a diamond bit.

Soil samples obtained from the drilling operations were preserved in glass jars, visually classified in the field and laboratory, and tested for natural moisture content. Representative soil samples were subjected to laboratory testing including grain size distribution and Atterberg limits. Rock from the coring operations was visually classified in the field and laboratory and the Rock Quality Designation (RQD) and percent core loss values were determined.

Approximate ground surface elevations at the test boring locations were determined using GPS survey methods.

III. FINDINGS

A. Visual Observations

The majority of the site is a relatively flat area, located east of the Ohio River. However, the grade falls approximately 60 feet down to the Ohio River on the western edge of the site. Most of the site is relatively open, however, old roadways, rail lines, parking lots and abandoned buildings are located across the site.

B. Subsurface Conditions

The test borings generally exhibited 5 to 10 inches of topsoil at the surface. However, boring B-1 was performed from a barge on the Ohio River, and as such did not encounter any surface topsoil. At the time of drilling, water at this location extended to 43.5 feet below the deck of the barge, or about 33.5 feet below the water surface. Pavement, consisting of 4 inches of Portland cement concrete over 8 inches of granular base material was encountered at the surface in boring B-8. Fill and possible fill was encountered from the surface in boring B-10, and below the topsoil or pavement in borings B-4, B-5, B-6, B-8 and B-11, to depths in the range of 2.5 to 11.0 feet. These soils exhibited penetration values ranging from 7 to 25 blows per foot (bpf) with natural moisture content values ranging from 17 to 32 percent.

Below these surface deposits, the borings performed on land, B-2 through B-11, exhibit silty clay, clayey silt, silt or sandy silt to depths in the range of 5.0 to 13.5 feet. These soils exhibited penetration values ranging from 5 to 21 bpf, with natural moisture content values ranging from 13 to 26 percent.

Below these deposits, or below the water in boring B-1, the borings exhibited silty sand, sand, or sand and gravel. These deposits extended to a depth of 45.5 feet in boring B-1, 81.0 feet in boring B-6, to a depth of 83.0 feet in boring B-8 and to the completion depths in the range of 40.0 to 45.0 feet in the remaining borings. These soils exhibited penetration values ranging from 3 bpf to 50 blows for 3 inches of penetration. The unusually low penetration values encountered were likely the result of local disturbance from groundwater flows, whereas the unusually high penetration values were likely due to striking cobbles, boulders, or bedrock fragments.

Beneath the soil overburden, borings B-1, B-6 and B-8 exhibited layers of weathered shale and sandstone bedrock. The upper portion of the rock could be augered and sampled using soil techniques. This rock exhibited penetration values of 50 blows for 3 to 4 inches of penetration.

Rock coring was performed in boring B-1 between depths of 47.3 and 60.0 feet. The rock recovered from the coring operations exhibited Rock Quality Designation (RQD) values ranging from 83 to 90 percent, with core recovery values of 98 to 100 percent.

Groundwater and soil cave-in levels were measured in the borings performed on land as tabulated below.

Boring No.	Groundwater Depth (feet)		Soil Cave-In Depth (feet)
	During Drilling	At Completion	
B-1	10.0*	10.0*	---
B-2	19.0	15.6	19.7
B-3	33.5	19.0	21.6
B-4	Dry	Dry	21.6
B-5	43.0	24.0	37.0
B-6	39.0	12.0	21.6
B-7	Dry	Dry	18.9
B-8	43.0	35.0	37.0
B-9	Dry	Dry	23.0
B-10	Dry	Dry	31.0
B-11	Dry	Dry	30.0

* Represents the surface of the Ohio River

IV. DISCUSSION

Relatively weak, moist soils were encountered near the surface in several of the borings. Drying or undercutting of these soils will likely be required in the building pad and pavement areas. Depending upon the soil and weather conditions at the time of construction, chemical stabilization of the subgrade, using lime, cement, or some other product, may be advisable.

Subsurface conditions at the site are generally suitable to support buildings with light to moderate loads. However, special procedures will be required to support heavily loaded structures at this site. Light to moderate foundation loads could generally be supported in the existing near surface soils. However, large foundation loads supported on standard shallow foundations may experience excessive settlements. The use of deep foundations would provide positive support for high structural loads.

Once foundation loads and other structural details are determined, then settlement analyses should be performed to determine if settlements are within tolerable limits.

V. PRELIMINARY ANALYSIS AND RECOMMENDATIONS

Based upon the preceding considerations as well as the subsurface information obtained from the field and laboratory testing, the following preliminary recommendations are provided.

A. General Site Preparation

1. All vegetation and topsoil should be removed from the construction area. Topsoil may be stockpiled for future use in landscaping. Existing pavement in the planned construction areas should also be removed. Clean granular base materials may be stockpiled for reuse.

2. The near surface soils were relatively weak and moist in some locations. Drying and/or undercutting of these soils will likely be required in the building pad and pavement areas. Depending upon the soil and weather conditions at the time of construction, chemical stabilization of the subgrade, using lime, cement, or some other product, may be advisable.

3. Excavations within the soils at this site may be accomplished using standard excavation equipment. Temporary excavations in excess of 4.0 feet in depth should be sloped or shored in accordance with OSHA regulations. All excavation sidewalls should be observed and approved during construction by the Soils Engineer.

4. Subsequent to excavation, the exposed surface should be compacted and/or proofrolled in the presence of the Soils Engineer. Soft or loose soils, wherever encountered, should be disked, dried and recompacted, or undercut and replaced with engineered fill, or otherwise as directed by the Soils Engineer.

5. During earthwork operations, care should be taken to provide adequate drainage on the surface of the exposed soils. Absorption of heavy rainfall, accumulations of water and heavy construction traffic may result in softening of these soils, hence, severely weakening the strength of the subgrade soils.

6. Fill material required to raise the grade may consist of on site silty-clayey soils, crushed limestone or sand and gravel. Topsoil and/or organically contaminated soils are also not considered suitable for use as engineered fill. All fill materials should be observed and approved by the Soils Engineer.

7. Engineered fill should be placed in layers not to exceed 8 inches in loose thickness, with each layer compacted to 100 percent of the maximum dry density as determined by ASTM D-698 standard method (AASHTO T-99), or as otherwise directed by the Soils Engineer.

8. Fill placement should extend beyond the limits of the proposed buildings or paved areas a minimum horizontal distance equal to the height of fill or 5 feet, whichever is greater. Otherwise the fill should be contained in a retaining wall.

9. Permanently exposed slopes 20 feet or less in height, should be laid back at a slope rate no steeper than 3:1 Horizontal to Vertical (H:V). Slope stability analyses should be performed for slopes higher than 20 feet to determine permissible slope rates. The slopes should be protected from sloughing or surface erosion.

B. Preliminary Foundation Support Recommendations

Deep Foundations – Heavy Structural Loads

Supporting large structural loads at this site would require deep foundations, as discussed above. Specific recommendations could be prepared once the actual structure configuration, construction grades, and foundation loads are provided. It is understood that the river cell, the grain storage silos, and the DDGS storage building are to be heavily loaded. It is assumed that the other proposed structures will be lightly to moderately loaded, with expected maximum column load of 250 Kips or less, and maximum expected wall load of 6 Kips per lineal foot or less.

Boring B-1, performed for the proposed river cell, exhibited only a few feet of riverbed deposits over sandstone bedrock. The sandstone should provided sufficient vertical capacity for the foundations, however, lateral capacity and potential buckling would have to be considered in the design. The use of drilled shafts, socketed into the underlying bedrock could be considered to resist lateral loads. Specific recommendations for drilled shafts, or other methods of resisting lateral loads could be provided once loading details are available.

For the grain storage silos and the DDGS storage building (borings B-6 and B-8), the following general Pile types, estimated pile cap elevation, allowable axial pile loads, estimated pile tip elevations, and estimated pile lengths are tabulated below. Alternate pile types and design loads will be provided upon request. It is assumed that H piles will be extended to refusal in the underlying bedrock, cast in place (CIP) pipe piles could likely be supported in the sand and gravel above the bedrock.

Base of Pile Cap Elevation (Est.)	Pile Type	Allowable Axial Design Load (tons)	Estimated Pile Tip Elevation	Estimated Pile Length (feet)
558	HP 10x42	55	480	80
	HP 12x53	70	480	80
	12" CIP	50	495	65
	14" CIP	70	495	65

Standard Foundations – Light to Moderate Structural Loads

Light to moderate foundation loads could likely be supported on standard foundations at this site. Recommendations for foundations to support light to moderate foundation loads are presented in the following paragraphs.

1. Shallow foundations to support light to moderate loads may be proportioned using a net allowable soil bearing capacity value of 2.5 Kips per square foot (Ksf). The bearing value applies to the total of all design loads. All footing bearing surfaces should be observed and approved by the Soils Engineer.

   In the event that the soils at the footing bearing surface exhibit soft or loose conditions, the unsuitable soils below the footings should be removed. Lean concrete may be used to raise the grade to the proposed footing bearing level.

2. Minimum widths for individual columns and continuous wall footings should be 24 and 18 inches, respectively. Minimum widths are considered advisable to provide a margin of safety against local or punching shear failure.

3. Exterior footings should be constructed at a minimum of 36 inches below the lowest adjacent exterior grade to offset the effects of frost penetration.

4. Once foundation loads and other structural details are determined, settlement analyses should be performed to determine if settlement values are within tolerable limits.

C. Seismic Considerations

Based upon the subsurface information obtained from the test borings, a Site Class D (Table 1615.1.1 of the 2005 OBC) may be used for seismic design.

VI. CHANGED CONDITIONS

Should details for the proposed facility be changed from those used in preparing this report, the Soils Engineer should be notified to make the necessary modifications in our recommendations to account for the changed conditions.

VII. TESTING AND OBSERVATION

Experience shows that subsurface conditions in an area sometimes vary from the ones indicated in the borings at their specific locations. It is therefore recommended that a Soils Technician, under the supervision of a qualified Soils Engineer, be retained on site to observe all earthwork and foundation bearing surfaces.

VIII. CLOSURE

CTL Engineering, Inc. has prepared this report for your use in accordance with generally accepted soil and foundation engineering practices. Preliminary analysis, conclusions and other work product of CTL Engineering, Inc. are instruments of service for this project only.

Soil samples will be retained in our laboratory for a period of 60 days, after which they will be discarded unless instructions are received from you as to their disposal.

This geotechnical report does not address the environmental aspects of this particular site.

Respectfully Submitted,

CTL ENGINEERING, INC.

Roger Evans, P.E.
Project Engineer

Joe Grani, P.E.
Project Engineer

APPENDIX A

TEST BORING RECORDS

SOIL DESCRIPTION

NON-COHESIVE SOIL DESCRIPTION	STANDARD PENETRATION BLOW COUNTS PER FOOT (BPF)
Very Loose	0 – 4
Loose	5 – 10
Medium Dense	11- 30
Dense	31 – 50
Very Dense	Over 50

COHESIVE SOIL DESCRIPTION	STANDARD PENETRATION BLOW COUNTS PER FOOT (BPF)
Very Soft	0 – 1
Soft	2 – 4
Medium Stiff	5 – 8
Stiff	9 – 15
Very Stiff	16 – 30
Hard	Over 30

GRADATION COMPONENT	SIZE
Boulders	Larger Than 8"
Cobbles	8" to 3"
Coarse Gravel	Passing 3" Retained on ¾"
Fine Gravel	Passing ¾", Retained on #10
Coarse Sand	Passing #10, Retained on #40
Fine Sand	Passing #40, Retained on #200
Silt	0.074mm (Passing #200) to 0.005mm
Clay	Smaller Than 0.005 mm

COMPONENT MODIFIERS	PERCENT BY WEIGHT
Trace of	0 – 1%
Traces of	2 – 10%
Little	11 – 20%
Some	21 – 35%
And	36 – 50%

NON-COHESIVE SOIL DESCRIPTION	MOISTURE TERMS	COHESIVE SOIL DESCRIPTION
Powdery	Dry	Powdery
Some Moisture	Damp	Below Plastic Limit
Damp to the Touch	Moist	Above Plastic, Below Liquid Limit
Free Water	Wet	Above Liquid Limit

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TEST BORING RECORD

CLIENT	: Kokosing Construction Company, Inc.	BORING NO.:	B-1
PROJECT	: Buckeye Ethanol Plant	SHEET	1 OF 3
LOCATION	: South Point, Ohio	DATE STARTED	: 11-09-06
PROJECT NO.	: 06050283COL	DATE COMPLETED	: 11-09-06

BORING	ELEVATION : 516.7 Feet	BORING METHOD	: HSA	HAMMER	: Auto
	STATION :	RIG TYPE	: CME 55	DRILLER	: MK
	OFFSET :	CASING DIA.	: 3.25"	TEMPERATURE	:
	DEPTH : 60.0 Feet	CORE SIZE	:	WEATHER	:

GROUNDWATER:

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	5												
	10	**0-10' Drill Through Barge** **10-43.5' Drill Through Water**											
	15												
	20												

Continued on next page

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	- Hollow Stem Auger	SS	- Split Spoon Sample	*	- Hand Penetrometer
SFA	- Solid Flight Auger	ST	- Shelby Tube Sample	LL	- Liquid Limit
RC	- Rock Coring	CR	- Rock Core Sample	PL	- Plastic Limit
MD	- Mud Drilling	BS	- Bag Sample	PI	- Plasticity Index
WD	- Wash Drilling			SPT	- Standard Penetration Test
HA	- Hand Auger				

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc. BORING NO.: B-1

PROJECT : Buckeye Ethanol Plant SHEET 2 OF 3

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	25												
	30	**0-10' Drill Through Barge** **10-43.5' Drill Through Water**											
	35												
	40												
473.2			43.5										
	45	Medium Dense, Wet, Gray **SILTY SAND,** Little Clay, Trace Gravel		SS-1	7 9 11	20	56	19					
471.2			45.5										
		Gray **HIGHLY WEATHERED SANDSTONE**		SS-2	50-3"		100	10					

Continued on next page

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WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-1

PROJECT : Buckeye Ethanol Plant

SHEET 3 OF 3

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
469.4		Gray **HIGHLY WEATHERED SANDSTONE**	47.3										
				CR-1 RQD= 89%			100						
	50												
				CR-2 RQD= 90%			98		153				
		Hard, Fresh, Gray **FINE TO MEDIUM GRAINED SANDSTONE**											
		COMPRESSIVE STRENGTH = 7,300 psi AT 50'											
	55												
				CR-3 RQD= 83%			100						
456.7	60		60.0										
		BOTTOM OF BORING											
	65												
	70												

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WD	- Wash Drilling			SPT	- Standard Penetration Test
HA	- Hand Auger				

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-2
SHEET 1 OF 2
DATE STARTED : 11-10-06
DATE COMPLETED : 11-10-06

BORING ELEVATION	: 546.0 Feet	BORING METHOD	: HSA	HAMMER	: Auto
STATION	:	RIG TYPE	: CME 55	DRILLER	: MK
OFFSET	:	CASING DIA.	: 3.25"	TEMPERATURE	:
DEPTH	: 40.0 Feet	CORE SIZE	:	WEATHER	:

GROUNDWATER: ▼ Encountered at 19.0' ▽ At completion 15.6' ▨ Caved in at 19.7'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
545.3		**TOPSOIL** (8")	0.7										
		Medium Stiff, Moist, Dark Brown **CLAYEY SILT**, Trace Sand		SS-1	3 4 4	8	67	24					
	5			SS-2	3 3 4	7	78	13			35	21	14
540.5			5.5										
		Medium Stiff, Moist, Brown **SANDY SILT**, Some Clay		SS-3	3 4 4	8	89	20					
537.5			8.5										
	10	Stiff, Damp, Brown **SILTY CLAY**, Little Sand		SS-4	4 5 6	11	83	17					
532.5			13.5										
	15 ▽	Loose to Very Loose, Damp to Wet, Brown **SILTY SAND**		SS-5	2 3 4	7	89	9			22	18	4
	▼ ▨ 20			SS-6	2 2 3	5		27					

Continued on next page

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RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-2

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 2

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	25	Loose to Very Loose, Damp to Wet, Brown **SILTY SAND**		SS-7	2 2 2	4	67	24					
518.5			27.5										
		Stiff, Moist, Gray **SILTY CLAY,** Some Sand											
517.0			29.0		2								
	30			SS-8A SS-8B	6 8	14	83	35 14					
		Medium Dense, Wet, Gray **SILTY SAND AND GRAVEL**											
512.5			33.5										
	35				9								
				SS-9	10 12	22	89	12					
		Medium Dense, Wet, Brown **SAND AND GRAVEL,** Little Silt											
507.5			38.5										
	40	Loose, Wet, Brown **SAND,** Little Gravel, Trace Sand		SS-10	4 4 6	10	94	18					
506.0			40.0										
		BOTTOM OF BORING											
	45												

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MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-3
SHEET 1 OF 2
DATE STARTED : 11-10-06
DATE COMPLETED : 11-10-06

BORING ELEVATION	: 549.5 Feet	BORING METHOD	: HSA	HAMMER	: Auto
STATION	:	RIG TYPE	: CME 55	DRILLER	: MK
OFFSET	:	CASING DIA.	: 3.25"	TEMPERATURE	:
DEPTH	: 40.0 Feet	CORE SIZE	:	WEATHER	:

GROUNDWATER: ▼ Encountered at 33.5' ▽ At completion 19.0' Caved in at 21.6'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
548.9		**TOPSOIL** (7")	0.6										
		STiff, Moist, Brown **SILTY CLAY**, Little Sand		SS-1	3 4 5	9	89	24					
546.5			3.0										
	5	Stiff, Moist, Brown **SANDY SILT**, Some Clay		SS-2	4 5 6	11	56	16					
				SS-3	4 4 6	10	83	18					
541.0			8.5										
	10			SS-4	4 6 7	13	72	12					
	15	Medium Dense, Damp, Brown **SILTY SAND**, Trace Clay		SS-5	5 6 7	13	89	13					
	20			SS-6	4 5 6	11	89	8			22	18	4

Continued on next page

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MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-3

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 2

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
526.0		Medium Dense, Damp, Brown **SILTY SAND,** Trace Clay	23.5										
	25	Medium Dense, Moist, Brown **SILTY SAND,** with Silty Clay Layers, Trace Gravel		SS-7	4 5 13	18	83	19					
522.5			27.0										
	30	Medium Dense, Moist, Brown **SILTY SAND AND GRAVEL**		SS-8	6 15 11	26	72	13					
516.0 ▼			33.5										
	35	Medium Dense, Wet, Brown **SILTY SAND,** Little Gravel		SS-9	5 12 7	19	67	24					
511.0			38.5										
509.5	40	Loose, Wet, Dark Brown **SILTY SAND,** Little Gravel	40.0	SS-10	4 3 6	9	72	20					
		BOTTOM OF BORING											
	45												

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	- Hollow Stem Auger	SS	- Split Spoon Sample	*	- Hand Penetrometer
SFA	- Solid Flight Auger	ST	- Shelby Tube Sample	LL	- Liquid Limit
RC	- Rock Coring	CR	- Rock Core Sample	PL	- Plastic Limit
MD	- Mud Drilling	BS	- Bag Sample	PI	- Plasticity Index
WD	- Wash Drilling			SPT	- Standard Penetration Test
HA	- Hand Auger				

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-4
SHEET 1 OF 2
DATE STARTED : 11-15-06
DATE COMPLETED : 11-15-06

BORING					
ELEVATION	: 561.0 Feet	BORING METHOD	: HSA	HAMMER	: Auto
STATION	:	RIG TYPE	: CME 55	DRILLER	: MK
OFFSET	:	CASING DIA.	: 3.25"	TEMPERATURE	:
DEPTH	: 40.0 Feet	CORE SIZE	:	WEATHER	:

GROUNDWATER: Encountered at Dry At completion Dry ▨ Caved in at 21.6'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
560.6		**TOPSOIL (5")**	0.4										
		Medium Stiff, Damp, Dark Brown **CLAYEY SILT,** Little Sand, Trace Gravel **(POSSIBLE FILL)**		SS-1	3 3 4	7	67	17					
558.0			3.0										
				SS-2	4 5 6	11	83	20					
	5	Stiff, Moist, Brown **SILT,** Some Sand, Some Clay		SS-3	5 6 6	12	89	19			29	19	10
552.5			8.5										
	10	Loose, Moist, Brown **SILTY SAND,** Trace to Little Clay		SS-4	3 4 5	9	94	22					
				SS-5	3 4 4	8	89	27			NP	NP	NP
	15												
543.0			18.0										
	20	Dense to Medium Dense, Damp, Brown **SAND AND GRAVEL,** Little Gravel, Trace Silt		SS-6	11 18 21	39	78	6					

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-4

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 2

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	25			SS-7	7 7 9	16	83	6					
	30	Dense to Medium Dense, Damp, Brown **SAND AND GRAVEL,** Little Gravel, Trace Silt		SS-8	9 7 8	15	89	6					
	35			SS-9	10 8 7	15	94	7					
521.0	40	**BOTTOM OF BORING**	40.0	SS-10	6 7 8	15	94	7					
	45												

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-5
SHEET 1 OF 2
DATE STARTED : 11-03-06
DATE COMPLETED : 11-03-06

BORING	ELEVATION : 562.0 Feet	BORING METHOD : HSA		HAMMER : Auto	
	STATION :	RIG TYPE : CME 75		DRILLER : JD	
	OFFSET :	CASING DIA. : 3.25"		TEMPERATURE :	
	DEPTH : 45.0 Feet	CORE SIZE :		WEATHER :	

GROUNDWATER: ▼ Encountered at 43.0' ▽ At completion 24.0' ▨ Caved in at 37.0'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
561.4		**TOPSOIL** (7")	0.6										
		Loose, Moist, Gray and Brown **SILTY SAND AND GRAVEL,** Trace Clay **(FILL)**		SS-1	3 5 5	10	67	19					
559.5			2.5										
		Medium Stiff to Stiff, Moist, Brown and Light Gray **SILTY CLAY,** Trace Sand, Trace Gravel		SS-2	2 3 3	6	67	26					
	5			SS-3	2 4 6	10	72	26					
554.0			8.0										
	10	Stiff, Moist, Brown **SANDY SILT,** Little Clay		SS-4	3 5 5	10	72	26					
549.0			13.0										
	15	Medium Dense, Damp, Brown **SAND AND GRAVEL,** Trace Silt		SS-5	5 8 11	19	67	5					
	20			SS-6	6 10 13	23	67	5					

Continued on next page

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	- Hollow Stem Auger	SS	- Split Spoon Sample	*	- Hand Penetrometer
SFA	- Solid Flight Auger	ST	- Shelby Tube Sample	LL	- Liquid Limit
RC	- Rock Coring	CR	- Rock Core Sample	PL	- Plastic Limit
MD	- Mud Drilling	BS	- Bag Sample	PI	- Plasticity Index
WD	- Wash Drilling			SPT	- Standard Penetration Test
HA	- Hand Auger				

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-5

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 2

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
539.0		Medium Dense, Damp, Brown **SAND AND GRAVEL**, Trace Silt	23.0										
	25			SS-7	3 3 5	8	72	5					
	30			SS-8	3 4 4	8	67	4					
	35	Loose to Medium Dense, Damp to Wet, Brown **SAND**, Trace Silt		SS-9	5 5 6	11	67	6					
	40			SS-10	3 4 4	8	67	11					
517.0	45	**BOTTOM OF BORING**	45.0	SS-11	2 3 3	6	67	22					

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HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-6
SHEET 1 OF 4
DATE STARTED : 11-14-06
DATE COMPLETED : 11-14-06

BORING ELEVATION	: 563.0 Feet	BORING METHOD	: HSA	HAMMER	: Auto
STATION	:	RIG TYPE	: CME 55	DRILLER	: MK
OFFSET	:	CASING DIA.	: 3.25"	TEMPERATURE	:
DEPTH	: 86.5 Feet	CORE SIZE	:	WEATHER	:

GROUNDWATER: ▼ Encountered at 39.0' ▽ At completion 12.0' ▨ Caved in at 21.6'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
562.3		**TOPSOIL** (8")	0.7										
		Stiff, Moist, Brown and Light Gray **SILTY CLAY**, Trace Sand, Trace Gravel **(POSSIBLE FILL)**		SS-1	4 5 5	10	89	23					
560.0			3.0										
		Stiff, Moist, Brown **SILTY CLAY,** Trace Sand, Trace Gravel with Cobbles **(POSSIBLE FILL)**		SS-2	4 6 7	13	67	21		6.0*			
557.5	5		5.5										
		Medium Stiff, Moist, Brown **SILT,** Some Clay, Trace Sand		SS-3	4 3 5	8	67	22			25	21	4
554.5			8.5										
				SS-4	6 7 8	15	72	6					
	10	▽											
		Medium Dense, Damp, Brown **SAND AND GRAVEL,** Trace Silt		SS-5	9 11 10	21	89	6					
	15												
544.5			18.5										
		Medium Dense to Loose, Damp to Wet, Brown **SAND,** Trace Gravel, Trace Silt		SS-6	6 7 9	16	83	8					
	20												

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-6

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 4

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	25			SS-7	6 7 8	15	72	6					
	30			SS-8	4 5 6	11	89	11					
	35	Medium Dense to Loose, Damp to Wet, Brown **SAND**, Trace Gravel, Trace Silt		SS-9	4 5 7	12	89	6					
	40			SS-10	3 4 5	9	78	20					
	45			SS-11	4 4 4	8	83	28					

Continued on next page

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BORING METHOD

- HSA - Hollow Stem Auger
- SFA - Solid Flight Auger
- RC - Rock Coring
- MD - Mud Drilling
- WD - Wash Drilling
- HA - Hand Auger

SAMPLING METHOD

- SS - Split Spoon Sample
- ST - Shelby Tube Sample
- CR - Rock Core Sample
- BS - Bag Sample

ABBREVIATIONS

- * - Hand Penetrometer
- LL - Liquid Limit
- PL - Plastic Limit
- PI - Plasticity Index
- SPT - Standard Penetration Test

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

PROJECT : Buckeye Ethanol Plant

BORING NO.: B-6

SHEET 3 OF 4

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	50	Medium Dense to Loose, Damp to Wet, Brown **SAND,** Trace Gravel, Trace Silt		SS-12	4 5 7	12	67	22					
	55			SS-13	5 5 6	11	78	20					
504.5			58.5										
	60			SS-14	6 7 9	16	67	12					
	65	Medium Dense to Very Dense, Wet, Gray **SAND AND GRAVEL,** Trace Silt		SS-15	9 16 17	33		11					
	70			SS-16	9 9 12	21	0						

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-6

PROJECT : Buckeye Ethanol Plant

SHEET 4 OF 4

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	75	Medium Dense to Very Dense, Wet, Gray **SAND AND GRAVEL,** Trace Silt		SS-17	17 23 30	53	56	10					
	80			SS-18	17 21 30	51	0						
482.0			81.0										
		HIGHLY WEATHERED SHALE											
480.0			83.0										
	85	Light Gray **HIGHLY WEATHERED SANDSTONE**		SS-19	50-4"		100	11					
476.5			86.5										
		BOTTOM OF BORING											
	90												
	95												

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HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-7
SHEET 1 OF 2
DATE STARTED : 11-15-06
DATE COMPLETED : 11-15-06

BORING ELEVATION : 565.0 Feet
STATION :
OFFSET :
DEPTH : 40.0 Feet

BORING METHOD : HSA
RIG TYPE : CME 55
CASING DIA. : 3.25"
CORE SIZE :

HAMMER : Auto
DRILLER : MK
TEMPERATURE :
WEATHER :

GROUNDWATER: Encountered at Dry At completion Dry ▨ Caved in at 18.9'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
564.5		**TOPSOIL** (6")	0.5										
		Stiff, Moist, Brown **CLAYEY SILT,** Little Sand, Trace Gravel with Root Fibers		SS-1	3 4 5	9	72	22		7.5*			
562.0			3.0										
	5	Stiff, Moist, Brown **SANDY SILT,** Little Clay		SS-2	3 4 5	9	83	22		4.0*			
				SS-3	4 4 5	9	89	24					
556.5			8.5										
	10	Loose, Moist, Brown **SILTY SAND,** Little to Trace Clay		SS-4	4 4 4	8	72	19					
				SS-5	2 3 3	6	83	21					
546.5 ▨	15		18.5										
	20	Medium Dense, Moist, Brown **SAND,** Trace Silt, Trace Clay		SS-6	3 5 6	11	89	17					

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BORING METHOD
HSA - Hollow Stem Auger
SFA - Solid Flight Auger
RC - Rock Coring
MD - Mud Drilling
WD - Wash Drilling
HA - Hand Auger

SAMPLING METHOD
SS - Split Spoon Sample
ST - Shelby Tube Sample
CR - Rock Core Sample
BS - Bag Sample

ABBREVIATIONS
* - Hand Penetrometer
LL - Liquid Limit
PL - Plastic Limit
PI - Plasticity Index
SPT - Standard Penetration Test

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-7

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 2

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
541.5		Medium Dense, Moist, Brown **SAND,** Trace Silt, Trace Clay	23.5										
	25			SS-7	3 4 7	11	83	17					
	30			SS-8	7 9 10	19	94	7					
		Medium Dense to Loose, Damp to Moist, Brown **SAND,** Trace Silt with Coal Fragments											
	35			SS-9	4 5 6	11	94	9					
525.0	40	**BOTTOM OF BORING**	40.0	SS-10	4 4 5	9	89	16					
	45												

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SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
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MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-8
SHEET 1 OF 4
DATE STARTED : 11-03-06
DATE COMPLETED : 11-03-06

BORING ELEVATION : 565.0 Feet
STATION :
OFFSET :
DEPTH : 87.0 Feet

BORING METHOD : HSA
RIG TYPE : CME 75
CASING DIA. : 3.25"
CORE SIZE :

HAMMER : Auto
DRILLER : JD
TEMPERATURE : Sunny
WEATHER :

GROUNDWATER: ▼ Encountered at 43.0' ▽ At completion 35.0' ▨ Caved in at 37.0'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
564.0		**PORTLAND CEMENT CONCRETE** (4") **OVER BASE COURSE** (8")	1.0										
		Stiff, Damp, Brown and Gray **SILTY CLAY,** Little Gravel, Trace Sand **(POSSIBLE FILL)**		SS-1	5 5 5	10	67	18	136	8.2 @ 11.0%			
562.0			3.0										
		Stiff, Moist, Brown and Light Gray **SILTY CLAY,** with Black Sand Layer (Petrolium Odor) **(POSSIBLE FILL)**		SS-2	4 4 6	10	72	32					
559.5	5		5.5										
		Stiff, Damp, Brown and Light Gray **SILTY CLAY,** Trace Sand		SS-3	3 4 7	11	67	20					
557.0			8.0										
	10	Medium Stiff, Damp, Brown **SILT,** Some Sand, Little Clay		SS-4	3 3 4	7	72	19			21	18	3
552.0			13.0										
	15	Medium Dense, Damp, Brown **SAND AND GRAVEL,** Trace Silt		SS-5	5 8 11	19	72	5					
547.0			18.0										
	20	Medium Dense to Very Loose, Damp to Wet, Brown **SAND,** Trace Silt, Trace Clay		SS-6	8 12 12	24	72	6					

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HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-8

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 4

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	25			SS-7	3 3 6	9	72	7			NP	NP	NP
	30			SS-8	4 4 5	9	67	5					
	35	Medium Dense to Very Loose, Damp to Wet, Brown **SAND**, Trace Silt, Trace Clay		SS-9	3 4 5	9	67	8					
	40			SS-10	3 6 8	14	72	5					
	45			SS-11	1 1 2	3	72	26			NP	NP	NP

Continued on next page

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BORING METHOD

- HSA - Hollow Stem Auger
- SFA - Solid Flight Auger
- RC - Rock Coring
- MD - Mud Drilling
- WD - Wash Drilling
- HA - Hand Auger

SAMPLING METHOD

- SS - Split Spoon Sample
- ST - Shelby Tube Sample
- CR - Rock Core Sample
- BS - Bag Sample

ABBREVIATIONS

- * - Hand Penetrometer
- LL - Liquid Limit
- PL - Plastic Limit
- PI - Plasticity Index
- SPT - Standard Penetration Test

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-8

PROJECT : Buckeye Ethanol Plant

SHEET 3 OF 4

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	50	Medium Dense to Very Loose, Damp to Wet, Brown **SAND,** Trace Silt, Trace Clay		SS-12	4 4 5	9	72	23					
	55			SS-13	4 7 10	17	0						
507.0			58.0										
	60	Loose, Wet, Dark Brown **SAND AND GRAVEL,** Trace Silt		SS-14	3 4 5	9	56	11					
	65			SS-15	7 11 14	25	6						
496.5			68.5										
	70	Medium Dense to Dense, Wet, Dark Grayish Brown **SAND,** Trace to Little Gravel, Trace Silt		SS-16	5 10 13	23	56	17					

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BORING METHOD
- HSA - Hollow Stem Auger
- SFA - Solid Flight Auger
- RC - Rock Coring
- MD - Mud Drilling
- WD - Wash Drilling
- HA - Hand Auger

SAMPLING METHOD
- SS - Split Spoon Sample
- ST - Shelby Tube Sample
- CR - Rock Core Sample
- BS - Bag Sample

ABBREVIATIONS
- * - Hand Penetrometer
- LL - Liquid Limit
- PL - Plastic Limit
- PI - Plasticity Index
- SPT - Standard Penetration Test

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-8

PROJECT : Buckeye Ethanol Plant

SHEET 4 OF 4

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	75	Medium Dense to Dense, Wet, Dark Grayish Brown **SAND,** Trace to Little Gravel, Trace Silt		SS-17	7 18 21	39	72	17					
486.5			78.5										
	80	Very Dense, Wet, Dark Brown **SAND AND GRAVEL,** Trace Silt with Cobbles and Boulders		SS-18	39 42 50-3"		80	13					
482.0			83.0										
	85	Gray **WEATHERED SANDSTONE**		SS-19	50-3"		66	8					
478.0			87.0										
		AUGER REFUSAL **BOTTOM OF BORING**											
	90												
	95												

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-9
SHEET 1 OF 2
DATE STARTED : 11-02-06
DATE COMPLETED : 11-02-06

BORING ELEVATION : 562.0 Feet
STATION :
OFFSET :
DEPTH : 40.0 Feet

BORING METHOD : HSA
RIG TYPE : CME 75
CASING DIA. : 3.25"
CORE SIZE :

HAMMER : Auto
DRILLER : JD
TEMPERATURE :
WEATHER :

GROUNDWATER: Encountered at Dry At completion Dry Caved in at 23.0'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
561.4		**TOPSOIL** (7")	0.6										
		Medium Stiff, Moist, Brown **CLAYEY SILT,** Some Sand		SS-1	2 3 3	6	0						
				SS-2	4 4 4	8	67	22					
557.0	5		5.0										
		Loose, Damp, Brown **SAND,** Trace Gravel, Trace Silt		SS-3	3 5 5	10	67	13					
554.0			8.0										
	10			SS-4	7 7 7	14	72	13					
		Medium Dense, Wet to Moist, Brown **SAND AND GRAVEL,** Trace Silt		SS-5	3 7 9	16	72	11					
	15												
	20			SS-6	4 7 9	16	67	9					

Continued on next page

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-9

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 2

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
539.0		Medium Dense, Wet to Moist, Brown **SAND AND GRAVEL**, Trace Silt	23.0										
	25			SS-7	6 6 8	14	67	10					
	30			SS-8	4 5 9	14	72	9					
		Medium Dense to Loose, Damp to Moist, Brown **SAND**, Trace Gravel, Trace Silt											
	35			SS-9	3 4 4	8	67	8					
522.0	40		40.0	SS-10	4 5 5	10	67	9					
		BOTTOM OF BORING											
	45												

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BORING METHOD		SAMPLING METHOD		ABBREVIATIONS	
HSA	Hollow Stem Auger	SS	Split Spoon Sample	*	Hand Penetrometer
SFA	Solid Flight Auger	ST	Shelby Tube Sample	LL	Liquid Limit
RC	Rock Coring	CR	Rock Core Sample	PL	Plastic Limit
MD	Mud Drilling	BS	Bag Sample	PI	Plasticity Index
WD	Wash Drilling			SPT	Standard Penetration Test
HA	Hand Auger				

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-10
SHEET 1 OF 2
DATE STARTED : 11-15-06
DATE COMPLETED : 11-15-06

BORING ELEVATION : 565.0 Feet
STATION :
OFFSET :
DEPTH : 40.0 Feet

BORING METHOD : HSA
RIG TYPE : CME 75
CASING DIA. : 3.25"
CORE SIZE :

HAMMER : Auto
DRILLER : JD
TEMPERATURE : Rain
WEATHER :

GROUNDWATER: Encountered at Dry At completion Dry Caved in at 31.0'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
		Medium Stiff to Very Stiff, Damp, Brown **CLAYEY SILT,** Some Sand, Trace to Little Gravel **(FILL)**		SS-1	4 4 4	8	72	16		9.0*			
				SS-2	7 8 17	25	72	15		9.0*			
560.0	5		5.0										
		Stiff, Damp, Black **CLAYEY SILT,** Some Sand, Trace Gravel **(FILL)**		SS-3	4 4 7	11	72	26		5.0*			
				SS-4	7 6 7	13							
554.0	10		11.0										
		Medium Stiff, Wet, Mottled Light Gray and Brown **CLAYEY SILT,** Some Sand		SS-5	2 3 3	6	72	23			24	17	7
552.0			13.0										
		Very Stiff, Damp, Brown and Light Gray **SILTY CLAY,** Trace Sand, Trace Gravel		SS-6	7 10 11	21	72	23					
547.0	15		18.0										
		Medium Dense to Loose, Moist to Wet, Brown **SILTY SAND,** Trace Clay		SS-7	4 7 7	14	72	17					
	20												

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-10

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 2

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
	25	Medium Dense to Loose, Moist to Wet, Brown **SILTY SAND**, Trace Clay		SS-8	3 4 4	8	72	28			NP	NP	NP
537.0			28.0										
	30			SS-9	4 4 6	10	72	7					
	35	Loose to Medium Dense, Damp, Brown **SAND**, Trace Silt		SS-10	5 10 8	18	72	6					
				SS-11	3 5 5	10	72	4					
525.0	40	**BOTTOM OF BORING**	40.0										
	45												

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GTL ENGINEERING

BORING METHOD	
HSA	- Hollow Stem Auger
SFA	- Solid Flight Auger
RC	- Rock Coring
MD	- Mud Drilling
WD	- Wash Drilling
HA	- Hand Auger

SAMPLING METHOD	
SS	- Split Spoon Sample
ST	- Shelby Tube Sample
CR	- Rock Core Sample
BS	- Bag Sample

ABBREVIATIONS	
*	- Hand Penetrometer
LL	- Liquid Limit
PL	- Plastic Limit
PI	- Plasticity Index
SPT	- Standard Penetration Test

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.
PROJECT : Buckeye Ethanol Plant
LOCATION : South Point, Ohio
PROJECT NO. : 06050283COL

BORING NO.: B-11
SHEET 1 OF 2
DATE STARTED : 11-14-06
DATE COMPLETED : 11-14-06

BORING ELEVATION	: 562.2 Feet	BORING METHOD	: HSA	HAMMER	: Auto
STATION	:	RIG TYPE	: CME 75	DRILLER	: JD
OFFSET	:	CASING DIA.	: 3.25"	TEMPERATURE	: Cloudy
DEPTH	: 40.0 Feet	CORE SIZE	:	WEATHER	:

GROUNDWATER: Encountered at Dry At completion Dry Caved in at 30.0'

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
561.7		**TOPSOIL** (6")	0.5										
		Stiff, Moist, Brown **SILTY CLAY,** Little Sand, Trace Gravel with Concrete Rubble **(FILL)**		SS-1	8 5 5	10	56	21					
559.2			3.0										
		Medium Stiff, Moist, Brown **SANDY SILT,** Some Clay		SS-2	2 2 3	5	72	26					
557.2	5		5.0										
		Loose, Moist, Brown **SAND,** Little Silt		SS-3	2 2 4	6	67	17					
554.2			8.0										
				SS-4	8 10 10	20	72	7					
	10			SS-5	6 10 12	22	72	8					
		Medium Dense, Damp, Brown **SAND AND GRAVEL,** Trace Silt		SS-6	7 12 14	26	72	7					
	15												
				SS-7	8 9 11	20	72	6					
	20												

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BORING METHOD	SAMPLING METHOD	ABBREVIATIONS
HSA - Hollow Stem Auger	SS - Split Spoon Sample	* - Hand Penetrometer
SFA - Solid Flight Auger	ST - Shelby Tube Sample	LL - Liquid Limit
RC - Rock Coring	CR - Rock Core Sample	PL - Plastic Limit
MD - Mud Drilling	BS - Bag Sample	PI - Plasticity Index
WD - Wash Drilling		SPT - Standard Penetration Test
HA - Hand Auger		

TEST BORING RECORD

CLIENT : Kokosing Construction Company, Inc.

BORING NO.: B-11

PROJECT : Buckeye Ethanol Plant

SHEET 2 OF 2

STRATUM ELEVATION	SAMPLE DEPTH	SOIL/MATERIAL DESCRIPTION	STRATUM DEPTH	SAMPLE NUMBER	SPT per 6"	BLOWS per 12" (N)	% RECOVERY	MOISTURE CONTENT	TOTAL UNIT WEIGHT pcf	UNCONF. COMP., ksf	ATTERBERG LIMITS LL	PL	PI
539.2		Medium Dense, Damp, Brown **SAND AND GRAVEL,** Trace Silt	23.0										
				SS-8	3 7 10	17	72	7					
	25												
				SS-9	6 7 6	13	67	6					
	30	Medium Dense to Loose, Damp to Moist, Brown **SAND,** Little to Trace Gravel, Trace Silt											
				SS-10	6 5 5	10	67	6					
	35												
				SS-11	3 5 5	10	72	18					
522.2	40	**BOTTOM OF BORING**	40.0										
	45												

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BORING METHOD

HSA - Hollow Stem Auger
SFA - Solid Flight Auger
RC - Rock Coring
MD - Mud Drilling
WD - Wash Drilling
HA - Hand Auger

SAMPLING METHOD

SS - Split Spoon Sample
ST - Shelby Tube Sample
CR - Rock Core Sample
BS - Bag Sample

ABBREVIATIONS

* - Hand Penetrometer
LL - Liquid Limit
PL - Plastic Limit
PI - Plasticity Index
SPT - Standard Penetration Test

APPENDIX B

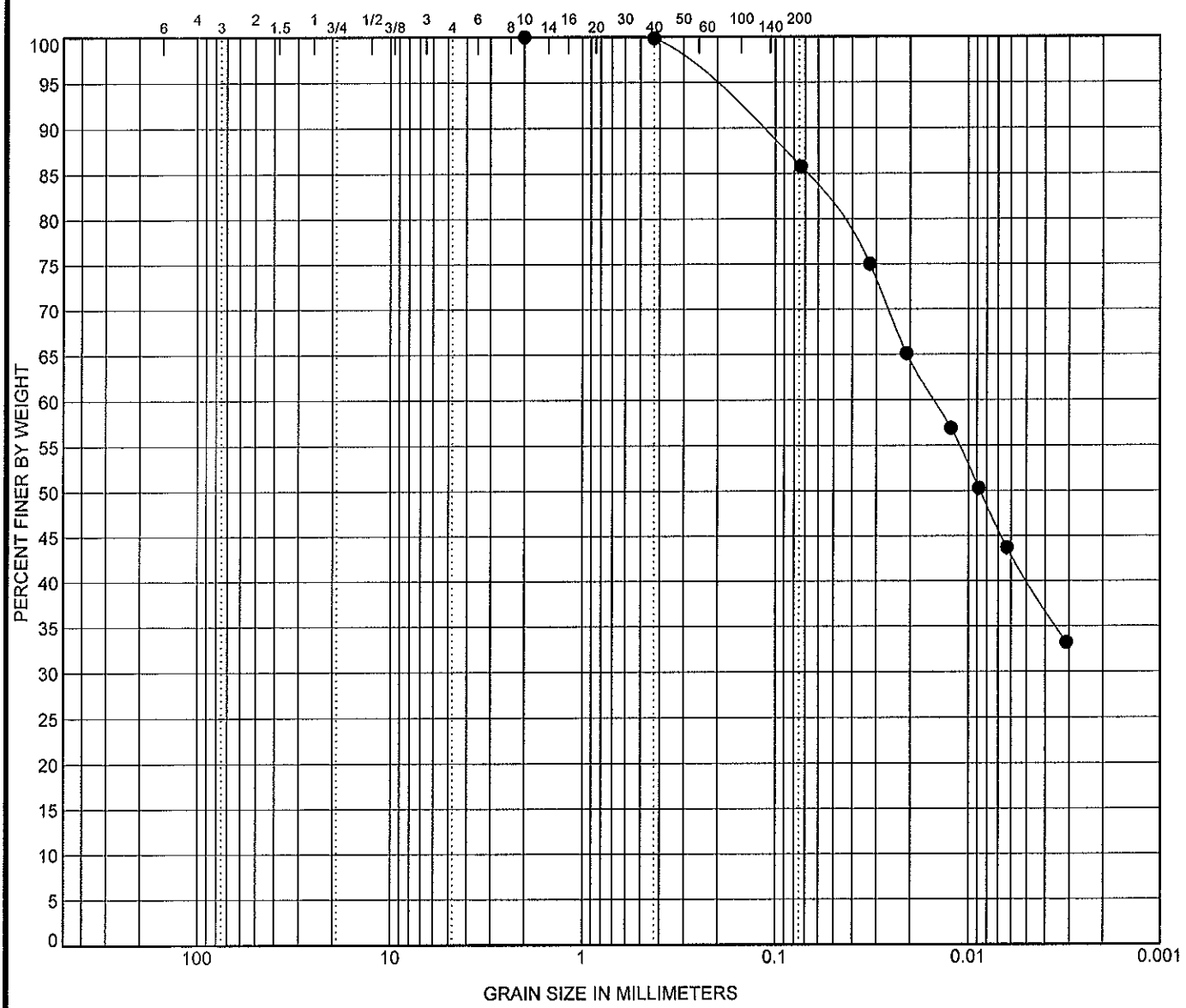
TEST RESULTS

LOSS ON IGNITION TEST DATA
ASTM D-2974

Client:	Kokosing Construction Company	**Date:**	11/20/2006
Project:	Buckeye Ethanol Plant	**Tech:**	EW/MW
Location:	South Point, Ohio	**Reviewed by:**	JH
Project #:	06050283COL		

Boring No.	Sample No.	Loss on Ignition (%)
B-5	SS-1	9.8
B-8	SS-2	5.9
B-10	SS-3	22.8

Calculations based on Dry Weight



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
● B-2	SS-2	3.0	**A-6a CLAYEY SILT (CL)**	13	35	21	14		
			Little Sand						

Boring No	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-2	SS-2	3.0	2	0.015	0.009			0	14	46	40

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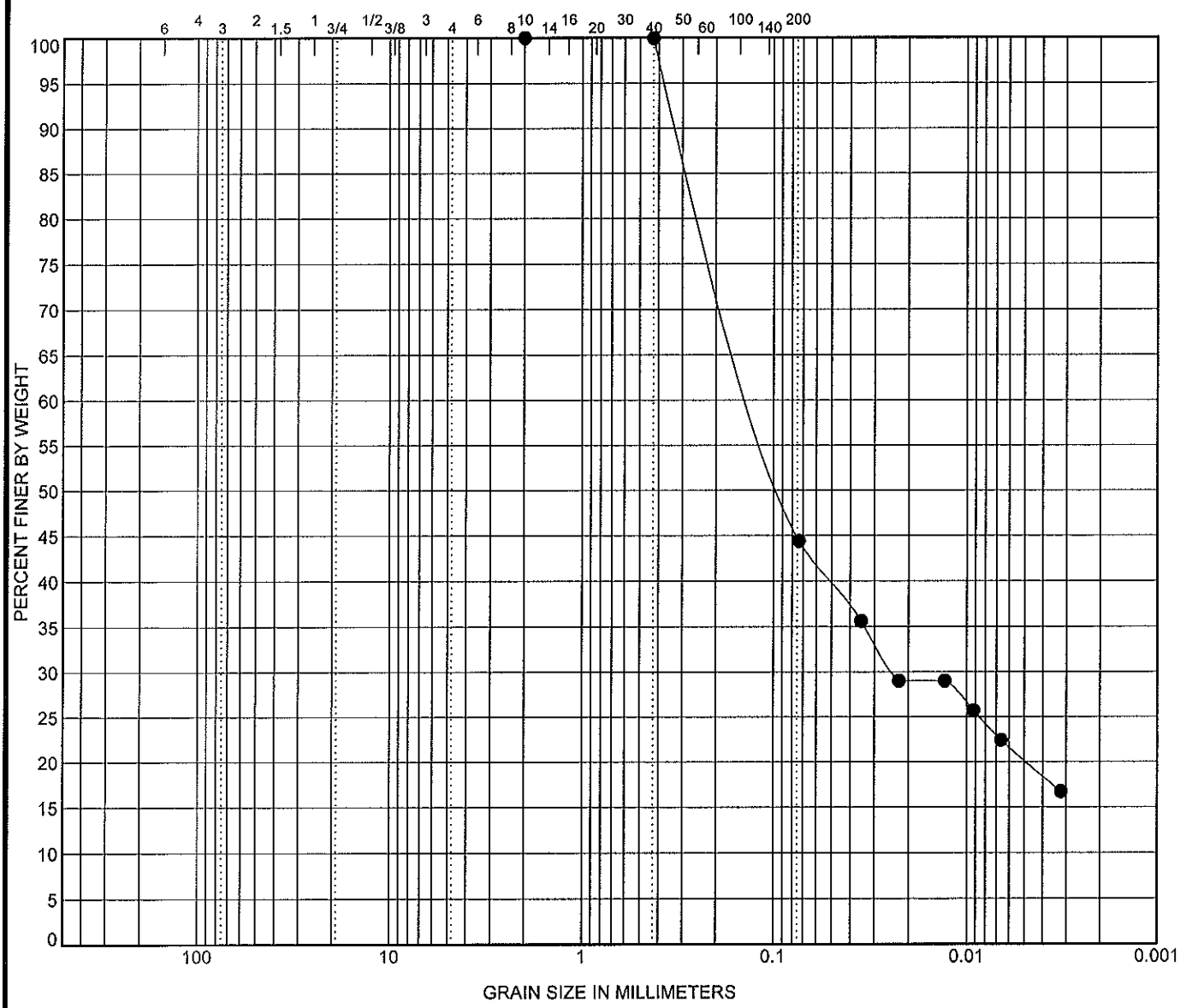
GRAIN SIZE DISTRIBUTION

Project: Buckeye Ethanol Plant

Location: South Point, Ohio

CTL Project Number: 06050283COL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
● B-2	SS-5	13.5	**A-4a SAND (SC-SM) Some Silt, Little Clay**	9	22	18	4		

Boring No	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-2	SS-5	13.5	2	0.121	0.088	0.024		0	56	24	20

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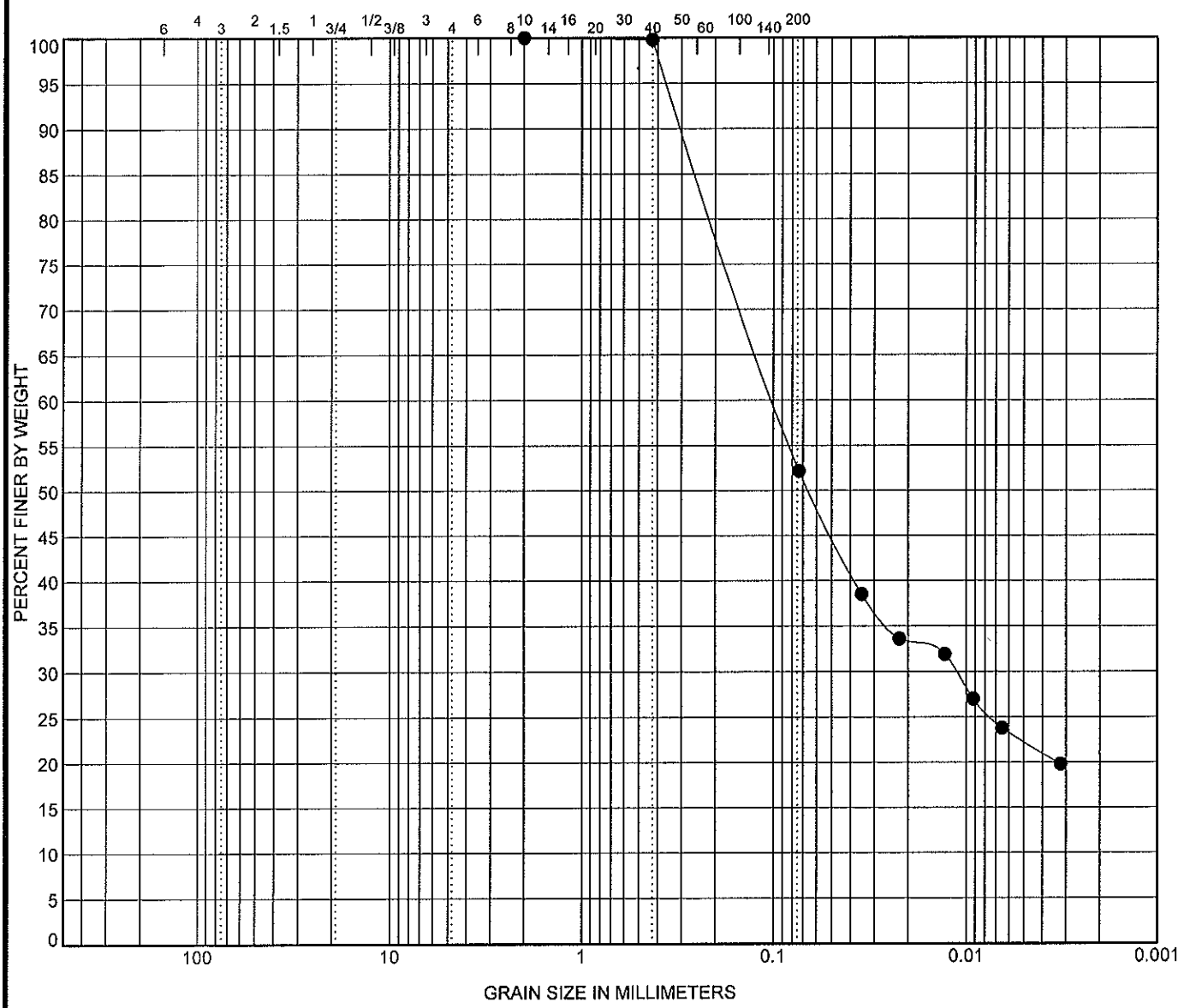
GRAIN SIZE DISTRIBUTION

Project: Buckeye Ethanol Plant

Location: South Point, Ohio

CTL Project Number: 06050283COL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
●	B-3	SS-6	18.5	**A-4a SANDY SILT (CL-ML) Some Clay**	8	22	18	4		

	Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-3	SS-6	18.5	2	0.098	0.065	0.011		0	48	30	22

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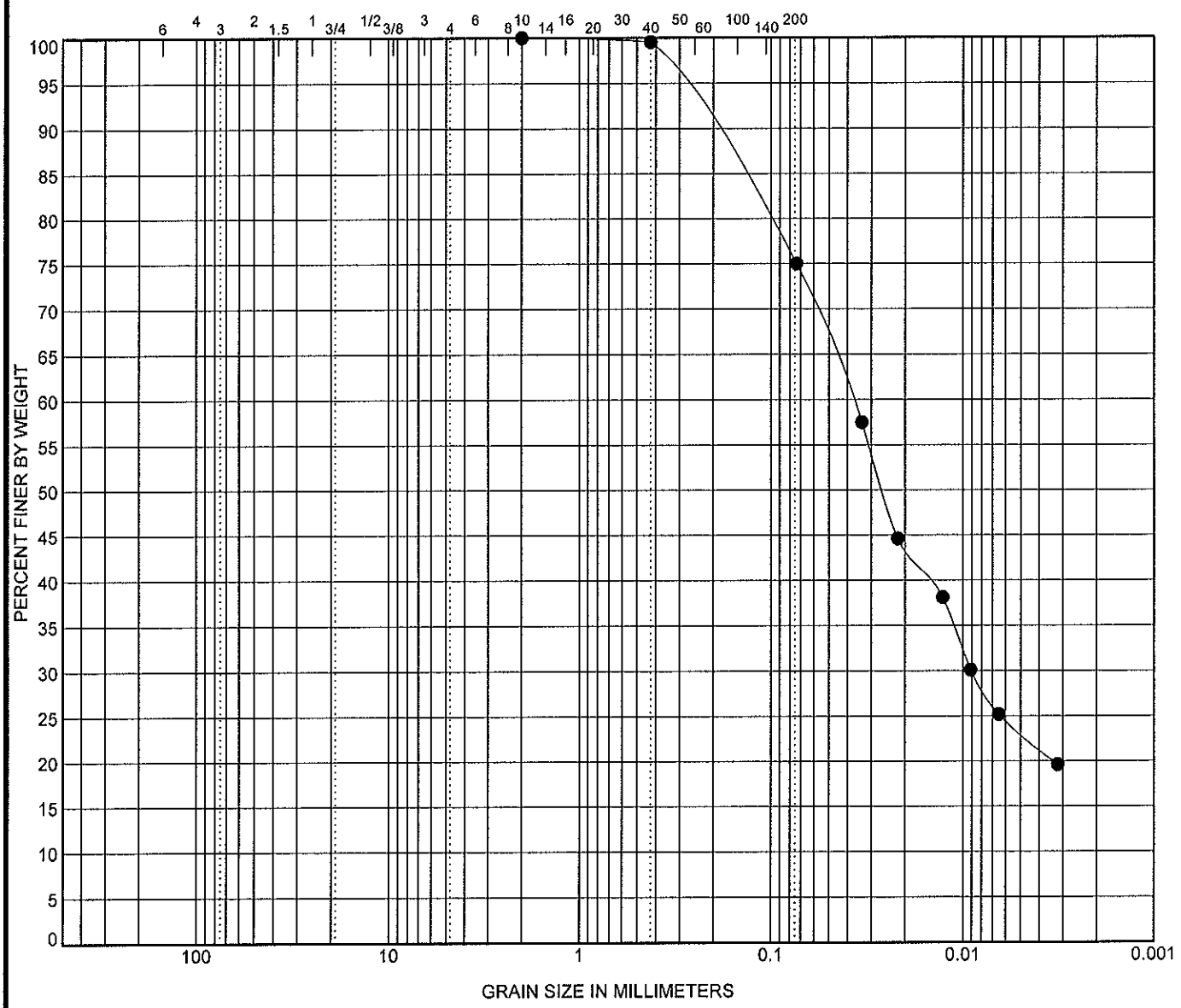
GRAIN SIZE DISTRIBUTION

Project: Buckeye Ethanol Plant

Location: South Point, Ohio

CTL Project Number: 06050283COL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
● B-4	SS-3	5.5	**A-4b SILT (CL)** **Some Sand, Some Clay**	19	29	19	10		

Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-4	SS-3	5.5	2	0.038	0.026	0.009		0	25	52	23

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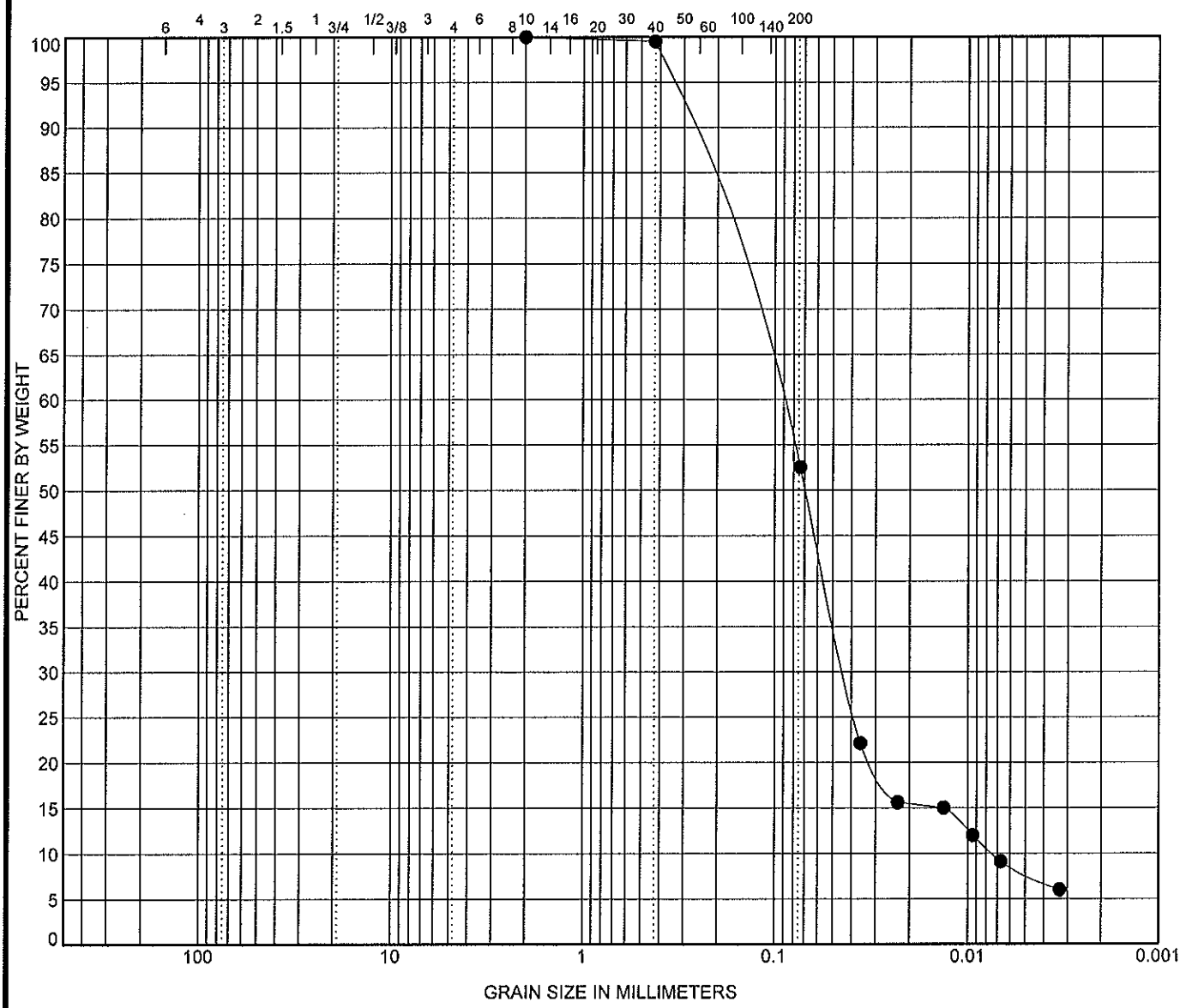
GRAIN SIZE DISTRIBUTION

Project: Buckeye Ethanol Plant

Location: South Point, Ohio

CTL Project Number: 06050283COL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
●	B-4	SS-5	13.5	A-4a SANDY SILT (ML) Traces of Clay	27	NP	NP	NP	2.58	13.08

	Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-4	SS-5	13.5	2	0.097	0.069	0.043	0.007	0	47	45	8

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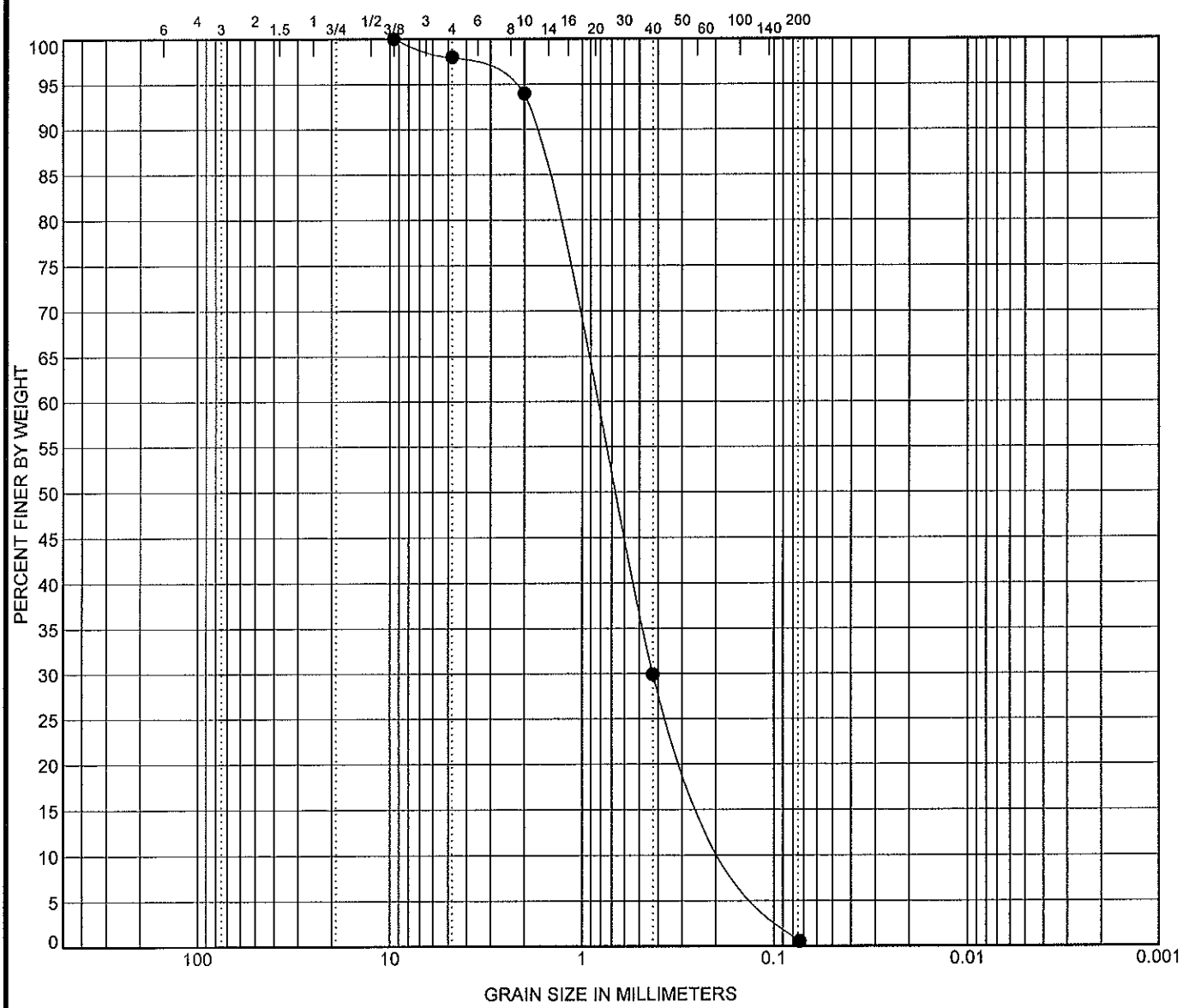
GRAIN SIZE DISTRIBUTION

Project: Buckeye Ethanol Plant

Location: South Point, Ohio

CTL Project Number: 06050283COL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
●	B-5	SS-8	28.5	**SAND (SW)** **Traces of Gravel, Trace of Silt and Clay**	4				1.59	6.79

	Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-5	SS-8	28.5	9.525	0.88	0.691	0.426	0.129	2	97	1	

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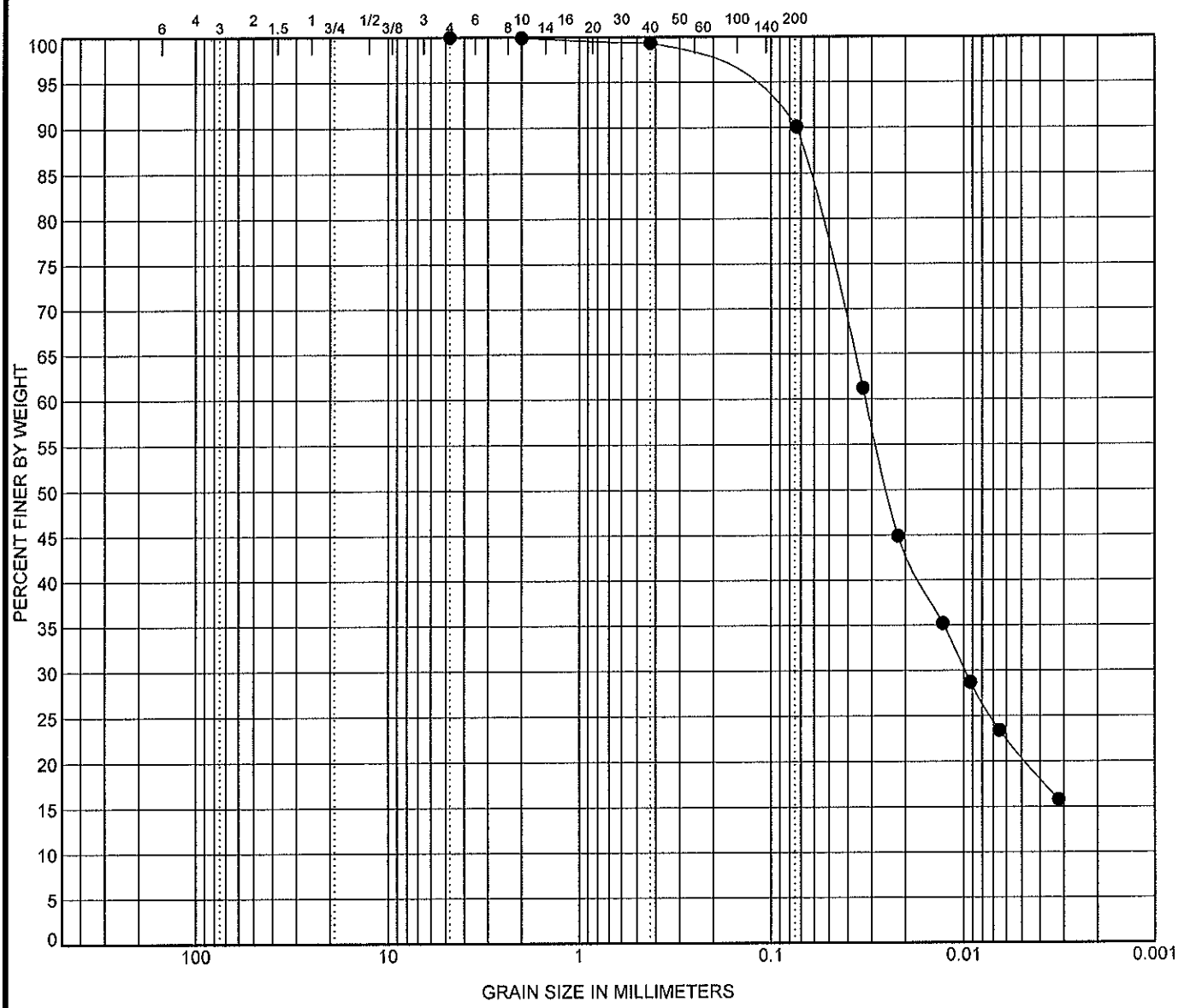
GRAIN SIZE DISTRIBUTION

Project: Buckeye Ethanol Plant

Location: South Point, Ohio

CTL Project Number: 06050283COL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
●	B-6	SS-3	5.5	A-4b SILT (CL-ML) Some Clay, Traces of Sand	22	25	21	4		

	Boring No	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-6	SS-3	5.5	4.75	0.032	0.025	0.01		0	10	69	21

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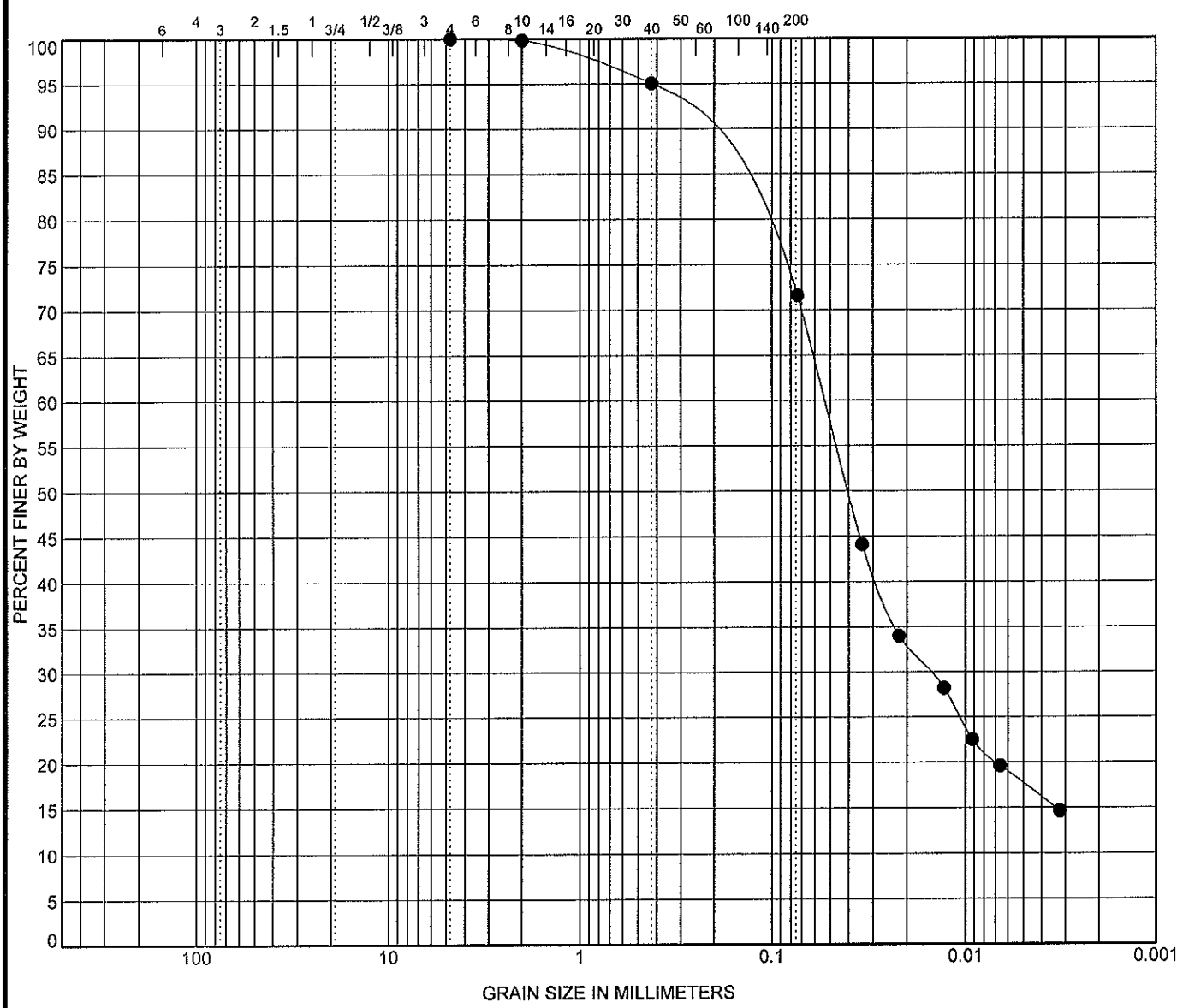
GRAIN SIZE DISTRIBUTION

Project: Buckeye Ethanol Plant

Location: South Point, Ohio

CTL Project Number: 06050283COL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
● B-8	SS-4	8.5	**A-4b SILT (ML)** **Some Sand, Little Clay**	19	21	18	3		

Boring No	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-8	SS-4	8.5	4.75	0.053	0.04	0.015		0	28	54	18

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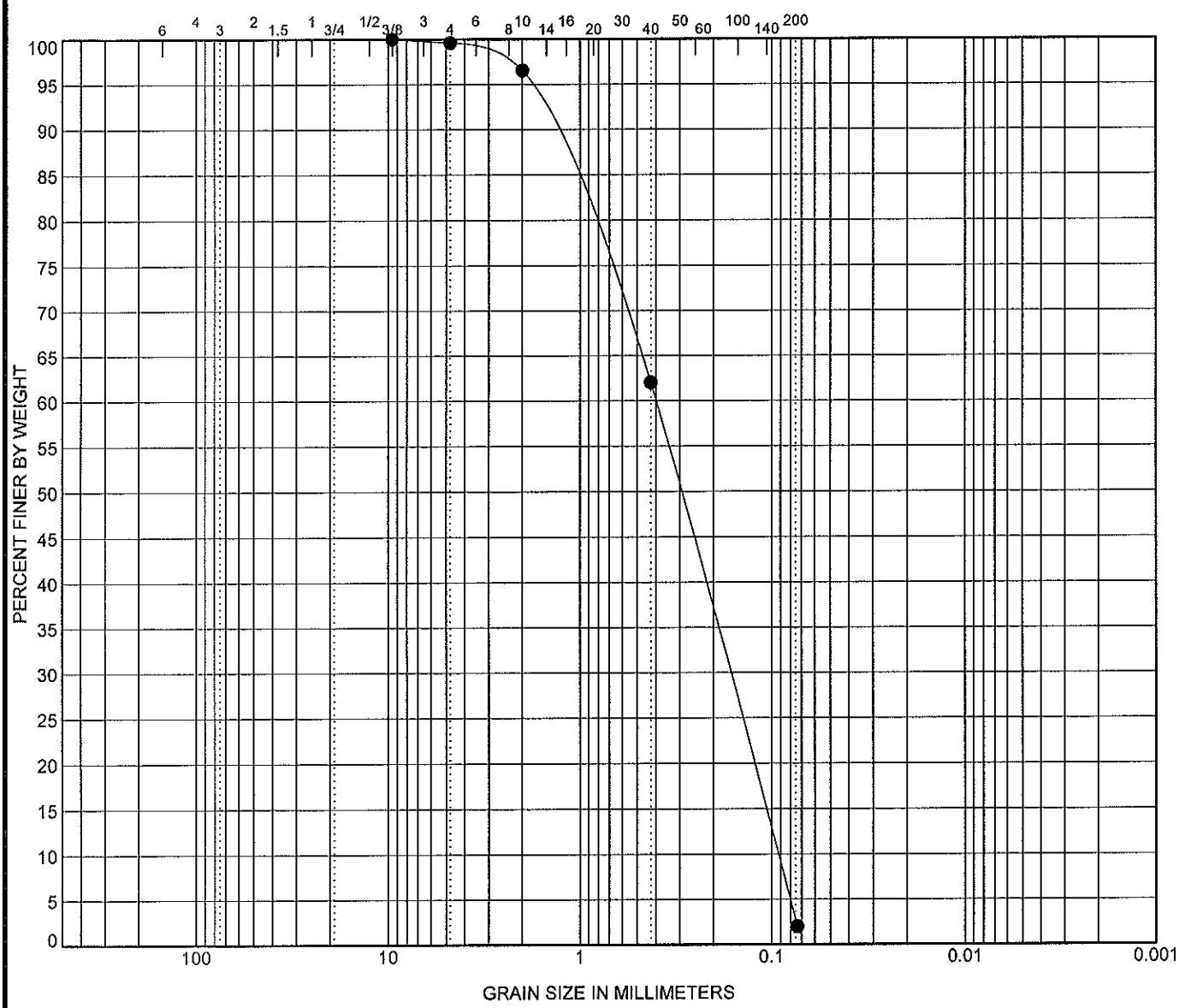
GRAIN SIZE DISTRIBUTION

Project: Buckeye Ethanol Plant

Location: South Point, Ohio

CTL Project Number: 06050283COL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
● B-8	SS-7	23.5	**A-3 SAND (SP)** **Traces of Silt and Clay**	7	NP	NP	NP	0.75	4.3

Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-8	SS-7	23.5	9.525	0.401	0.299	0.167	0.093	0	98	2	

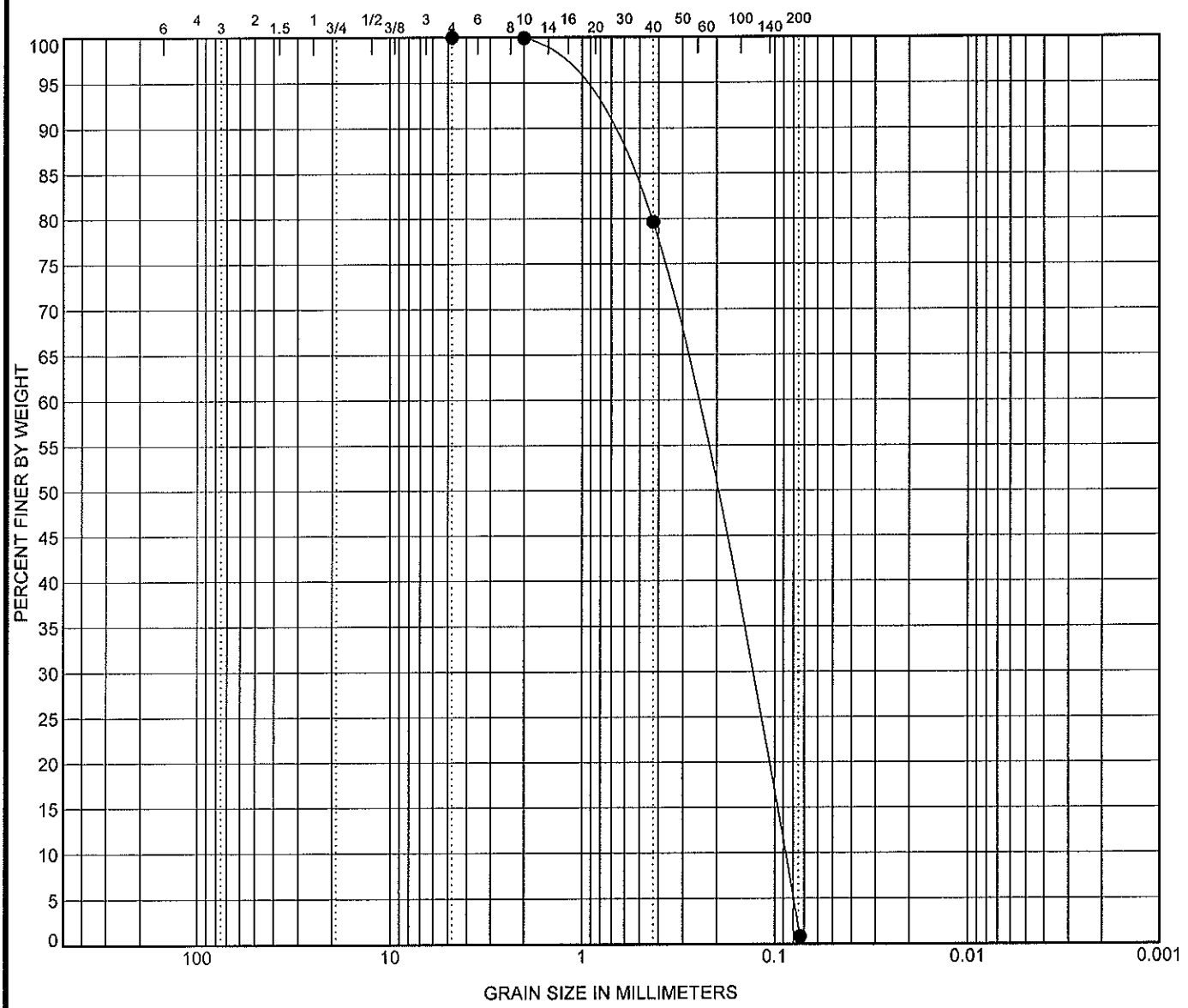
CTL Engineering, Inc.
2860 Fisher Road
Columbus, Ohio 43204
Telephone: (614) 276-8123
Fax: (614) 276-6377

GRAIN SIZE DISTRIBUTION

Project: Buckeye Ethanol Plant

Location: South Point, Ohio

CTL Project Number: 06050283COL



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
● B-8	SS-11	43.5	**A-3 SAND (SP)** **Trace of Silt and Clay**	26	NP	NP	NP	0.8	3.04

Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-8	SS-11	43.5	4.75	0.275	0.22	0.141	0.09	0	99	1	

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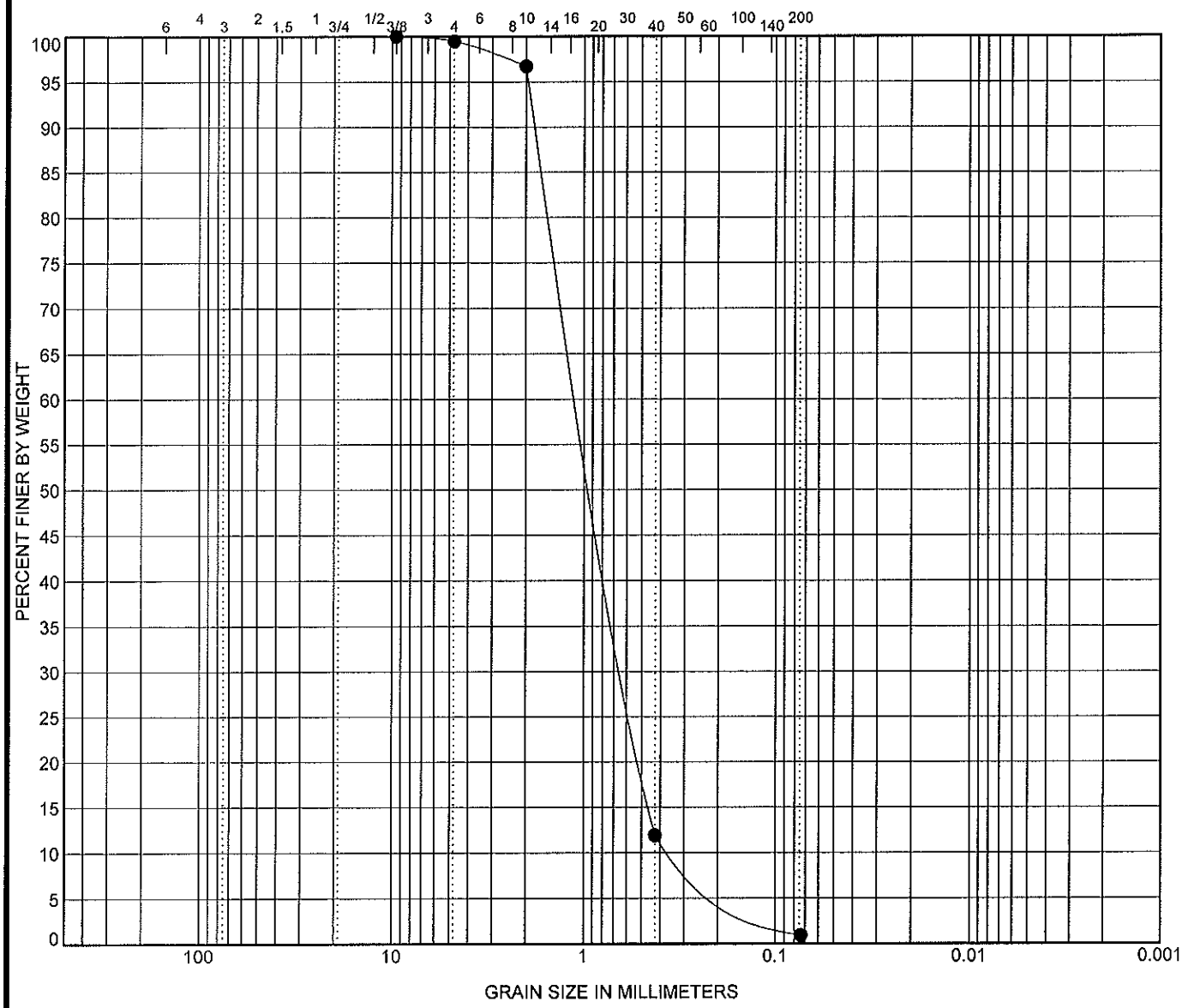

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
●	B-9	SS-9	33.5	SAND (SP) Trace of Gravel	8				1.09	3.26

	Boring No	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-9	SS-9	33.5	9.525	1.023	0.852	0.591	0.314	1	99		

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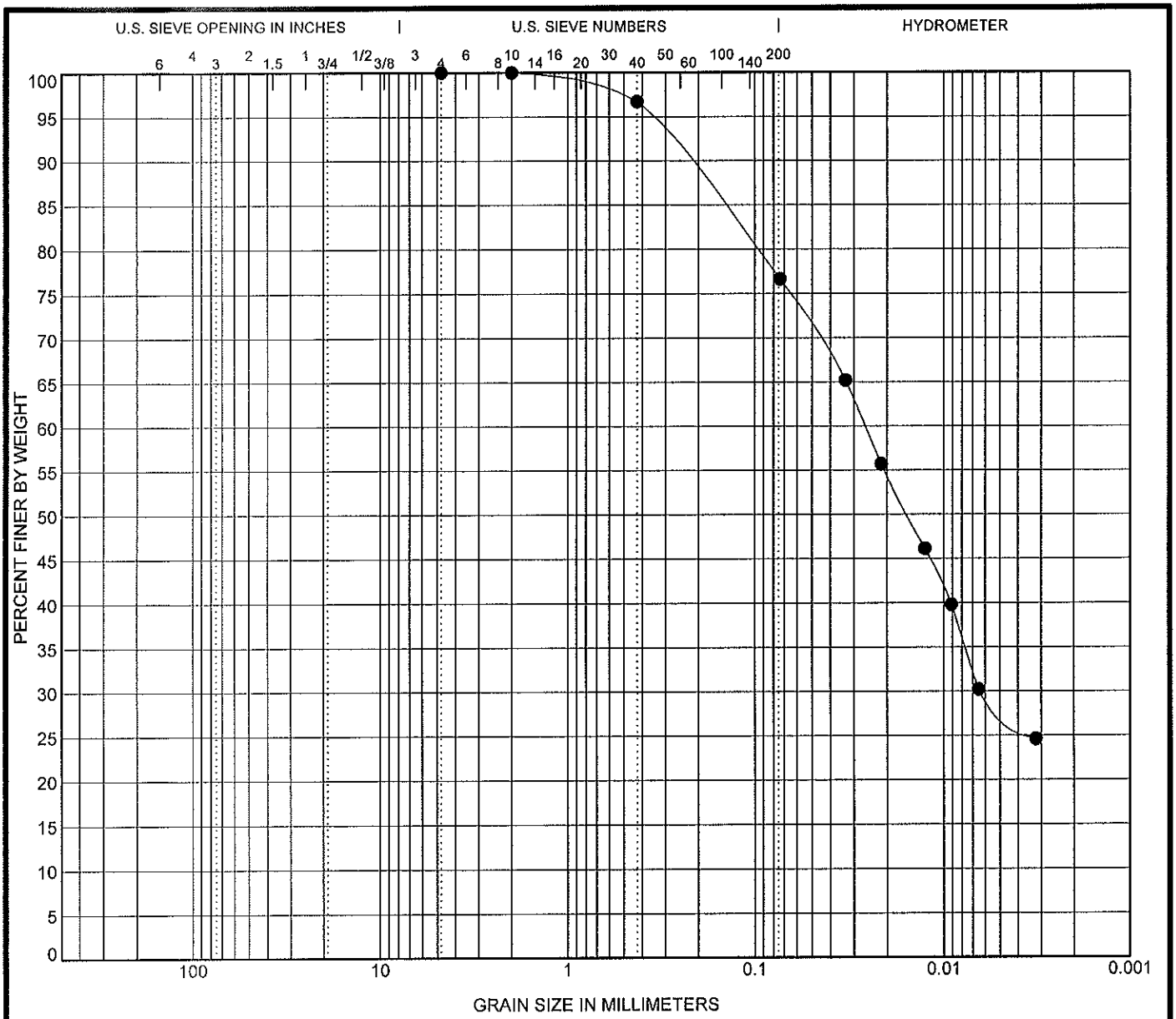

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
●	B-10	SS-5	11.0	**A-4a CLAYEY SILT (CL-ML) Some Sand**	23	24	17	7		

	Boring No	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-10	SS-5	11.0	4.75	0.026	0.016	0.006		0	23	49	28

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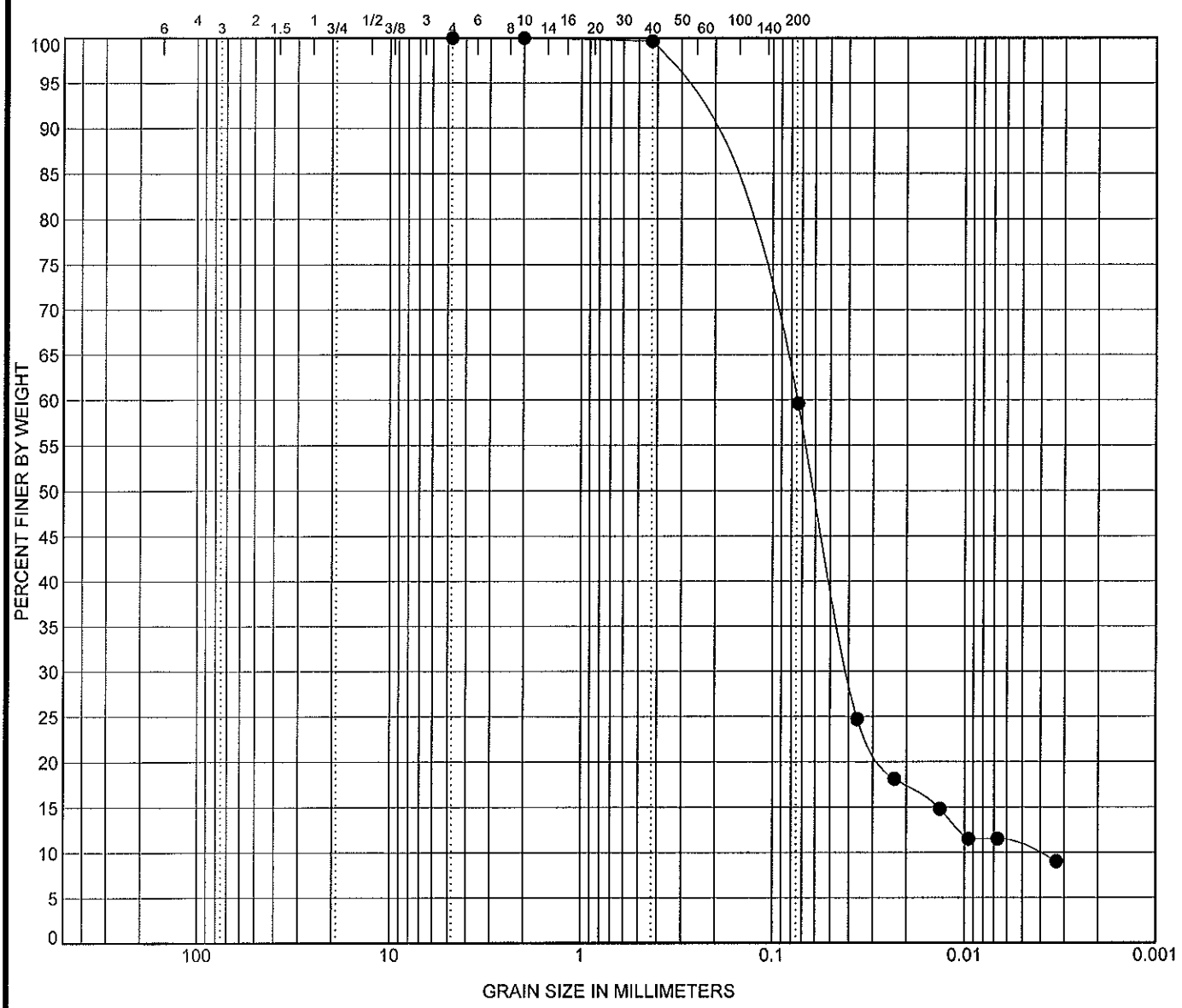

COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Sample	Depth	Classification	%MC	LL	PL	PI	Cc	Cu
●	B-10	SS-8	23.5	**A-4b SILT AND SAND (ML)** **Traces of Clay**	28	NP	NP	NP	4.93	17.12

	Boring No.	Sample	Depth	D100	D60	D50	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-10	SS-8	23.5	4.75	0.075	0.061	0.04	0.004	0	40	50	10

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Location: South Point, Ohio

CTL Project Number: 06050283COL

CTL Engineering Inc.
2860 Fisher Road, P.O. Box 44548, Columbus, Ohio 43204-3538
Phone: 614/276-8123 • Fax: 614/276-6377
e-mail: ctl@ctleng.com

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Established 1927

REPORT ON SAMPLE OF CORES

CLIENT: Kokosing Construction
6253 Westerville Road
Westerville, OH 43081-4046
ATTN: Mr. Michael Hullinger

DATE REPORTED: 11/16/06
DATE TESTED: 11/16/06
DATE RECEIVED: 11/16/06
SAMPLED BY: Client

LAB CODE NO.: 6203
PROJECT NO.: 06050283COL
PROJECT: Buckeye Ethanol Plant
IDENTIFICATION: Sandstone

****

COMPRESSION & UNIT WEIGHT
TEST RESULTS (ASTM D 2938)

CORE NO.	DIAMETER (in)	ACTUAL LENGTH (in)	WEIGHT (grams)	UNIT WEIGHT (lb/ft^3)	TOTAL LOAD (lbf)	COMPRESSIVE STRENGTH (psi)
B-1,RC-2	1.98	4.9	606.0	153.0	21,910	7,300

NOTE: Cores were tested at "as-received" Moisture content.

****

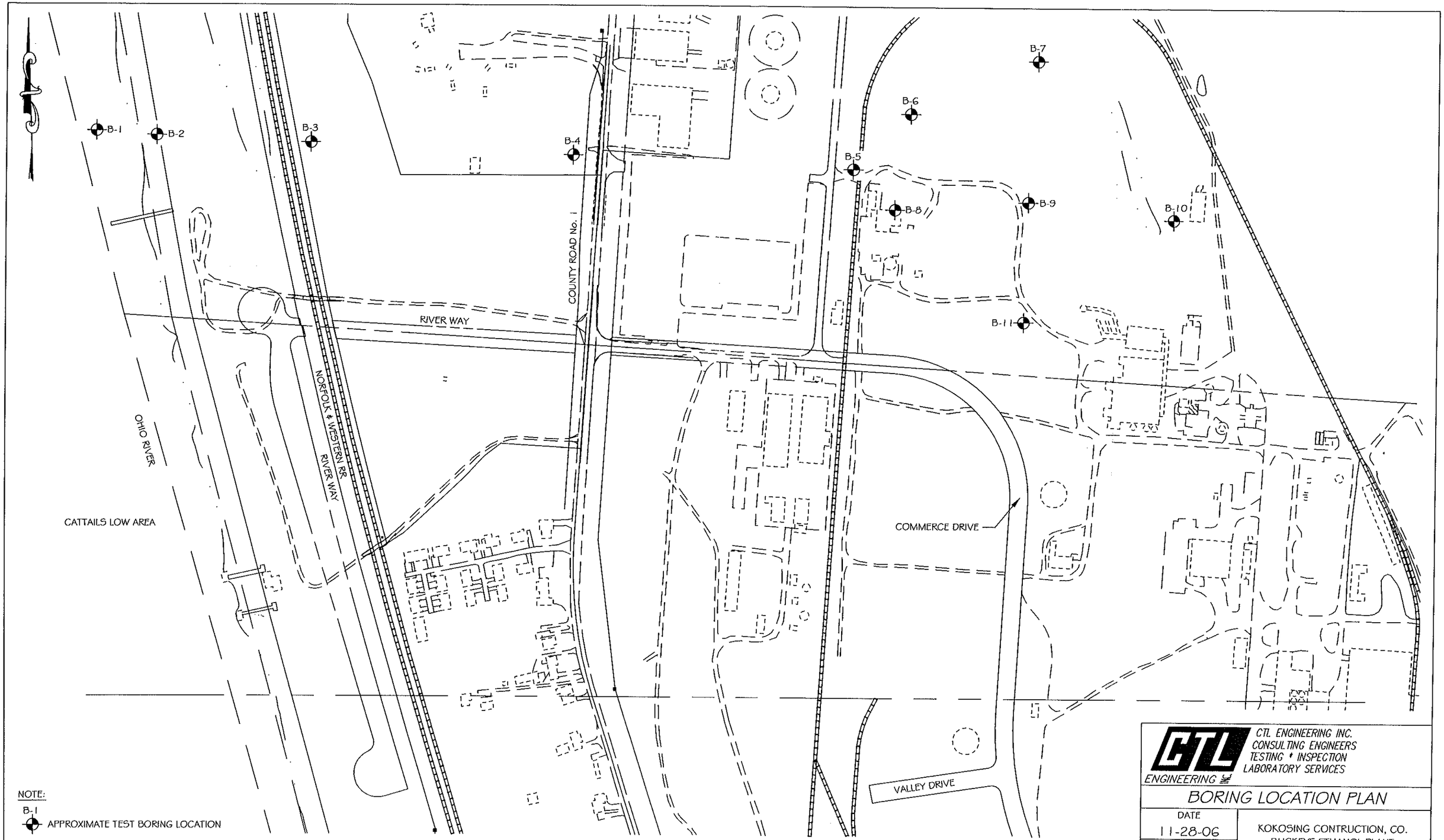
Respectfully submitted,
CTL ENGINEERING, INC.

Donald S. Pierce, P.E.
CML Manager

mlc

APPENDIX C

BORING LOCATION PLAN/ SOIL PROFILE SHEETS



NOTE:

B-1 ⊕ APPROXIMATE TEST BORING LOCATION

APPROXIMATE GROUND SURFACE ELEVATIONS AT THE BORING LOCATIONS WERE DETERMINED USING GPS SURVEY METHODS.

CTL ENGINEERING INC.
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TESTING + INSPECTION
LABORATORY SERVICES

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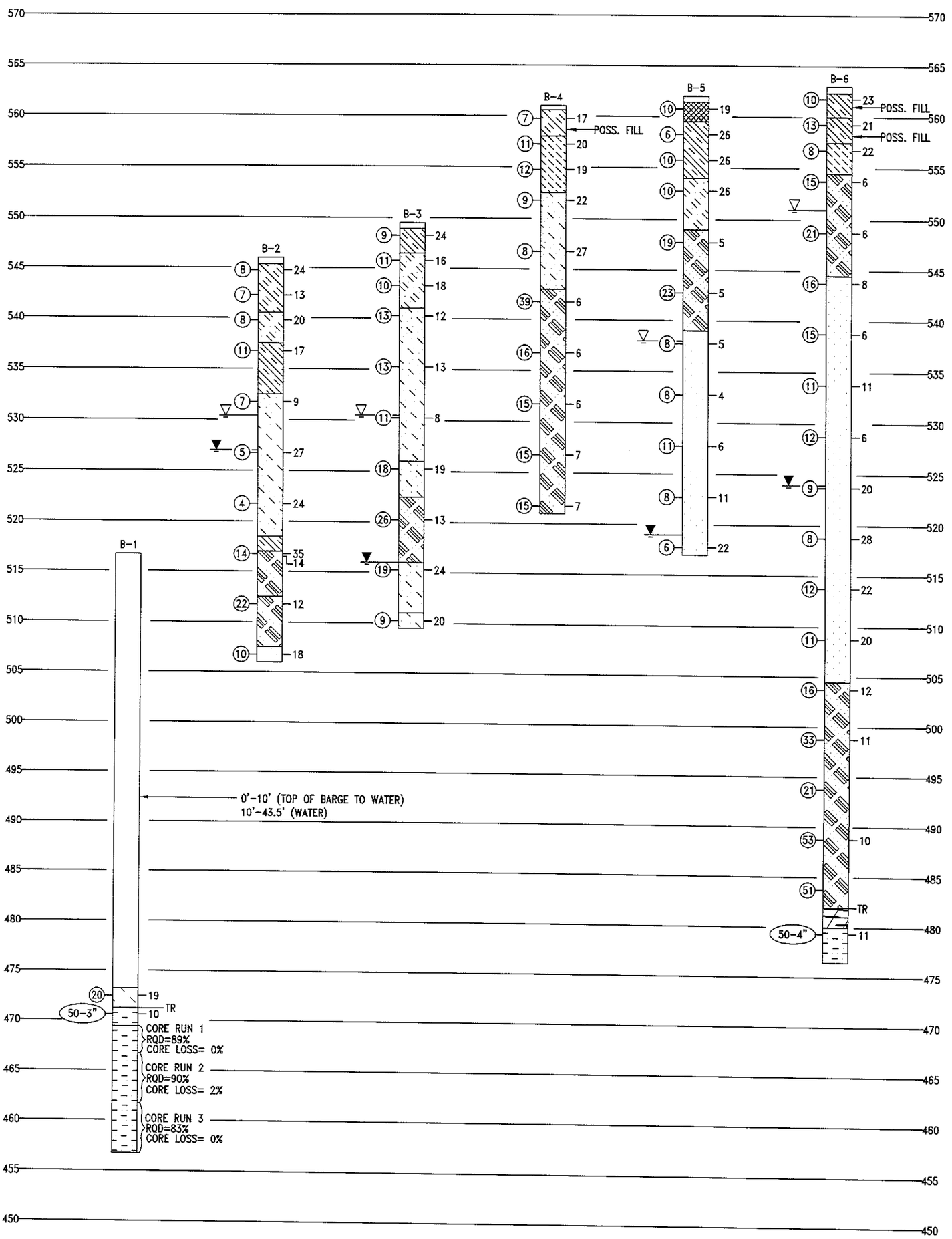
BORING LOCATION PLAN

DATE			
11-28-06	KOKOSING CONTRUCTION, CO. BUCKEYE ETHANOL PLANT SOUTH POINT, OHIO		
SCALE			
AS SHOWN			
DRAWN BY	REVIEWED BY	PAGE	PROJECT NO.
C.N.	MP	1 OF 3	06050283COL



LEGEND

- TOPSOIL
- BITUMINOUS CONCRETE
- PORTLAND CEMENT CONCRETE
- CRUSHED AGGREGATE GRAVEL/COBBLES
- FILL
- PEAT
- CLAY
- SILT
- SAND
- BOULDERS
- SAND \ GRAVEL
- WEATHERED SHALE
- SILTSTONE
- SANDSTONE
- LIMESTONE
- COAL
- SHALE
- CLAYSHALE

- GROUND WATER DURING DRILLING
- GROUND WATER AT COMPLETION OF DRILLING
- GROUND WATER AT "N" HOURS AFTER COMPLETION
- —W MOISTURE CONTENT IN PERCENT (w)
- (N)— STANDARD PENETRATION IN BLOWS PER FOOT (N)
- —TR TOP OF ROCK

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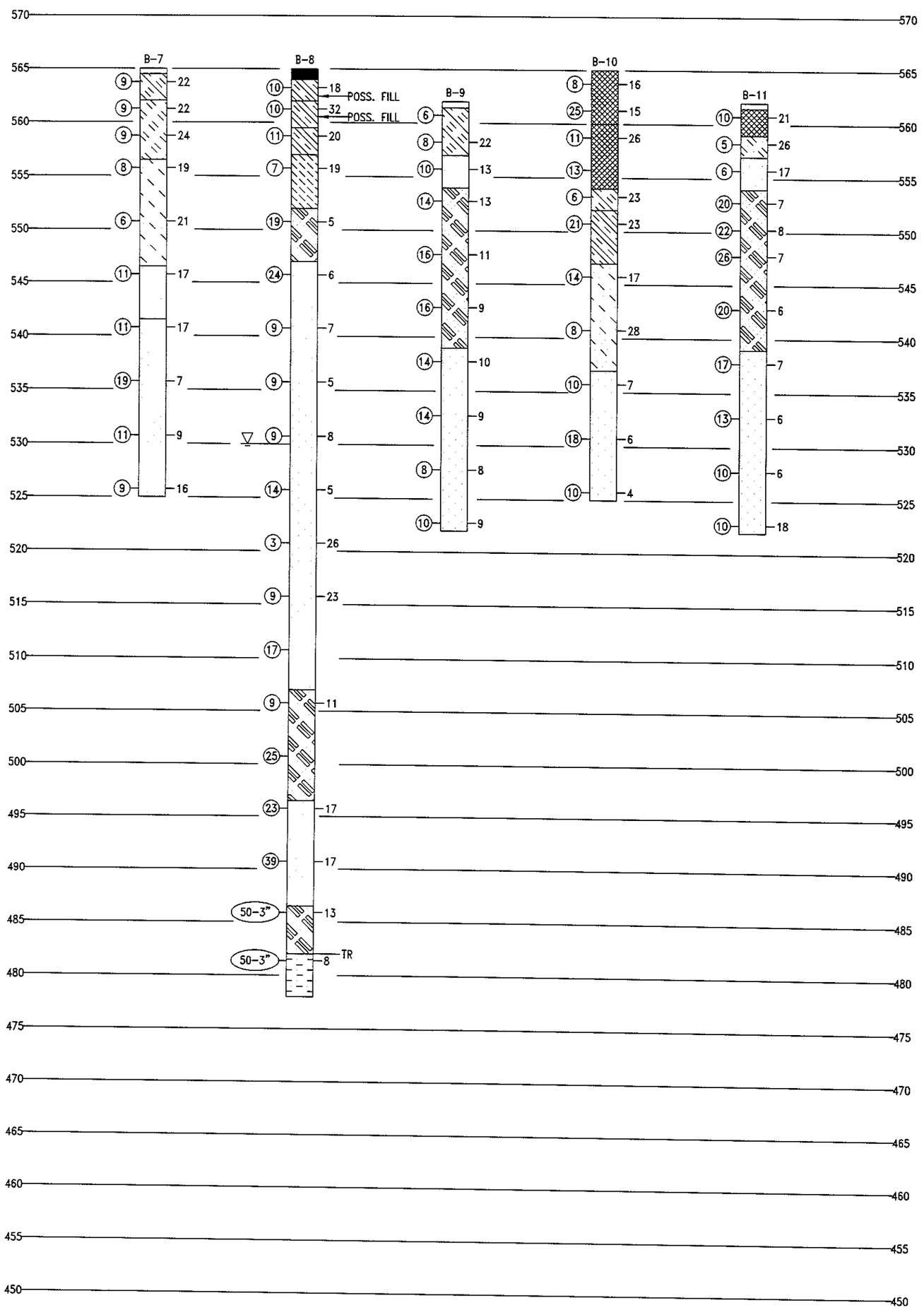
SOIL PROFILE

DATE	KOKOSING CONTRUCTION, CO.
04 DEC 06	BUCKEYE ETHANOL PLANT
SCALE	SOUTH POINT, OHIO
AS SHOWN	

DRAWN BY	REVIEWED BY	PAGE	PROJECT NO.
N.K.S.	MP	2 OF 3	06050283COL



LEGEND

- TOPSOIL
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- CRUSHED AGGREGATE GRAVEL/COBBLES
- FILL
- PEAT
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- SILT
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- SAND \ GRAVEL
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- SHALE
- CLAYSHALE
- GROUND WATER DURING DRILLING
- GROUND WATER AT COMPLETION OF DRILLING
- GROUND WATER AT "N" HOURS AFTER COMPLETION
- —W MOISTURE CONTENT IN PERCENT (w)
- (N)— STANDARD PENETRATION IN BLOWS PER FOOT (N)

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SOIL PROFILE

DATE	KOKOSING CONTRUCTION, CO.
04 DEC 06	BUCKEYE ETHANOL PLANT
SCALE	SOUTH POINT, OHIO
AS SHOWN	

DRAWN BY	REVIEWED BY	PAGE	PROJECT NO.
N.K.S.	MP	3 OF 3	06050283COL