

GEOTECHNICAL FEB 18 2003

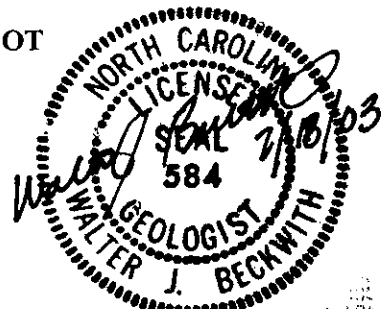
PRELIMINARY SITE ASSESSMENT
PARCEL 24B, JOHN MACCLEMENTS ET AL PROPERTY
301 NORTH SMITH STREET
CHARLOTTE, NORTH CAROLINA
STATE PROJECT NO. 9.9080100 (P-3800)

Prepared for:
NCDOT Geotechnical Unit
PO Box 25201
Raleigh, North Carolina 27611-5201

Prepared by:
Solutions Industrial & Environmental Services, Inc.
3722 Benson Drive
Raleigh, North Carolina 27609

Solutions-IES Project No. 1580.02A2.NDOT


Brian M. Rebar
Environmental Specialist



Walter J. Beckwith, P.G.
Senior Hydrogeologist

February 14, 2003

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1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to construct a Multi-Modal Station in Charlotte, Mecklenburg County, North Carolina. The planned construction will require the NCDOT to acquire additional property. On December 10, 2002, Solutions Industrial & Environmental Services, Inc. (Solutions-IES) submitted proposal NC02055P to the NCDOT to conduct a preliminary site assessment (PSA) of Parcel 24b, sited within the planned construction area at 301 North Smith Street (Figure 1). This report summarizes the results of field and laboratory activities conducted during the PSA of the referenced property.

2.0 BACKGROUND

According to information provided by the NCDOT, the property is owned by John E. MacClements and comprises 1.456 acres. A 25,000 square foot building was reportedly built in 1958 and is currently occupied by Carolina Rim & Wheel.

In October of 2001, Solutions-IES performed a PSA for the NCDOT on the adjacent railroad right-of-way between West 1st and West 9th Streets ¹. Because the Phase I Environmental Assessment Report ² of the area described most properties as presenting some environmental risk, Solutions-IES opened two borings (SB-20 and SB-21) to a depth of 8 feet below ground surface (bgs) in the vicinity of Parcel 24b. Boring SB-20 was located approximately 82' southwest of the west corner of the Carolina Rim & Wheel building and SB-21 was located approximately 22' north of the north corner of the building. The soil sample collected from SB-20 at a depth of 6-8' bgs contained 26 mg/kg of diesel range organics. No volatile organics or petroleum hydrocarbons were reported in the sample collected from SB-21.

¹ Preliminary Site Assessment, Approximately 4.29 Acres Along Norfolk and Southern Railroad, Mecklenburg County, North Carolina, State Project No. 9.9081000 (P-3800). Consultant's report prepared by Solutions-IES for NCDOT Geotechnical Unit. Dated December 6, 2001

² Limited Phase I Environmental Site Assessment Report. State Project No. 9.9080178 (AMTRACK) Proposed AMTRACK Rail Station. Downtown Charlotte. Charlotte, North Carolina. Consultant's report prepared by Arcadis Geraghty & Miller. Dated September 28, 2000.

3.0 SITE DESCRIPTION

The John MacClements et al property (Parcel 24b) is located on the north side of North Smith Street between Hearn Place and 7th Street. Railroad tracks abut the property to the north. A large building/warehouse (occupied by Carolina Rim & Wheel) is located on the property surrounded by an asphalt parking lot and grass. According to the highway plan sheets, NCDOT will acquire the entire property as a right-of-way for the Multi-Modal Station. Figure 2 shows the location of Parcel 24b (site).

4.0 FIELD ACTIVITIES

In advance of the Solutions-IES field assessment, Schnabel Engineering Associates, Inc. (Schnabel) was retained by NCDOT to perform a geophysical evaluation of the property. A copy of the geophysical survey results obtained January 8, 2003 is provided in Appendix A. The preliminary report submitted by Schnabel identified anomalies at three grid locations X=120' Y=270', X=237 Y=96, and X=225 Y=167 that suggested the possibility of underground storage tanks (USTs). Several other smaller anomalies were noted, but all were believed to be associated with buried utilities, miscellaneous metal, or debris.

Prior to beginning subsurface sampling, Solutions-IES contacted the North Carolina One Call Center and Priority Locating Service of Charlotte, North Carolina, to survey the site for underground utilities. Priority Locating surveyed the areas where anomalies were observed with a Schonstedt metal detector, but did not pick up any significant readings that would confirm the presence of USTs in any of the three locations identified by Schnabel.

On January 9-10, 2002, Solutions-IES advanced ten borings to evaluate the presence of petroleum-impacted soil across the entire parcel. Figure 3 shows the approximate boring locations. All ten of the borings were advanced with a Geoprobe®.

The Geoprobe® borings were advanced to a maximum depth of 12 feet bgs. Four of the borings were terminated at 7-8' bgs due to refusal. Four borings (SB-1 through SB-4) were advanced in the vicinity of the anomaly located at grid location X=120 Y=270 (Appendix B, Photograph 1). Three borings (SB-5 through SB-7) were advanced in the vicinity of the anomaly located at grid location X=225 Y=167 (Appendix B, Photograph 2). Two borings (SB-8 and SB-9) were advanced near the anomaly located at grid locations X=237 Y=96 (Appendix B, Photograph 3) and one boring (SB-10) was advanced on the

west corner of the property. SB-10 was located in the vicinity of boring SB-20, which was sampled during the PSA that was conducted on the railroad right-of-way in October of 2001 (Appendix B, Photograph 4). No saturated soils were encountered in any of the borings.

A Geoprobe® Macro-Core Sampler® was used to collect continuous soil cores at each boring location. Upon removal from the ground, the cores were examined for soil staining and olfactory evidence of petroleum contamination. Soil from each 4-foot section was cut into 2-foot lengths. Soil from each interval was further split into two identical aliquots. Each aliquot was placed in a separate resealable plastic bag. One bag was placed on ice for possible laboratory analysis, while the other bag was sealed and placed at ambient temperature for field screening with an organic vapor analyzer (OVA). Soil recovered from the hand auger boring was also placed in resealable plastic bags. After a period of approximately 20 minutes to allow accumulation of volatile organic compounds (VOCs) in the headspace of the bags, each sealed bag left at ambient temperature was scanned with the OVA. A background reading was taken with the OVA prior to measuring VOC concentrations in the bags. The VOC readings were entered on the boring record along with the soil description and any indications of petroleum staining or odor. Copies of the boring logs are provided in Appendix C, and the OVA readings are summarized in Table 1.

Similar subsurface conditions were encountered across the site. There is a 0.5 to 1.5-foot layer of topsoil that rests on a 2 to 5-foot layer of reddish orange silty clay that is underlain by a 2 to 6-foot layer of reddish orange sandy clay. In a few of the borings, a 0.5 to 2-foot layer of gray, dark black or dark brown sandy clay was encountered around 9 to 10 feet bgs. Conditions encountered at each boring location are shown on the boring logs included in Appendix C. No hydrocarbon odors or visual evidence of petroleum staining were noted in the recovered samples collected from any of the borings. OVA readings ranged from 0 to 4.9 parts per million (ppm).

Five samples were selected for laboratory analysis to confirm field observations suggesting that no petroleum hydrocarbons were present in the soil. The samples were placed in laboratory-supplied jars and stored on ice pending shipment to Prism Laboratories, Inc. in Charlotte, NC under chain-of-custody procedures. The samples were submitted for analysis of gasoline and diesel range total petroleum hydrocarbons (TPH) by EPA Modified Method 8015 with preparation methods 5030 and 3550, respectively.

5.0 LABORATORY RESULTS

The analytical laboratory report for the soil samples is provided in Appendix D. TPH gasoline range organics (GRO) and diesel range organics (DRO) were not detected in any of the five samples submitted to the laboratory.

6.0 DISCUSSION

Ten borings were opened within the property boundaries of Parcel 24b. Nine of the borings were opened in areas of the site identified by geophysical methods as possibly covering large metallic objects such as USTs. Boring B-10 was advanced near an area where diesel contamination was identified in a previous investigation completed in 2001. No petroleum hydrocarbon odors or elevated OVA readings were noted in any borings at depths ranging from 7 feet to 12 feet bgs. Gasoline range organics and diesel range organics were not identified in any of the five soil samples submitted for laboratory analysis. Saturated soil was not encountered in any of the borings. As such, groundwater was not evaluated as part of the PSA.

7.0 CONCLUSIONS

This PSA was performed on behalf of the NCDOT for the MacClements property parcel 24b located at 301 North Smith Street in Charlotte, Mecklenburg County, NC. Based upon our field observations and laboratory results, no petroleum-impacted soils were encountered within the property boundaries within 7 to 12 feet of the ground surface. The reported detection of 26 mg/kg of diesel range organics in soil from SB-20, opened during a previous assessment for the railroad station was not confirmed in nearby boring B-10. This suggests that any hydrocarbons present in SB-20 may be very localized.

TABLE

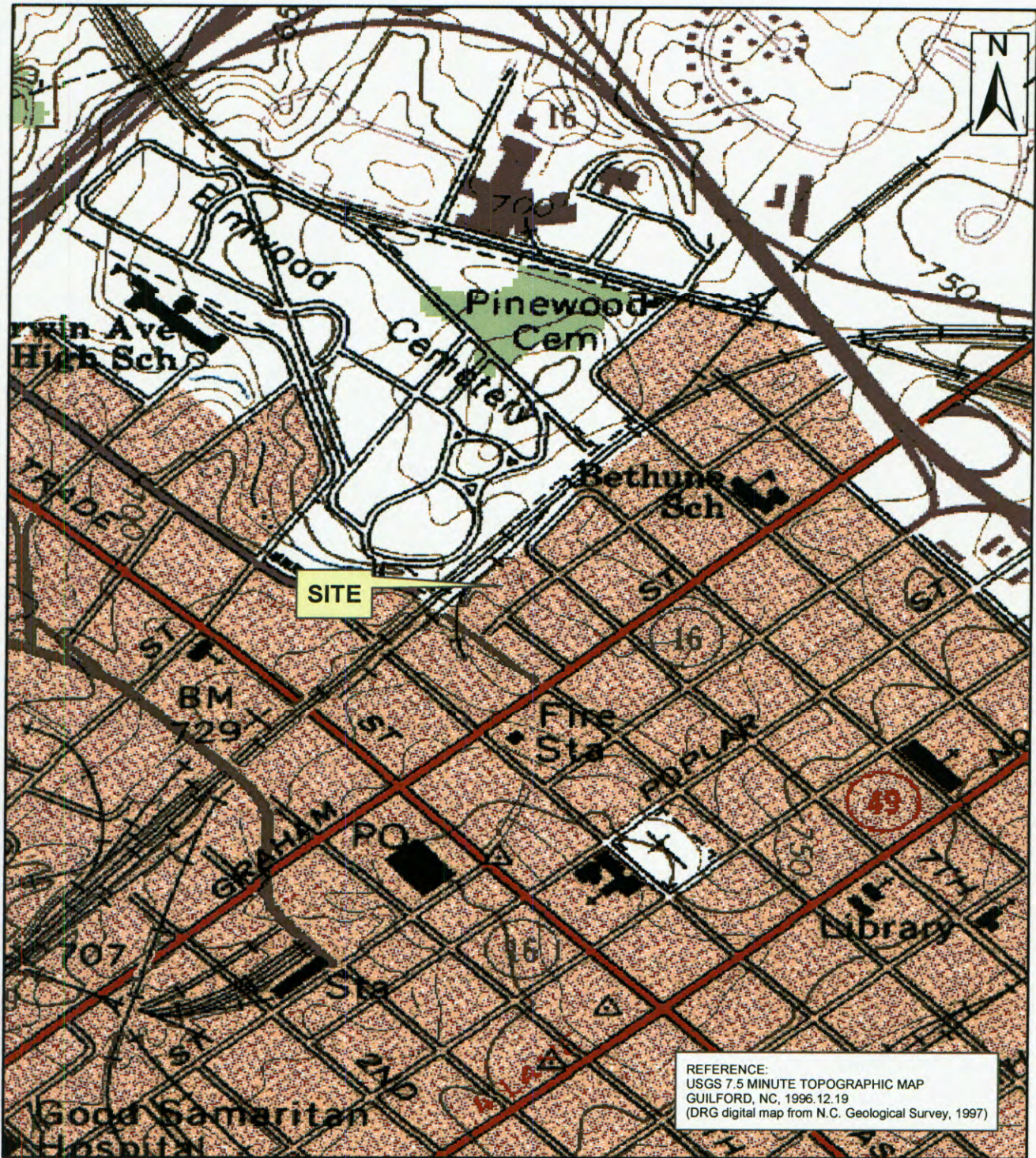
TABLE 1
SUMMARY OF FIELD SCREENING RESULTS FOR SOIL
Parcel 24b - John MacClements et al Property
301 North Smith Street, Charlotte, North Carolina
NCDOT Project No. 9.9080100 (P-3800)
January 9-10, 2003

Sample Depth Below Ground Surface	OVA Reading (ppm)									
	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	SB-9	SB-10
0 - 0.6 meters (0 - 2 feet)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.6 - 1.2 meters (2 - 4 feet)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
1.2 - 1.8 meters (4 - 6 feet)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	4.9
1.8 - 2.4 meters (6 - 8 feet)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
2.4 - 3.0 meters (8 - 10 feet)	0.0	0.0	0.0	1.9	NC	NC	NC	0.0	0.0	NC
3.0 - 3.7 meters (10 - 12 feet)	0.0	0.0	0.0	0.0	NC	NC	NC	0.0	0.0	NC

Notes:

1. OVA readings were obtained with a Foxboro Century Model 108 Organic Vapor Analyzer.
2. Background OVA reading was 1.0 ppm (OVA readings adjusted).
3. Samples denoted by shaded cells were submitted for laboratory analysis.
4. NC - Sample not collected.

FIGURES



REFERENCE:
 USGS 7.5 MINUTE TOPOGRAPHIC MAP
 GUILFORD, NC, 1996.12.19
 (DRG digital map from N.C. Geological Survey, 1997)

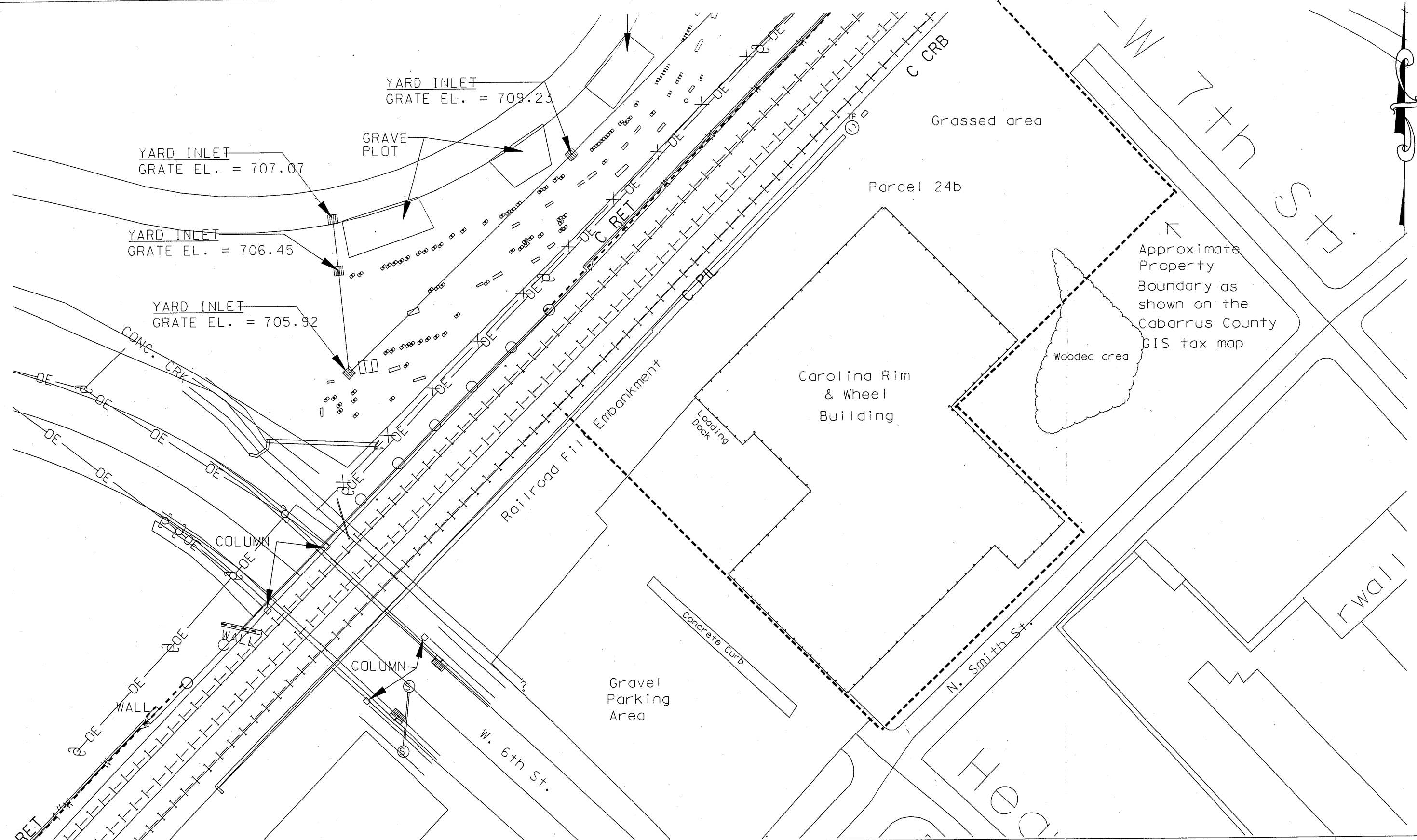
1 : 10,000



SITE LOCATION MAP
 NC DOT Project #9.9080100 (P-3800)
 John MacClements Property (Parcel #24b)
 301 North Smith Street
 Charlotte, North Carolina

3722 BENSON DRIVE, RALEIGH, NC 27609			
PHONE (919) 873-1060, FAX (919) 873-1074			
FILE:	topo24b.mxd	PROJECT NO.:	1580.02A2.NDOT
CREATED BY:	B.Wolfe	DATE:	February-03
CHECKED BY:		GIS Soft., Vers.	ESRI ArcView 8.1
DIRECTORY:	NCDOT/1580..	FIGURE	1

PROJECT NUMBER 1580.02A3.NDOT
 DRAFTER BMW
 CHECKED BY BMR
 PROJECT MANAGER GB
 DATE 2/14/03
 FILE fig.2n.dgn



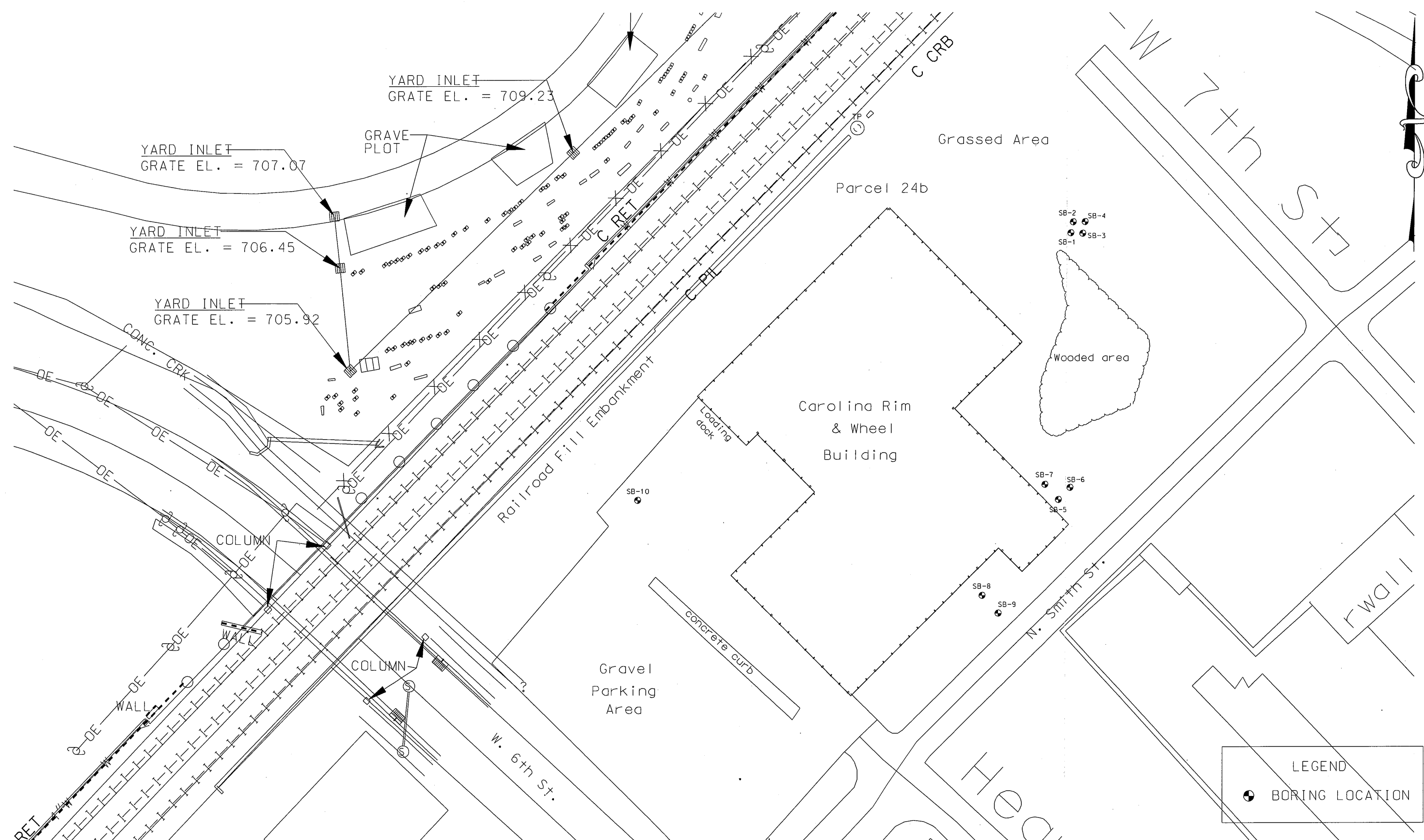
Solutions
 Industrial & Environmental Services
 3722 BENSON DRIVE
 RALEIGH, NORTH CAROLINA 27609
 TEL.: (919) 873-1060 FAX.: (919) 873-1074

Scale: 1" = 50'

SITE MAP
 John MacClements Property (Parcel 24b)
 301 North Smith Street
 Charlotte, North Carolina
 NCDOT State Project No. 9.9080100 (P-3800)

FIGURE:
 2

PROJECT NUMBER 1580.02A2.NDOT
 DRAFTER BMR
 CHECKED BY BMR
 PROJECT MANAGER
 DATE 2/4/03
 FILE fig-3nj.k.dgn



LEGEND
 ● BORING LOCATION

Solutions
 Industrial & Environmental Services
 3722 BENSON DRIVE
 RALEIGH, NORTH CAROLINA 27609
 TEL.: (919) 873-1060 FAX.: (919) 873-1074

Scale: 1" = 50'

SOIL BORING LOCATIONS
 John Maclements Property (Parcel 24b)
 301 North Smith Street
 Charlotte, North Carolina
 NCDOT State Project No. 9.9080100 (P-3800)

FIGURE:
 3

APPENDIX A

GEOPHYSICAL SURVEY RESULTS

North Carolina Department of Transportation

**GEOPHYSICAL SURVEYS
FOR RIGHT-OF-WAY PROPERTIES**

State Project 9.9080100 (P-3800), Mecklenburg County
John Mac Clements et al Property (Parcel 24B)
Charlotte, North Carolina



January 14, 2003
Project Number 01211005.01-15



405-A Parkway Drive, Greensboro, North Carolina 27401-1693
Phone (336) 274-9456; Fax (336) 274-9486

North Carolina Department of Transportation
GEOPHYSICAL SURVEYS FOR RIGHT-OF-WAY PROPERTIES
State Project 9.9080100 (P-3800), Mecklenburg County

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 - 2.2 Location Control
 - 2.3 Data Collection

- 3.0 DISCUSSION OF RESULTS

- 4.0 CONCLUSIONS

- 5.0 LIMITATIONS

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- Figure 2 EM-61 Survey – Differential Response
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1.0 INTRODUCTION

Schnabel Engineering Associates, Inc. provided geophysical surveys on December 12, 2002 and January 8, 2003, to locate possible underground storage tanks (UST's) on the John Mac Clements et al property (Parcel 24B) located at 301 North Smith Street in Charlotte, North Carolina. Hearn Place and North Smith Street lie along the southern and eastern perimeters of the property, respectively. A concrete embankment wall, 7th Street, and Parcel 12 border the western, northern and northeastern perimeters of the property, respectively. Railroad tracks lie on the other side of the embankment wall. The 1.46-acre property is currently used by Carolina Rim and Wheel, an automotive parts distributor that operates out of an approximate 25,000 square foot warehouse located in the southern portion of the property. Photos of the site are shown in Figure 4.

The geophysical investigation consisted of electromagnetic (EM) induction surveys using a Geonics EM-61 instrument. Ground penetrating radar (GPR) surveys were performed across selected EM-61 anomalies and steel-reinforced concrete pavement using a SIR-2000 GPR system equipped with a 400 MHz antenna.

2.0 FIELD METHODOLOGY

2.1 Survey Area

The geophysical survey area was based on maps provided by the NCDOT and discussions with NCDOT representative Mr. Tommy Douglas on December 3, 2002. . The EM-61 survey area included the asphalt-covered loading area along Hearn Place, the asphalt-covered parking area along North Smith Avenue, and the grass-covered lot between the warehouse and 7th Street. Because the property line between Parcel 12 and Parcel 24B was not clearly identified, the geophysical survey area may have extended onto the southern and western edges of Parcel 12.

A portion of the grass-covered lot along the embankment wall covering approximately 2,400 square feet could not be surveyed due to fallen trees and brush. The strip of property between the concrete

embankment wall and the warehouse could not be surveyed due to limited space, trees and piles of miscellaneous supplies and equipment.

2.2 Location Control

A 10-foot by 10-foot survey grid was set up on the site as location control for the geophysical surveys. References to direction and location in this report are based on this X-Y coordinate grid system in footage increments. The grid system was established by measuring an X=250 base line along the western edge of North Smith Street. A Y=0 base line was established near the center of Hearn Place and perpendicular to the X-axis base line.

Grid marks were placed on the ground every 10 feet using water-based marking paint. These marks were used as location control when collecting the EM-61, GPR, and hand auger probe data. The locations of existing site features (building, streets, vehicles, fence lines, etc.) were recorded for later correlation with the geophysical data and for location references to the NCDOT drawings.

2.3 Data Collection

The majority of the EM-61 data were collected along northeast-southwest survey lines oriented parallel to the X-axis and spaced 2.5 feet apart covering approximately 27,500 square feet (0.63 acres). The EM-61 data were recorded digitally using a field computer and later transferred to a desktop computer for data processing. Preliminary EM-61 results were emailed to NCDOT representatives Mr. Tommy Douglas and Mr. Cyrus Parker and to Solutions Industrial & Environmental Services representative Mr. Gary Birk on December 24, 2002.

GPR surveys were performed across selected EM-61 differential anomalies and steel-reinforced concrete pavement on January 8, 2003. The GPR data were digitally recorded and reviewed in the field to determine the approximate location and depth of objects. The GPR data were later transferred to a desktop computer for further review and plotting.

3.0 DISCUSSION OF RESULTS

Figure 1 shows the EM-61 early time gate results, which provide the most sensitive detection of metal targets regardless of size. Three linear anomalies parallel to 7th Street and centered near coordinates X=120 Y=333, are probably in response to utility lines. A northeast-southwest trending, linear, early time gate anomaly, beginning from approximately X=115 Y=237, and extending to X=123 Y=320, is probably in response to a utility line. This probable utility line may connect to one of the utility lines that run parallel to 7th Street. The high amplitude anomalies (contours shaded in red) located along the warehouse walls are probably in response to steel reinforced concrete sidewalks and/or the building.

The anomaly centered near coordinates X=245 Y=69, is probably in response to the water meters and the surface metal covers. A number of randomly scattered early time gate anomalies recorded across the grass lot and the area adjacent to the loading dock, appear to be in response to small, miscellaneous, metal debris.

The EM-61 differential plot (Figure 2) shows the difference between the response of the top and bottom coils of the EM-61. The differential response is taken to remove the effect of surface and very shallowly buried, insignificant metallic objects. Normally, this differential response indicates anomalies from deeper or larger objects such as UST's. Similar to the early time gate results, the linear differential anomalies recorded along 7th Street are probably in response to utility lines. The high amplitude anomalies along the building (contours shaded in red) are probably in response to the steel-reinforced concrete sidewalks and/or the building.

Three differential anomalies were recorded near grid coordinates X=121 Y=270, X=220 Y=166, and X=237 Y=96, respectively. The linear geometry of the early time anomaly at X=121 Y=270, and the narrow (2 feet) GPR responses over the anomaly, suggest the probable presence of a utility line. A portion of this utility line, from Y=265 to 275, appears to be buried approximately 1.7 below surface, whereas the segment of line from Y=277 to 287, appears to be buried approximately 2.4 feet deep (refer to Figure 3 for GPR images). Hand auger probing did not encounter the probable utility line.

Based on the early time gate results, the utility line may continue and possibly connect to a utility line that runs along 7th Street.

Similarly, the linear EM anomaly at X=220 Y=166, which may be located on Parcel 12, yielded narrow GPR responses. The linear geometry of the EM anomaly and the GPR responses suggest the probable presence of a utility line buried approximately 1.5 below surface. Due to its location to the road and warehouse, this probable utility line may still be active. Therefore, auger probing was not performed at this location. GPR results also suggest that the anomaly near X=237 Y=96, is in response to a small, miscellaneous metal object. The EM-61 differential results and GPR surveys suggest that the remaining portion of the survey area is free of large metal objects such as UST's or drums.

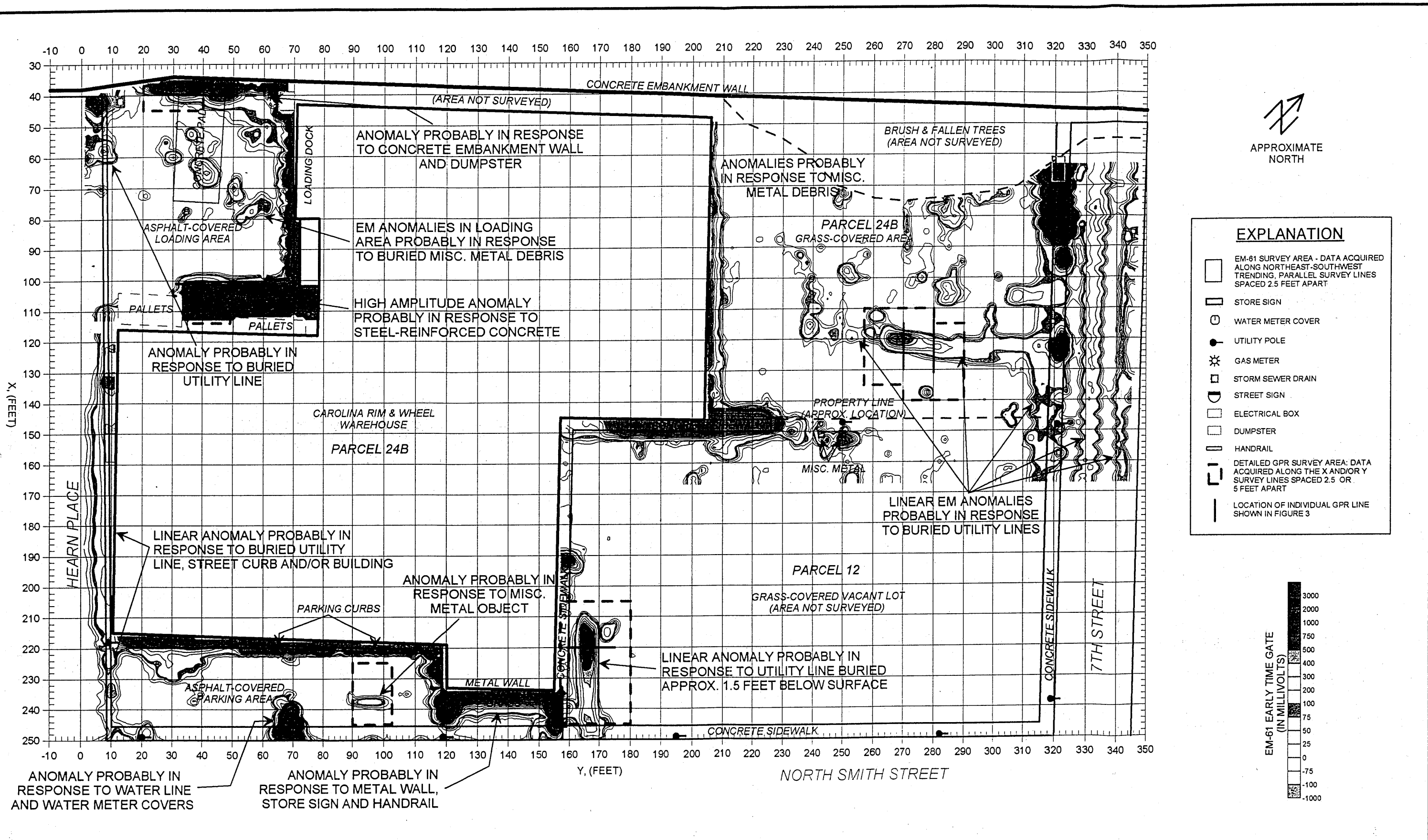
4.0 CONCLUSIONS

Our evaluation of the EM-61, GPR, and auger probe data collected across the John Mac Clements property, provides the following conclusions:

- A portion of the grass-covered lot along the embankment wall, covering approximately 2,400 square feet, could not be surveyed due to fallen trees and brush.
- Three linear EM-61 anomalies running parallel to 7th Street and centered near coordinates X=120 Y=333, are probably in response to utility lines.
- EM-61 and GPR data suggest the probable presence of a utility line beginning near X=115 Y=237, and extending to X=123 Y=320. This probable utility line may connect to one of the utility lines that run parallel to 7th Street.
- EM-61 and GPR data suggest the probable presence of a utility line running from the edge of North Smith Street at X=250 Y=167, and extending to X=212 Y=165. This probable utility line appears to be buried approximately 1.5 feet below surface and may not be located on the Mac Clements property.
- The EM-61 differential results and GPR surveys suggest that the remaining portion of the survey area is free of large metal objects such as UST's or drums.

5.0 LIMITATIONS

These services have been performed and this report prepared for the North Carolina Department of Transportation in accordance with generally accepted guidelines for conducting geophysical surveys. It is generally recognized that the results of geophysical surveys are non-unique and may not represent actual subsurface conditions.

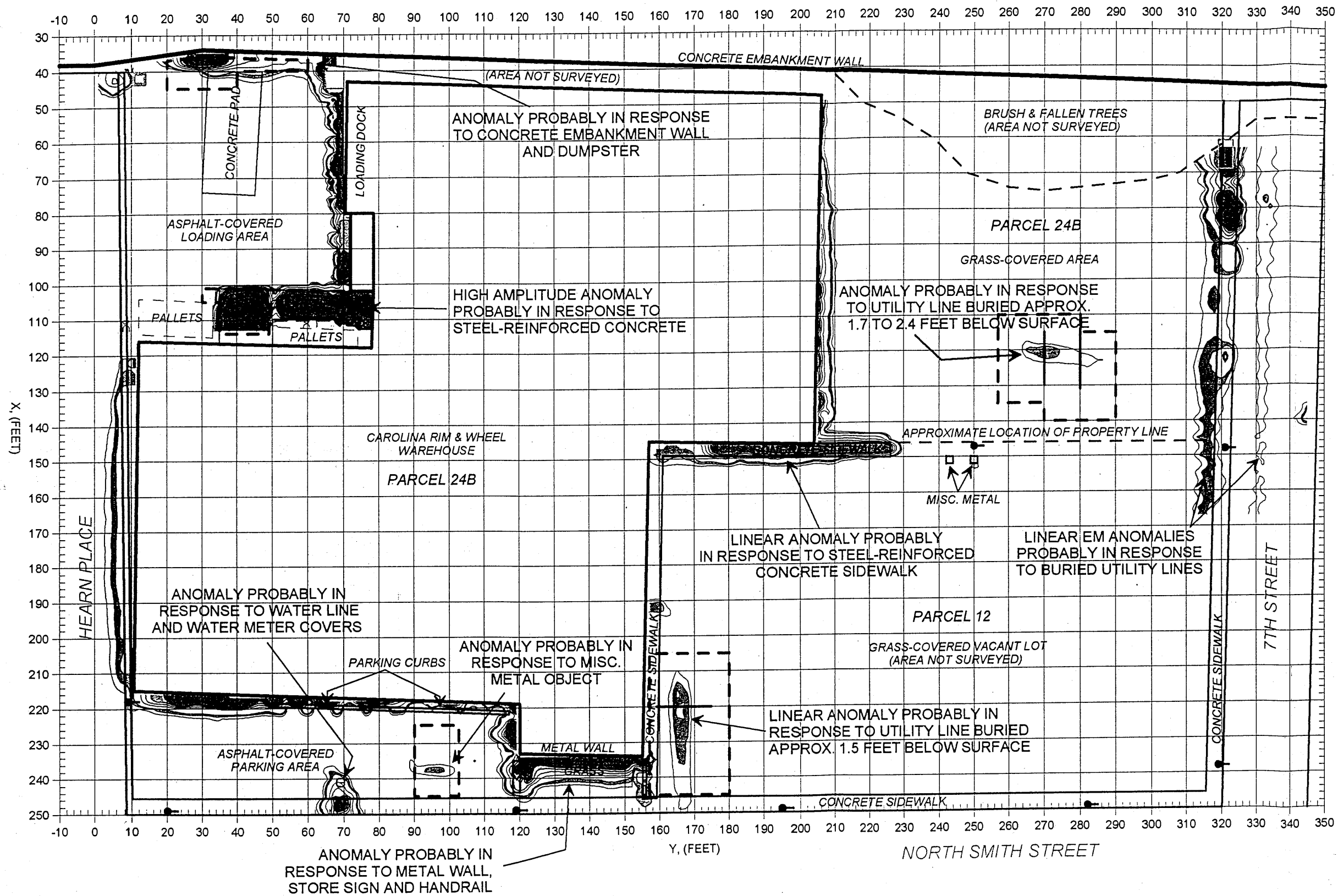


Note: The contour plot shows the earliest and most sensitive time gate of the EM-61 bottom coil/channel in millivolts (mV). The EM data were collected on December 12, 2002 using a Geonics EM-61MK2 instrument. GPR data were acquired on January 8, 2003.



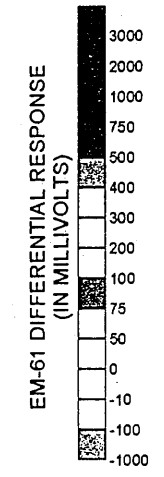
NC Department of Transportation
Geotechnical Unit
John Mac Clements et al Property
Charlotte, North Carolina

EM-61 EARLY TIME GATE RESPONSE
FIGURE 1



EXPLANATION

- EM-61 SURVEY AREA - DATA ACQUIRED ALONG NORTHEAST-SOUTHWEST TRENDING, PARALLEL SURVEY LINES SPACED 2.5 FEET APART
- STORE SIGN
- WATER METER COVER
- UTILITY POLE
- GAS METER
- STORM SEWER DRAIN
- STREET SIGN
- ELECTRICAL BOX
- DUMPSTER
- HANDRAIL
- DETAILED GPR SURVEY AREA: DATA ACQUIRED ALONG THE X AND/OR Y SURVEY LINES SPACED 2.5 OR 5 FEET APART
- LOCATION OF INDIVIDUAL GPR LINE SHOWN IN FIGURE 3



Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM-61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as pipes and tanks. The EM data were collected on December 12, 2002 using a Geonics EM-61 MK2 instrument. GPR data were acquired on January 8, 2003.

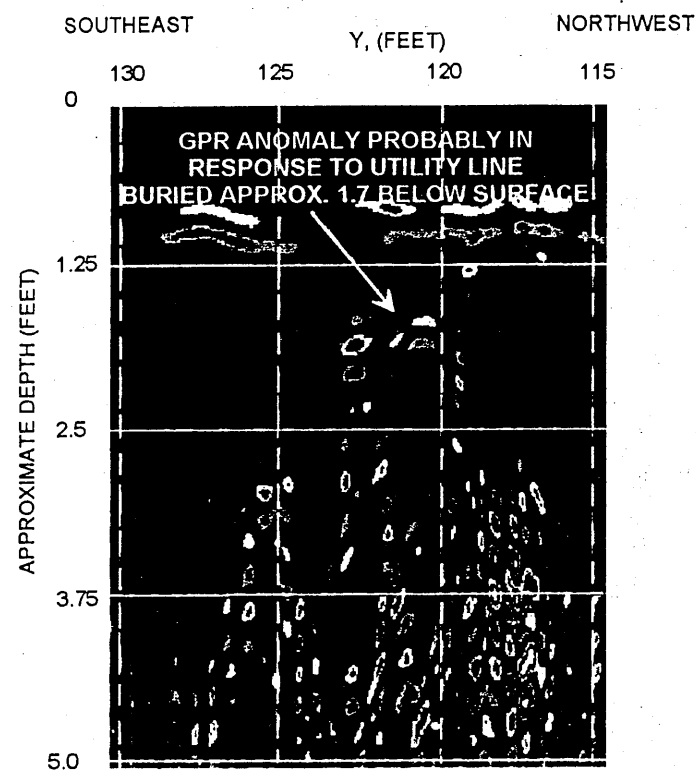


NC Department of Transportation
Geotechnical Unit
John Mac Clements et al Property
Charlotte, North Carolina

EM-61 DIFFERENTIAL RESPONSE
FIGURE 2

EM ANOMALY CENTERED
NEAR X=121 Y=270

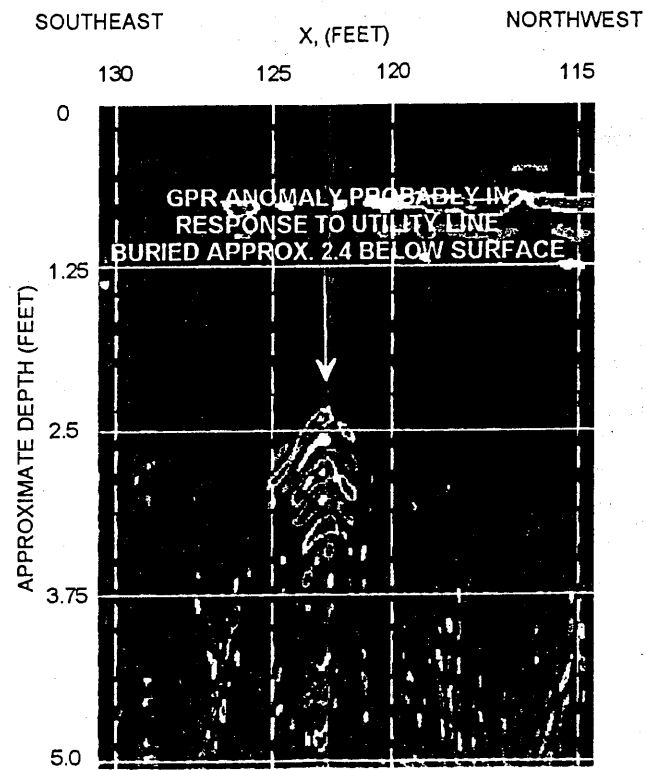
GPR LINE Y=270



ANOMALY PROBABLY IN RESPONSE TO UTILITY LINE. HAND AUGER PROBING DID NOT ENCOUNTER UTILITY LINE.

EM ANOMALY CENTERED
NEAR X=121 Y=270

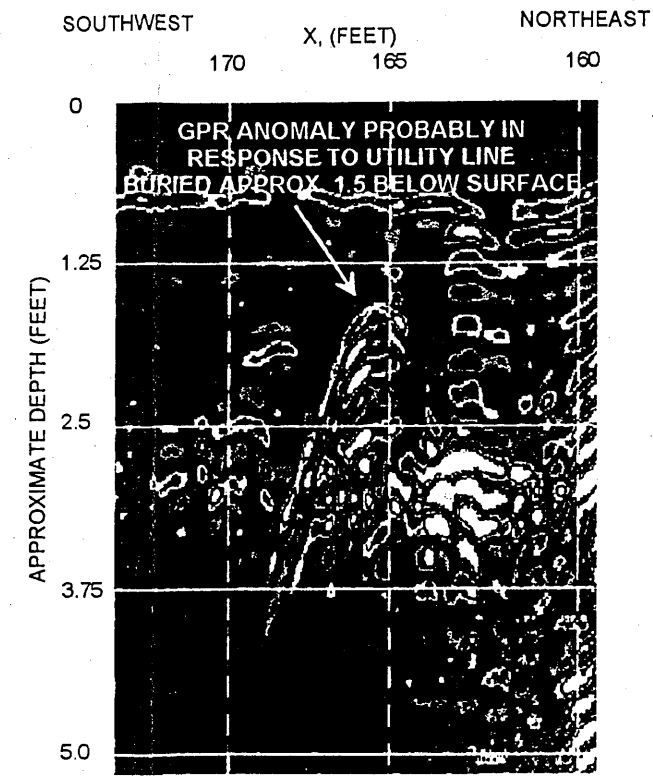
GPR LINE Y=280



HAND AUGER PROBING DID NOT ENCOUNTER UTILITY LINE.

EM ANOMALY CENTERED
NEAR X=220 Y=166

GPR LINE X=220



FOR SAFETY REASONS, HAND AUGER PROBING WAS NOT PERFORMED AT THIS LOCATION.

APPENDIX B
PHOTOGRAPHS



Photograph 1 – Looking south at borings SB-1 through SB-4.



Photograph 2 – Looking southwest at borings SB-5 through SB-7.



Photograph 3 – Looking southwest at borings SB-8 and SB-9.








Photograph 4 – Looking north at boring SB-10, railroad tracks are in the background.

APPENDIX C
BORING LOGS

Page:

BOREHOLE CONSTRUCTION LOG

BOREHOLE NO. SB-1	
PROJECT NO./NAME 1580 NCDOT John MacClements Property	LOCATION Charlotte NC
APPROVED BY Walt Beckwith	LOGGED BY Bryan Wolfe
DRILLING CONTRACTOR/DRILLER Solutions IES	SIZE/ TYPE OF BIT 2"
DRILLING EQUIPMENT/METHOD Geoprobe	SAMPLING METHOD Macro-core
CASING MAT/DIA.	SCREEN: TYPE MAT. LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE	TOP OF WELL CASING TOP & BOTTOM SCREEN GW SURFACE DATE 1/9/03



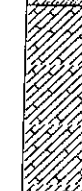






Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Dark Brown Topsoil fill	-	
			Reddish Orange Silty Clay (A-6)	-	0.0
5			Reddish Orange Silty Clay (A-6)	-	0.0
			Reddish Orange Sandy Clay (A-6) with tan and grey streaks	-	0.0
10			Reddish Orange Sandy Clay (A-6) with tan and grey streaks	-	0.0
			Boring Terminated at 12ft	-	
15				-	

Page:

BOREHOLE CONSTRUCTION LOG

BOREHOLE NO. SB-2






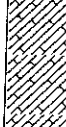
PROJECT NO./NAME 1580 NCDOT John MacClements Property		LOCATION Charlotte, NC	
APPROVED BY Walt Beckwith		LOGGED BY Bryan Wolfe	
DRILLING CONTRACTOR/DRILLER Solutions-IES		SIZE/ TYPE OF BIT 2"	
DRILLING EQUIPMENT/METHOD Geoprobe		SAMPLING METHOD Macro-core	START DATE 1/9/03 FINISH DATE 1/9/03
CASING MAT/DIA.	SCREEN: TYPE	MAT.	LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE		TOP OF WELL CASING	TOP & BOTTOM SCREEN GW SURFACE DATE 1/9/03

Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Topsoil with grass		
			Orange Red Silty Clay (A-6) with gray and tan streaks		
			Reddish Orange Sandy Clay (A-6) with gray streaks		0.0
5			Reddish Orange Sandy Clay (A-6) with small quartz fragments		0.0
			Reddish Orange Sandy Clay (A-6) with gray streaks		0.0
			Reddish Orange Sandy Clay (A-6) with gray streaks		0.0
10			Gray Sandy Clay (A-6) with small quartz pebbles		
			Reddish Orange Clay (A-6) very dense		0.0
			Reddish Orange Clay (A-6) with gray streaks, very dense		
			Boring Terminated at 11.5ft		
15					

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BOREHOLE CONSTRUCTION LOG

BOREHOLE NO. SB-3	
PROJECT NO./NAME 1580 NCDOT John MacClements Property	LOCATION Charlotte, NC
APPROVED BY Walt Beckwith	LOGGED BY Bryan Wolfe
DRILLING CONTRACTOR/DRILLER Solutions-IES	SIZE/ TYPE OF BIT 2"
DRILLING EQUIPMENT/METHOD Geoprobe	SAMPLING METHOD Macro-core
CASING MAT/DIA.	SCREEN: TYPE MAT. LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE	TOP OF WELL CASING TOP & BOTTOM SCREEN GW SURFACE DATE 1/9/03








Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Dark Brown Topsoil Fill		
			Dark Red Silty Clay (A-6)		0.0
			Reddish Orange Silty Clay (A-6) with gray streaks		0.0
5			Reddish Orange Sandy Clay (A-6) with tan and gray streaks		0.0
			Dark Brown Sandy Clay (A-6) with large quartz fragments		0.0
10			Reddish Orange Sandy Clay (A-6) with gray streaking		0.0
			Boring Terminated at 11ft		
15					

Page:

BOREHOLE CONSTRUCTION LOG

BOREHOLE NO. SB-4






PROJECT NO./NAME 1580 NCDOT John MacClements Property		LOCATION Charlotte, NC	
APPROVED BY Wall Beckwith		LOGGED BY Bryan Wolfe	
DRILLING CONTRACTOR/DRILLER Solutions-IES		SIZE/ TYPE OF BIT 2"	
DRILLING EQUIPMENT/METHOD Geoprobe		SAMPLING METHOD Macro-core	START DATE 1/9/03 FINISH DATE 1/9/03
CASING MAT/DIA.	SCREEN: TYPE	MAT.	LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE		TOP OF WELL CASING	TOP & BOTTOM SCREEN GW SURFACE DATE 1/9/03

Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Fragmented black rock fill		
			Reddish Brown Silty Clay (A-6) with bright red streaks	-	0.0
			Reddish Orange Silty Clay (A-6) with tan and gray streaks	-	0.0
5			Reddish Orange Silty Clay (A-6) with tan and gray streaks	-	0.0
			Reddish Orange Sandy Clay (A-6) with gray streaks	-	0.0
			Dark Black Sandy Clay (A-6) with quartz rock fragments	-	1.9
10			Reddish Orange Sandy Clay (A-6) with rock fragments	-	0.0
			Boring Terminated at 12ft		
15					

Page:

BOREHOLE CONSTRUCTION LOG





BOREHOLE NO. SB-5	
PROJECT NO./NAME 1580 NCDOT John MacClements Property	LOCATION Charlotte, NC
APPROVED BY Walt Beckwith	LOGGED BY Bryan Wolfe
DRILLING CONTRACTOR/DRILLER Solutions-IES	SIZE/ TYPE OF BIT 2"
DRILLING EQUIPMENT/METHOD Geoprobe	SAMPLING METHOD Macro-core
CASING MAT/DIA.	SCREEN: TYPE MAT. LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE	TOP OF WELL CASING TOP & BOTTOM SCREEN GW SURFACE DATE 1/9/03

Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Topsoil, Reddish Brown Fill		
			Topsoil, Black Rocky		0.0
			Reddish Orange Silty Clay (A-6) with tan streaks		0.0
5			Reddish Orange Silty Clay (A-6) with quartz rock fragments		0.0
			Orange/gray Sandy Clay (A-6) with some quartz fragments		0.0
10			Boring terminated at 8ft due to refusal		
15					

Page:

BOREHOLE CONSTRUCTION LOG

BOREHOLE NO. SB-6	
PROJECT NO./NAME 1580 NCDOT John MacClements Property	LOCATION Charlotte, NC
APPROVED BY Wall Beckwith	LOGGED BY Bryan Wolfe
DRILLING CONTRACTOR/DRILLER Solutions-IES	SIZE/ TYPE OF BIT 2"
DRILLING EQUIPMENT/METHOD Geoprobe	SAMPLING METHOD Macro-core
CASING MAT/DIA.	SCREEN: TYPE MAT. LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE	TOP OF WELL CASING TOP & BOTTOM SCREEN GW SURFACE DATE 1/9/03






Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Fill, Crushed Stone	-	0.0
			Reddish Orange Sandy Clay (A-6)	-	0.0
5			Reddish Orange Sandy Soil (A-2-4) Loosely packed	-	0.0
			Hard Reddish Orange Silty Clay (A-6) with with tan and gray streaks	-	0.0
			Boring Terminated at 7ft due to refusal	-	
10				-	
15				-	

Page:

BOREHOLE CONSTRUCTION LOG

BOREHOLE NO. SB-7






PROJECT NO./NAME 1580 NCDOT John MacClements Property		LOCATION Charlotte, NC	
APPROVED BY Walt Beckwith		LOGGED BY Bryan Wolfe	
DRILLING CONTRACTOR/DRILLER Solutions-IES		SIZE/ TYPE OF BIT 2"	
DRILLING EQUIPMENT/METHOD Geoprobe		SAMPLING METHOD Macro-core	START DATE 1/9/03 FINISH DATE 1/9/03
CASING MAT/DIA.	SCREEN: TYPE	MAT.	LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE		TOP OF WELL CASING	TOP & BOTTOM SCREEN GW SURFACE DATE 1/9/03

Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Crushed rock and concrete fill		
			Blackish Sandy Soil (A-6) with rock fragments		0.0
			Reddish Orange Silty Clay (A-6) with gray and tan streaks		0.0
5			Reddish Orange Sandy Clay (A-6) with gray and tan streaks		
			Dense, Gray/orange Sandy Soil (A-6) with rock fragments		0.0
					0.0
			Boring terminated at 7ft due to refusal		
10					
15					

Page:

BOREHOLE CONSTRUCTION LOG

BOREHOLE NO. SB-8	
PROJECT NO./NAME 1580 NCDOT John MacClements Property	LOCATION Charlotte, NC
APPROVED BY Walt Beckwith	LOGGED BY Bryan Wolfe
DRILLING CONTRACTOR/DRILLER Solutions-IES	SIZE/ TYPE OF BIT 2"
DRILLING EQUIPMENT/METHOD Geoprobe	SAMPLING METHOD Macro-core
CASING MAT/DIA.	SCREEN: TYPE MAT. LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE	TOP OF WELL CASING TOP & BOTTOM SCREEN GW SURFACE DATE 1/10/03

Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Asphalt		
			Reddish Orange Silty Clay (A-6) with tan and gray streaks		0.0
			Reddish Orange Silty Clay (A-6) with small pebbles and gray, tan, and white streaks		0.0
5			Dark Gray Sandy Clay (A-6) Some quartz gravel		0.0
			Reddish Orange Sandy Clay (A-6) with gray, white and tan streaking		0.0
10			Boring Terminated at 12ft		
15					

Page:

BOREHOLE CONSTRUCTION LOG







BOREHOLE NO. SB-9	
PROJECT NO./NAME 1580 NCDOT John MacClements Property	LOCATION Charlotte, NC
APPROVED BY Walt Beckwith	LOGGED BY Bryan Wolfe
DRILLING CONTRACTOR/DRILLER Solutions-IES	SIZE/ TYPE OF BIT 2"
DRILLING EQUIPMENT/METHOD Geoprobe	SAMPLING METHOD Macro-core
CASING MAT/DIA.	SCREEN: TYPE MAT. LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE	TOP OF WELL CASING TOP & BOTTOM SCREEN GW SURFACE DATE 1/10/03

Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Asphalt		
			Reddish Orange Silty Clay (A-6) with tan and gray streaks	-	0.8
				-	0.2
5			Reddish Orange Silty Clay (A-6) With small pebbles and gray, tan, and white streaks	-	4.8
				-	0.0
				-	0.0
10				-	0.0
			Boring Terminated at 12ft	-	
15				-	

Page:

BOREHOLE CONSTRUCTION LOG

BOREHOLE NO. SB-10	
PROJECT NO./NAME 1580 NCDOT John MacClements Property	LOCATION Charlotte, NC
APPROVED BY Walt Beckwith	LOGGED BY Bryan Wolfe
DRILLING CONTRACTOR/DRILLER Solutions-IES	SIZE/ TYPE OF BIT 2"
DRILLING EQUIPMENT/METHOD Geoprobe	SAMPLING METHOD Macro-core
CASING MAT/DIA.	SCREEN: TYPE MAT. LENGTH DIA. SLOT SIZE
ELEVATION OF: GROUND SURFACE	TOP OF WELL CASING TOP & BOTTOM SCREEN GW SURFACE DATE 1/10/03

Depth	Well Completion Details	Graphic	Visual Description	Sample Number	OVA Values (ppm)
			Asphalt		
			Crushed Stone Fill		
			Tan Sand (A-3)	-	1.0
			Black Sand (A-3) with quartz fragments	-	0.0
5			Reddish Orange Silty Clay (A-6) with tan & gray streaks	-	4.9
			Light Gray Sand (A-3) with some small rounded gravel, densely packed		0.2
			Boring Terminated at 7ft due to refusal		
10					
15					

APPENDIX D
LABORATORY ANALYTICAL REPORTS

Lab Report



1/22/03

Page 1 of 5

Solutions - IES
Attn: Gary Birk
3722 Benson Dr.
Raleigh, NC 27609

Customer Project ID: NCDOT Parcel 24B
Customer Sample ID: SB-1-6-8
Prism Sample ID: AC69322
Login Group: 5316K5
Sample Collection Date/Time: 1/9/03 13:40
Lab Submittal Date/Time: 1/10/03 15:00

The following analytical results have been obtained for the indicated sample which was submitted to this laboratory

TEST PARAMETER	TEST RESULT	UNITS	REPORTING LIMIT	METHOD REFERENCE	DATE/TIME STARTED	ANALYST
TPH - DIESEL RANGE	Less than	mg/kg	10	8015MOD/3550	1/15/03 21:22	EHT
TPH-GASOLINE RANGE / PREP. 5030	Less than	mg/kg	1.0	8015MOD/5030	1/14/03 21:13	JMV
CALCULATIONS BASED ON DRY WT.	85	% DRY WT.	0.01	SM 2540 G	1/14/03 18:00	CWC
PREP. METHOD 3545 FOR DIESEL	Completed			SW846-3545	1/14/03 17:00	CWC

Sample Comments:

A handwritten signature in black ink, appearing to read 'Angela'.

Angela D. Overcash, V.P. Laboratory Services

Lab Report



1/22/03

Page 2 of 5

Solutions - IES
Attn: Gary Birk
3722 Benson Dr.
Raleigh, NC 27609

Customer Project ID: NCDOT Parcel 24B
Customer Sample ID: SB-4-8-10
Prism Sample ID: AC69323
Login Group: 5316K5
Sample Collection Date/Time: 1/9/03 15:50
Lab Submittal Date/Time: 1/10/03 15:00

The following analytical results have been obtained for the indicated sample which was submitted to this laboratory

TEST PARAMETER	TEST RESULT	UNITS	REPORTING LIMIT	METHOD REFERENCE	DATE/TIME STARTED	ANALYST
TPH - DIESEL RANGE	25	mg/kg	10	8015MOD/3550	1/15/03 23:38	EHT
TPH-GASOLINE RANGE / PREP. 5030	Less than	mg/kg	1.0	8015MOD/5030	1/15/03 23:49	JMV
CALCULATIONS BASED ON DRY WT.	89	% DRY WT.	0.01	SM 2540 G	1/14/03 18:00	CWC
PREP. METHOD 3545 FOR DIESEL	Completed			SW846-3545	1/14/03 17:00	CWC

Sample Comments:

Angela D. Overcash, V.P. Laboratory Services

Lab Report



1/22/03

Page 3 of 5

Solutions - IES
Attn: Gary Birk
3722 Benson Dr.
Raleigh, NC 27609

Customer Project ID: NCDOT Parcel 24B
Customer Sample ID: SB-5-6-8
Prism Sample ID: AC69324
Login Group: 5316K5
Sample Collection Date/Time: 1/9/03 17:25
Lab Submittal Date/Time: 1/10/03 15:00

The following analytical results have been obtained for the indicated sample which was submitted to this laboratory

TEST PARAMETER	TEST RESULT	UNITS	REPORTING LIMIT	METHOD REFERENCE	DATE/TIME STARTED	ANALYST
TPH - DIESEL RANGE	Less than	mg/kg	10	8015MOD/3550	1/15/03 22:07	EHT
TPH-GASOLINE RANGE / PREP. 5030	Less than	mg/kg	1.0	8015MOD/5030	1/16/03 01:37	JMV
CALCULATIONS BASED ON DRY WT.	82	% DRY WT.	0.01	SM 2540 G	1/14/03 18:00	CWC
PREP. METHOD 3545 FOR DIESEL	Completed			SW846-3545	1/14/03 17:00	CWC

Sample Comments:

Angela D. Overcash, V.P. Laboratory Services

Lab Report



1/22/03

Page 4 of 5

Solutions - IES
Attn: Gary Birk
3722 Benson Dr.
Raleigh, NC 27609

Customer Project ID: NCDOT Parcel 24B
Customer Sample ID: SB-9-4-6
Prism Sample ID: AC69325
Login Group: 5316K5
Sample Collection Date/Time: 1/10/03 08:10
Lab Submittal Date/Time: 1/10/03 15:00

The following analytical results have been obtained for the indicated sample which was submitted to this laboratory

TEST PARAMETER	TEST RESULT	UNITS	REPORTING LIMIT	METHOD REFERENCE	DATE/TIME STARTED	ANALYST
TPH - DIESEL RANGE	Less than	mg/kg	10	8015MOD/3550	1/15/03 22:52	EHT
TPH-GASOLINE RANGE / PREP. 5030	Less than	mg/kg	1.0	8015MOD/5030	1/16/03 02:12	JMV
CALCULATIONS BASED ON DRY WT.	79	% DRY WT.	0.01	SM 2540 G	1/14/03 18:00	CWC
PREP. METHOD 3545 FOR DIESEL	Completed			SW846-3545	1/14/03 17:00	CWC

Sample Comments:

Angela D. Overcash, V.P. Laboratory Services

Lab Report



1/22/03

Page 5 of 5

Solutions - IES
Attn: Gary Birk
3722 Benson Dr.
Raleigh, NC 27609

Customer Project ID: NCDOT Parcel 24B
Customer Sample ID: SB-10-4-6
Prism Sample ID: AC69326
Login Group: 5316K5
Sample Collection Date/Time: 1/10/03 08:53
Lab Submittal Date/Time: 1/10/03 15:00

The following analytical results have been obtained for the indicated sample which was submitted to this laboratory

TEST PARAMETER	TEST RESULT	UNITS	REPORTING LIMIT	METHOD REFERENCE	DATE/TIME STARTED	ANALYST
TPH - DIESEL RANGE	Less than	mg/kg	10	8015MOD/3550	1/16/03 00:25	EHT
TPH-GASOLINE RANGE / PREP. 5030	Less than	mg/kg	1.0	8015MOD/5030	1/16/03 02:48	JMV
CALCULATIONS BASED ON DRY WT.	82	% DRY WT.	0.01	SM 2540 G	1/14/03 18:00	CWC
PREP. METHOD 3545 FOR DIESEL	Completed			SW846-3545	1/14/03 17:00	CWC

Sample Comments:

Angela D. Overcash, V.P. Laboratory Services



Full Service Analytical & Environmental Solutions

449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543
Phone: 704/529-6364 • Fax: 704/525-0409

Client Company Name: Solvent Services
Report To/Contact Name: Gregory Bork
Reporting Address: 7 The Green

Phone: 910 533 4444 Fax (Yes) (No): 910 533 4444
Site Location Name: Wetland Parcel 206
Site Location Physical Address:

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1 QUOTE # TO ENSURE PROPER BILLING:

Project Name: Wetland Parcel 206 UST Project: (Yes) (No) (No)
Short Field Analysis: (Yes) (No) (No)
*Please ATTACH any project specific reporting provisions and/or QC Requirements
Invoice To: Wetland
Address:

Purchase Order No./Billing Reference 9958010013000
Requested Due Date 1 Day 2 Days 3 Days 4 Days 5 Days
 6-9 Days Standard 10 days
Samples received after 15:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL
Certification: NELAC USACE FL NC
SC OTHER N/A
Water Chlorinated: YES NO N/A
Sample Iced Upon Collection: YES NO

LAB USE ONLY
Samples INTACT upon arrival? NO N/A
Received ON WET ICE? Temp 5
PROPER PRESERVATIVES indicated?
Received WITHIN HOLDING TIMES?
CUSTODY SEALS INTACT?
VOLATILES rec'd W/OUT HEADSPACE?
PROPER CONTAINERS used?

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER		PRESERVATIVES	ANALYSES REQUESTED	REMARKS	SUB LAB CERT. ID NO.	PRISM LAB ID NO.
				TYPE SEE BELOW	NO. SIZE					
SP-1-6-8	11/1/03	1346	soil	6	2 wetland					69026
SP-1-8-16	11/1/03	1556	soil	1	1					69027
SP-5-6-8	11/1/03	1725		1	1					69028
SP-9-4-6	11/1/03	816		1	1					69029
SP-10-11-6	11/1/03	852		1	1					69030

PRESS DOWN FIRMLY - 3 COPIES

Sampler's Signature: [Signature] Sampled By (Print Name): Brian Fisher Affiliation: Solvent Services

Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

Relinquished By (Signature): [Signature] Received By (Signature): [Signature] Date: 11/1/03 Military/Hours: 1725

Relinquished By (Signature): [Signature] Received By (Signature): [Signature] Date: 11/1/03 Military/Hours: 1725

Relinquished By (Signature): [Signature] Received For Prism Laboratories By: [Signature] Date: 11/1/03 Military/Hours: 1725

Method of Shipment: Fed Ex UPS Hand-delivered Prism Field Service Other

NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND-VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

PRISM USE ONLY
Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

Additional Comments:

NPDES: NC SC NC SC NC SC NC SC NC SC NC SC

DRINKING WATER: NC SC NC SC NC SC NC SC

SOLID WASTE: NC SC NC SC NC SC

RCRA: NC SC NC SC NC SC

CERCLA: NC SC NC SC NC SC

LANDFILL: NC SC NC SC NC SC

OTHER: NC SC NC SC

SEE REVERSE FOR TERMS & CONDITIONS

FINAL REPORT COPY