



February 3, 2014

2390081003

Mrs. Cheri Hobson-Matthews
Planning & Zoning Director
Henry County Planning & Zoning Department
140 Henry Parkway
McDonough, GA 30253

RE: **GEOTECHNICAL INVESTIGATION DATA REPORT
SEMINOLE ROAD LANDFILL SURFACE MINING PERMIT
ELLENWOOD, HENRY COUNTY, GEORGIA**

Dear Mrs. Hobson-Matthews:

This report presents the results of the geotechnical investigation completed by Golder Associates Inc. (Golder) at the site of a proposed Surface Mining Borrow Pit at Linecrest Road in Ellenwood, Henry County, Georgia. The purpose of the geotechnical investigation was to perform soil borings in accessible portions of the site to generally characterize subsurface conditions within the footprint of the proposed Surface Mining Borrow Pit.

This report includes a summary of the project, a description of the procedures used to carry out the geotechnical exploration, subsurface conditions encountered, and measured water levels. Soil borings results are attached to this report.

1.0 INTRODUCTION

On behalf of DeKalb County Sanitation Division, Golder is developing an engineering concept, recommendations, and construction plans and documents for surface mining activities at Linecrest Road in Ellenwood, Henry County, Georgia.

The surface mining borrow pit is to be excavated on a ±19.25 acre tract of land. This tract of land is composed of six residential properties, four of which had homes at one time. Currently the tract of land is vacant. A power line easement owned by Snapping Shoals EMC runs within the property along the eastern property line, adjacent to Bond Drive. The excavation for the surface mining borrow pit will generally extend 10 feet below existing ground surface (ft-bgs) to the northern portion of the property and slope at a 1% grade to the existing ground surface near the southern portion of the property. Soil excavated will be used for daily cover and other construction at Seminole Road Landfill.

Storm water collected within the limits of the surface mining borrow pit will be discharged through a proposed 48-inch diameter reinforced concrete pipe (RCP) culvert beneath Linecrest Road. This storm water pipe will replace the existing 36-inch RCP culvert and be installed at a lower elevation to discharge storm water from the entire surface mining borrow pit onto Seminole Road Landfill property where it will be diverted to existing storm water detention ponds.

A geotechnical investigation was conducted by Golder to characterize subsurface conditions at the four locations shown on Figure 1. The investigation was limited to these areas which were accessible to a drill rig without any clearing.

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2.0 SITE DESCRIPTION

The proposed surface mining borrow pit is located in a residential area. The vacant ± 19.25 acre property is densely wooded and residences have been removed from the parcels. The property is located between Bond Drive and Linecrest Road in Ellenwood, Henry County, Georgia. Surface mining activities will be within the footprint of the ± 19.25 acre property. Seminole Road Landfill lies to the north of Linecrest Road. Access to the site is located at four entry points with main access at 3239 Linecrest Road, Ellenwood, Ga 30294 and 267 Bond Drive, Ellenwood, Ga 30294.

Our geotechnical investigation was limited to clearings in the northwest portion of the site near Linecrest Road and the eastern-central portion of the site near Bond Drive. Topography across the site varies from a high of about 970 feet above mean sea level (ft-msl) in the eastern-central portion of the site with low elevations of approximately 950 ft-msl along the northern and southern site boundaries. No rock outcroppings or surface water features (i.e., ponds, streams or wetland areas) were observed by Golder in the accessible areas of the site.

2.1 Existing Structures

Remnants of former residences consist of support stones in the footprint of the former structure locations. Small structures such as sheds or rock fencing can be found within the ± 19.25 acre property as well.

The upstream headwall of the existing 36-inch RCP storm water culvert is located within the right-of-way of Linecrest Road on the surface mining borrow pit side of the road. The culvert is located to the east of the parcel at 3245 Linecrest Road. The culvert advances from the headwall in a northern direction beneath Linecrest Road to where it discharges onto the Seminole Road Landfill property. The drainage channel receiving flow from the culvert ultimately discharges to detention pond 9. Runoff from the northwest portion of the site enters a roadside drainage channel that discharges to a creek that bypasses detention pond 2.

3.0 SUBSURFACE EXPLORATION PROCEDURES

On December 19, 2013, Golder conducted a subsurface exploration in the footprint of the proposed surface mining borrow pit to evaluate general subsurface stratigraphy, primarily depths to auger refusal and groundwater. The following subsections describe the methodology of the exploration program. Approximate borehole locations are indicated on Figure 1 while Figure 2 represents the geologic profile of the borings.

3.1 Soil Borings

Piedmont Environmental Drilling Inc. (Piedmont), under contract to Golder, performed the geotechnical drilling using an all-terrain rubber-track drill rig. Boreholes were advanced using 2.25-inch inner diameter hollow stem augers. Two of the boreholes were drilled in general accordance with ASTM D1586 and standard penetration tests (SPT) were performed using a split-barrel SPT sampler. Borings B-1 and B-2 are located in the northern portion of the property near Linecrest Road, while boring B-3 and B-4 are located in the eastern portion of the property near Bond Drive. Borings B-1 and B-3 were advanced from ground surface using hollow stem augers where SPT sampling was conducted at 10 foot intervals to a depth of 40 ft-bgs. Borings B-2 and B-4 were advanced from ground surface using hollow stem augers to depths of 50 and 41 ft-bgs, respectively, with no SPT sampling. Bag samples for B-2 and B-4 were taken at 25 foot intervals. Figure 1 shows the approximate borehole locations.

SPT sampling was only conducted at Borings B-1 and B-3 due to time constraints resulting from equipment failure of the all-terrain rubber-track drill rig. In order to achieve the desired number of borings, Borings B-2 and B-4 were advanced from ground surface using hollow stem augers without SPT sampling to expedite the drilling process. Samples obtained in Borings B-1 and B-3 were classified as residual soil. Borings B-2 and B-4 provided supplemental information with regard to the depth of groundwater, dense soil layers or rock lenses, and auger refusal.

During the subsurface exploration, a Golder engineer characterized soils encountered and recorded drilling observations on field borehole logs. The soils were identified and logged in general accordance with ASTM D2488 and Golder's standard field procedures. In describing the soils, properties such as grain size, plasticity, color, consistency/compactness, moisture, and structure were recorded; details of the soils encountered during drilling are presented on Records of Boreholes in Attachment A and Figure 2 – Geologic Profile of Soil Borings. The presence and depths of groundwater infiltration were also recorded at the time of drilling, if observed. SPT soil samples were collected and stored in clean glass containers.

4.0 SITE SUBSURFACE CONDITIONS

Materials encountered during the geotechnical exploration include: 3 to 4 inches of topsoil, residual soils, and bedrock/float rock. The distribution and characteristics of these materials and associated groundwater conditions are discussed in detail in the following subsections.

4.1 Residual Soils

Residual soils in the Piedmont physiographic province are the result of in-place weathering of the parent bedrock. Residual soil was encountered in all four borings to depths ranging from 40 to 50 ft-bgs. Residual soils consisted of brown and gray silty sand and sandy silt with some mica and rock fragments. Silts encountered in this zone were generally low plasticity. SPT blow counts ranged from 13 to 53 bpf. Boring B-4 penetrated thin rock lenses at about 19 to 20 ft-bgs.

4.2 Auger Refusal

Auger refusal is typically interpreted as the top of competent bedrock where no rock coring is performed but may indicate rock lenses or boulders suspended within soil or partially weathered rock (PWR). Typically, a zone of PWR will be encountered prior to auger refusal occurring in sound bedrock. Top of bedrock elevations in the Piedmont physiographic province vary considerably over short horizontal distances and, dependent on differential weathering and bedrock type, pinnacles of rock may be encountered above auger refusal depths. For these reasons, caution is recommended when considering auger refusal to represent top of bedrock.

Auger refusal was encountered in Boring B-4 at a depth of 41 ft-bgs with hard drilling noted initially at a depth of 38 ft-bgs.

4.3 Groundwater

Groundwater measurements were taken 24 hours after the time of drilling. Stabilized groundwater levels may differ from those measured and seasonal fluctuations will occur. Groundwater levels were measured for Borings B-1 at 28 ft-bgs and B-2 at 33 ft-bgs. Borings B-3 and B-4 caved at depths of 31 and 32 ft-bgs, respectively. At 24 hours after the time of drilling no groundwater was present above the caved depth in either of these boreholes.

Backfilling was not completed in order to allow for future groundwater measurements to ensure more accurate field estimates of groundwater depth. The boreholes will be backfilled following the next round of groundwater measurements.

5.0 LIMITATIONS

Findings presented in this report are based on data and samples from four discrete locations from the site. It is not uncommon for subsurface conditions to vary significantly over short horizontal and vertical distances. Regardless of the thoroughness of a subsurface exploration, there is the possibility that conditions between borings will differ from those at the boring locations.

Our professional services have been performed and our findings derived in accordance with generally accepted geotechnical engineering principles and standards. Golder is not responsible for the conclusions,

opinions, or recommendations of others based on these data. Our exploration and testing did not include any assessment or evaluation of environmental conditions or contamination in the soil, groundwater, or surface water.

6.0 SUMMARY AND CLOSING

The geotechnical exploration was performed to provide a general characterization of subsurface conditions for the surface mining borrow pit along Linecrest Road. In Boreholes B-1 and B-2 conducted near Linecrest Road, residual soil was encountered, beneath a thin layer of topsoil, to depths of 40 and 50 ft-bgs. Auger refusal was not encountered in either borehole. Groundwater depths in these boreholes ranged from 28 to 33 ft-bgs, as measured 24 hours following drilling. In Borehole B-3 and B-4 near Bond Drive, residual soil was encountered to depths of 40 and 41 ft-bgs., with auger refusal in Borehole B-4 at 41 ft-bgs. No groundwater was present in Boreholes B-3 and B-4 above their caved depths of 31 and 28 ft-bgs, respectively.

In general, the findings of Golder's geotechnical investigation indicate:

- Bedrock may be present at depths of 40 ft-bgs or less; therefore, proposed excavation depths should be limited to a maximum of 40 ft-bgs.
- The borings encountered residual soil throughout their depths. No deleterious material was encountered in the four boreholes performed for the investigation; however, other unexplored areas of the site may contain unsuitable material, particularly due to the previous development of the site for residential properties.
- Groundwater was encountered at shallower depths close to Linecrest Road where groundwater was measured at 28 to 33 ft-bgs (corresponding to an elevation of approximately 932 ft-msl). Groundwater control will be necessary during the culvert replacement. Excavation/mining plans will be produced based on groundwater at approximately 28 ft-bgs near Linecrest Road and at similar elevations across the site.

We trust that this report is sufficient for your present requirements. Should you have any questions concerning this report, please do not hesitate to contact one of the undersigned.

Sincerely,

GOLDER ASSOCIATES INC.



Steve J. Cribb, PE
Senior Consultant and Associate



Kevin S. Brown, P.E.
Principal and Senior Consultant

Attachments:

- Figure 1 – Approximate Location of Soil Borings
- Figure 2 – Geologic Profile of Soil Borings
- Attachment A – Soil Boring Logs
- Attachment B – Important Information About Your Geotechnical Engineering Report

KSB/SJC



LEGEND

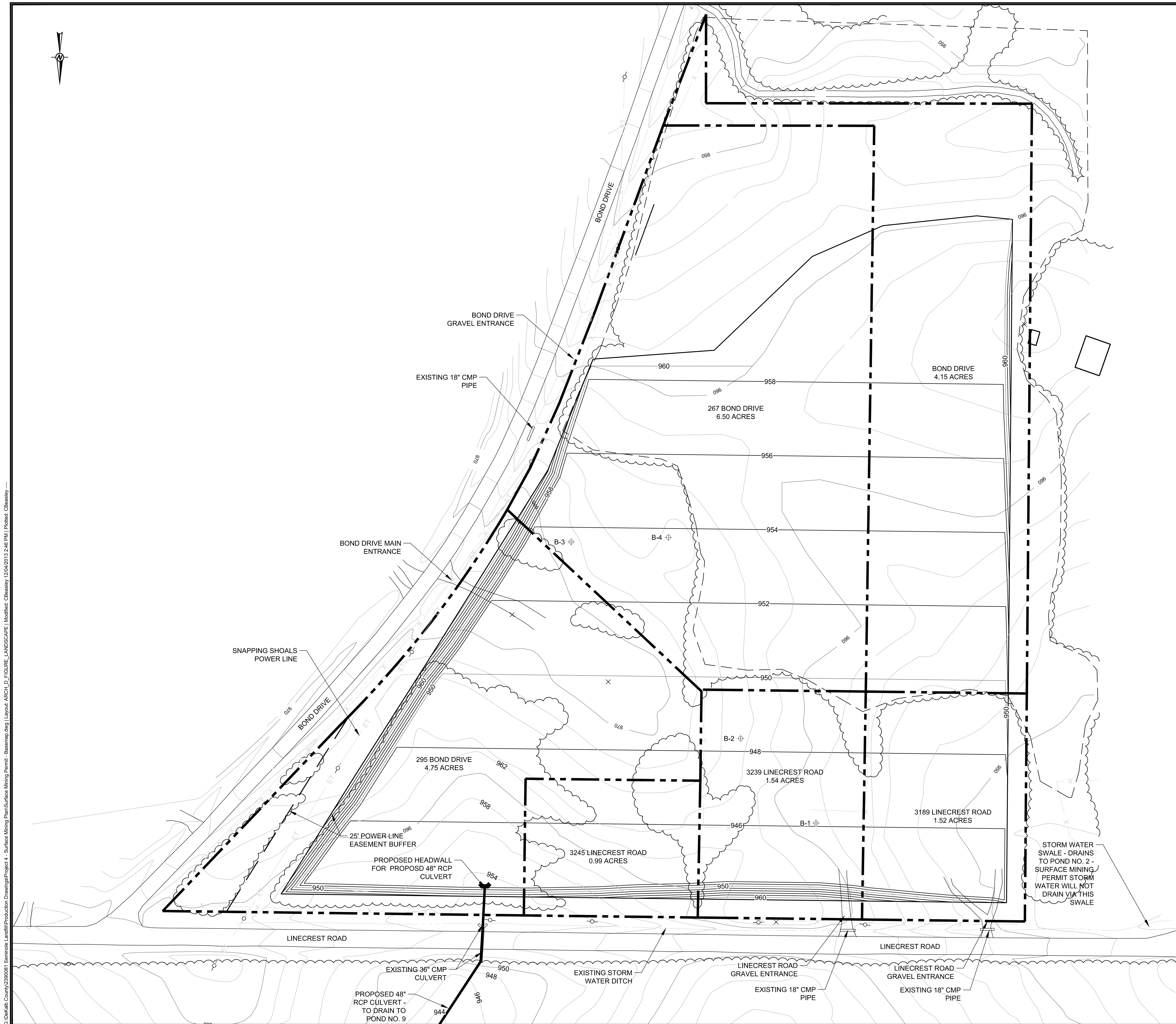
- PROPERTY BOUNDARY
- 990 EXISTING CONTOURS
- EXISTING EDGE OF ROAD
- EXISTING TREE LINE
- EXISTING FENCE
- EXISTING CHANNEL FLOW LINE
- EXISTING POWER LINE
- POWER LINE EASEMENT

NOTES

1. DRAWING TO BE USED FOR PLANNING PURPOSES.

REFERENCES / SPECIFICATIONS

1. AERIAL TOPOGRAPHIC INFORMATION PROVIDED BY BECKOM AERIAL MAPPING, DATE OF AERIAL 8/23/2013.
2. GROUND RUN SURVEY INFORMATION PROVIDED BY MARTIN SURVEYORS, DATED 10/24/2013. INFORMATION INCLUDES STORM WATER DITCHING AND PIPING, FENCING AND PROPERTY LINES.



DRAFT - FOR DISCUSSION PURPOSES

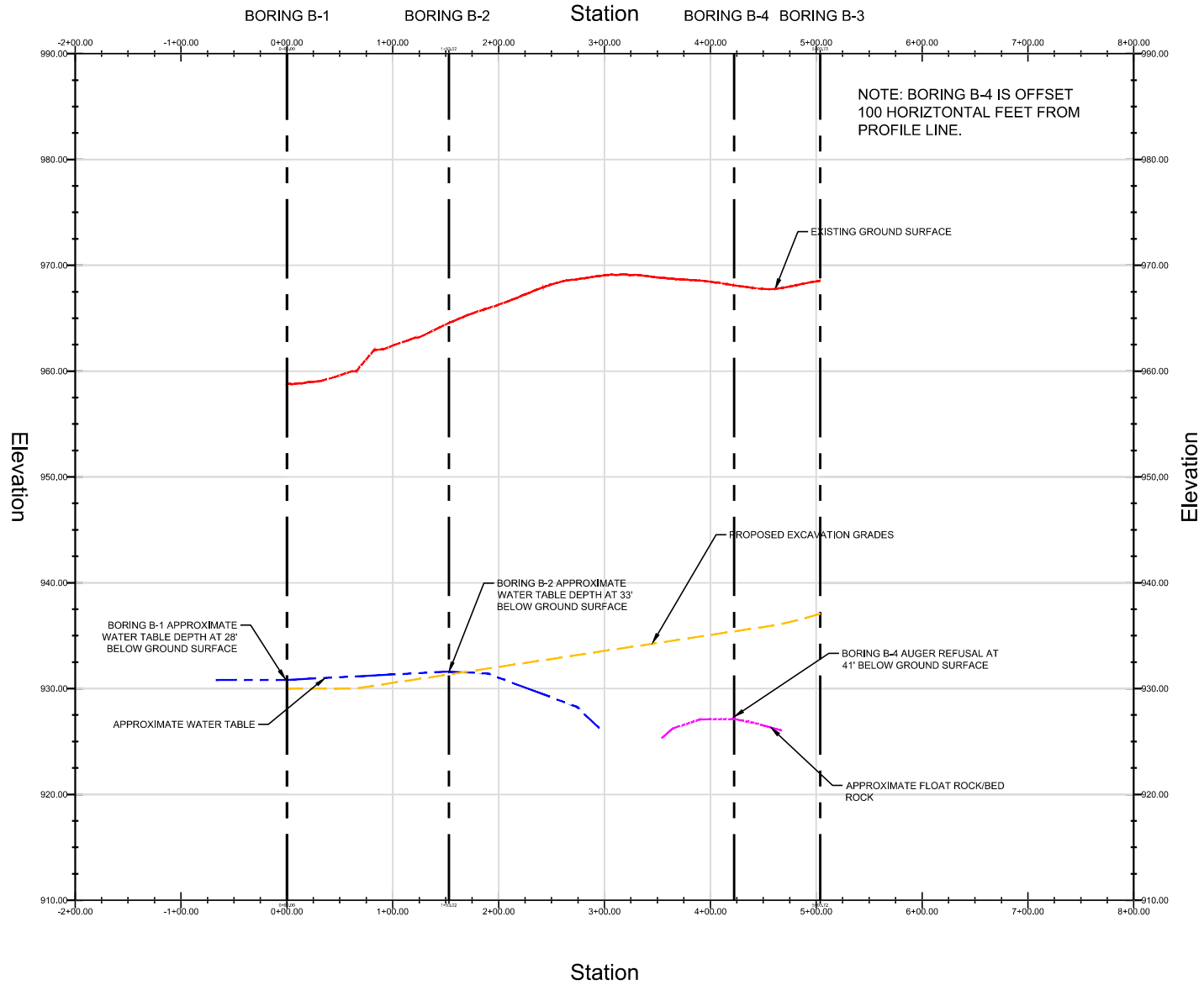


REV	DATE	REVISION DESCRIPTION	DES	CADD	CHK	RWV
PROJECT: DEKALB COUNTY SURFACE MINING PERMIT APPLICATION SEMINOLE ROAD LANDFILL						
TITLE: EXISTING CONDITIONS BASEMAP EXCAVATION 10 FEET DEPTH						
PROJECT No.		2390081-003	FILESurface Mining Permit - Basemap			
DESIGN	ACB	12/4/2013	SCALE	AS SHOWN		
CADD	ACB	12/4/2013	SHEET			
CHECK	KGB	12/4/2013				
REVIEW	KGB	12/4/2013				



G:\DeKalb County\2390081 - Seminole Landfill\Production Drawings\Project 4 - Surface Mining Plant\Surface Mining Permit - Basemap.dwg | Layout: ARCH_D_FIGURE_LANDSCAPE | Modified: C:\Users\jcherry | Printed: C:\Users\jcherry

GEOLOGIC PROFILE



CONTRACTED WITH Golden BORING NO. B-1
 PROJECT NAME 3239 Linecrest Rd. JOB NO. _____ DATE 19-12-13
 RIG: D-50 ENGINEER Chase Roast CATHEAD/AUTOHAMMER
 DRILLERS: Sorpe DRILLING METHOD: HSA

ELEV.	DESCRIPTION	DEPTH IN FEET	SAMPLES			NOTES
			NO.	BLOWS / 6"	N	
	<u>3" top soil</u>					
5'		5'				
10'	<u>Reg. hard, br, f/sa, si, some mica.</u>	10'	<u>1</u>	<u>5, 14, 28</u>	<u>42</u>	
15'		15'				
20'	<u>Reg. Hard, Br, f/sa, si, some mica. some rock frags.</u>	20'	<u>2</u>	<u>11, 17, 15</u>	<u>32</u>	
25'		25'				
30'	<u>1/2 stiff soils.</u>	30'	<u>3</u>	<u>9, 12, 14</u>	<u>26</u>	
35'		35'				
40'	<u>Reg. v. dense, br, Gv, f/sa, si, fr. mica, some rock frags.</u>	40'	<u>4</u>	<u>7, 11, 40</u>	<u>51</u>	
45'	<u>Bit @ 40.0'</u>	45'				
50'		50'				

Wet spoon @ 40.0'
GROUND WATER:
 TOB: DRY
 HRS: _____
 CAVED TO: 29.0'
 BACKFILL TYPE: open

Soil descriptions provided by Piedmont Environmental Drilling, Inc. (Piedmont) employees do NOT represent professional opinions. Therefore, any use of the provided soil descriptions is made at the user's own risk. Piedmont does not guarantee the accuracy of the provided descriptions, nor does Piedmont accept any liability for errors resulting from use of the provided descriptions.

CONTRACTED WITH Golder BORING NO. B-2
 PROJECT NAME 3239 Linecrest Rd. JOB NO. _____ DATE 19-12-13
 RIG: D-50 ENGINEER Chase Beasley CATHEAD/AUTOHAMMER
 DRILLERS: Sorpe DRILLING METHOD: SA

ELEV.	DESCRIPTION	DEPTH IN FEET	SAMPLES			NOTES
			NO.	BLOWS / 6"	N	
	<u>3" top soil</u>					
5'		5'		<u>SA</u>		
10'		10'				
15'		15'				
20'		20'				
25'		25'				
30'		30'				
35'		35'				
40'		40'				
45'		45'				
50'	<u>BIT @ 50.0'</u>	50'				

GROUND WATER:
420-36.0'
 TOB: _____
 HRS: _____
 CAVED TO: 45.0'
 BACKFILL TYPE: open

Soil descriptions provided by Piedmont Environmental Drilling, Inc. (Piedmont) employees do NOT represent professional opinions. Therefore, any use of the provided soil descriptions is made at the user's own risk. Piedmont does not guarantee the accuracy of the provided descriptions, nor does Piedmont accept any liability for errors resulting from use of the provided descriptions.

CONTRACTED WITH Golder BORING NO. B-3
 PROJECT NAME 3239 Linecrest Rd. JOB NO. _____ DATE 11-12-13
 RIG: D-50 ENGINEER Chase Brasley CATHEAD/AUTOHAMMER
 DRILLERS: Sarge DRILLING METHOD: ASA

ELEV.	DESCRIPTION	DEPTH IN FEET	SAMPLES			NOTES
			NO.	BLOWS / 6"	N	
	<u>4" top soil</u>					
5'		5'				
10'	<u>Res, v/hard, Br, white; F/sa, si, some mica</u>	10'	<u>1</u>	<u>12, 30, 23</u>	<u>53</u>	
15'		15'				
20'	<u>Res, stiff, Br, F/sa, si, some mica</u>	20'	<u>2</u>	<u>5, 6, 7</u>	<u>13</u>	
25'		25'				
30'	<u>v/stiff soils; Br, F/sa, si, some mica, some rock frags</u>	30'	<u>3</u>	<u>5, 8, 9</u>	<u>17</u>	
35'		35'				
40'	<u>Res, v/stiff, Br, F/sa, si, Tr. mica, some Gtz.</u>	40'	<u>4</u>	<u>9, 9, 9</u>	<u>18</u>	
45'	<u>BT @ 40.0'</u>	45'				
50'		50'				

Wet spoon @ 40.0'
GROUND WATER:
 TOB: ASD - dry
 HRS: _____
 CAVED TO: 31.0'
 BACKFILL TYPE: open

Soil descriptions provided by Piedmont Environmental Drilling, Inc. (Piedmont) employees do NOT represent professional opinions. Therefore, any use of the provided soil descriptions is made at the user's own risk. Piedmont does not guarantee the accuracy of the provided descriptions, nor does Piedmont accept any liability for errors resulting from use of the provided descriptions.

CONTRACTED WITH Golder BORING NO. B-4
 PROJECT NAME: 3239 Lincrest Rd. JOB NO. _____ DATE 19.12.13
 RIG: D-50 ENGINEER Chase Beasley CATHEAD/AUTOHAMMER
 DRILLERS: Scorpe DRILLING METHOD: SA

ELEV.	DESCRIPTION	DEPTH IN FEET	SAMPLES			NOTES
			NO.	BLOWS / 6"	N	
	4" top soil			SA		
5'		5'				
10'		10'				
15'		15'				
20'	gruc lens @ 19' 40 20'	20'				
25'		25'				
30'		30'				
35'		35'				
40'	flared drilling @ 38.0' Grinding @ 40.0'	40'				GROUND WATER: TOB: <u>H₂O - DOP</u> HRS: _____ CAVED TO: <u>28.0'</u>
45'	AR @ 41.0'	45'				BACKFILL TYPE: <u>open</u>
50'		50'				Soil descriptions provided by Piedmont Environmental Drilling, Inc. (Piedmont) employees do NOT represent professional opinions. Therefore, any use of the provided soil descriptions is made at the user's own risk. Piedmont does not guarantee the accuracy of the provided descriptions, nor does Piedmont accept any liability for errors resulting from use of the provided descriptions.