

**Via 2-Day FedEx**

February 17, 2015

NCDENR  
Div. of Waste Management  
Brownfields Program  
217 W. Jones Street  
Raleigh, North Carolina 27603

Attn: Mr. Tony Duque

Re: Soil Management Plan  
3<sup>rd</sup> & Poplar Project Brownfields Site  
Charlotte, Mecklenburg County, NC  
NC Brownfields Program  
Project No: 18017-14-060  
H&H Job No. GSL-001



Dear Mr. Duque:

Please find attached a copy of the Soil Management Plan prepared for the property listed above. As requested, we incorporated comments from your email (dated 12/29/14) in this finalized document. Thank you for assistance with this project and please do not hesitate to contact me if you have further questions regarding this document.

Sincerely,

**Hart & Hickman, PC**



Matt Ingalls  
Project Manager

cc: Mr. Ben Liebetrau (Greystar)

**Soil Management Plan**  
**3<sup>rd</sup> & Poplar Project Brownfields Site**  
**NC Brownfields Program**  
**Project No. 18017-14-060**

**W. 3<sup>rd</sup> Street and S. Poplar Street**  
**Charlotte, North Carolina**

**H&H Job No. GSL-001**  
**December 30, 2014**



**#C-1269 Engineering**  
**#-245 Geology**

2923 South Tryon Street, Suite 100  
Charlotte, NC 28203  
704.586.0007 main

3334 Hillsborough Street  
Raleigh, NC 27607  
919.847.4241 main

[www.harthickman.com](http://www.harthickman.com)

**Soil Management Plan  
3<sup>rd</sup> & Poplar Project Brownfields Site  
W. 3<sup>rd</sup> Street and S. Poplar Street  
Charlotte, North Carolina  
NC Brownfields Program  
Project No. 18017-14-060  
H&H Job No. GSL-001**

**Table of Contents**

<b><u>Section</u></b>	<b><u>Page</u></b>
<b>1.0 Introduction.....</b>	<b>1</b>
<b>2.0 Environmental Action Objectives .....</b>	<b>2</b>
<b>3.0 Site Conditions .....</b>	<b>3</b>
3.1 Overview.....	3
3.2 Summary of Redevelopment Considerations .....	4
<b>4.0 Environmental Goals.....</b>	<b>7</b>
4.1 Remedial Goals for Soil.....	7
4.2 Remedial Goals for Groundwater .....	7
4.3 Underground Storage Tanks (USTs) .....	8
<b>5.0 Proposed Environmental Actions.....</b>	<b>9</b>
5.1 Environmental Action Criteria.....	9

**List of Figures**

- Figure 1 Site Location Map
- Figure 2 Site Map

**List of Appendices**

- Appendix A Previous Environmental Reports (Text, Tables, and Figures)
- Appendix B Proposed Development Plans
- Appendix C Example Health and Safety Plan
- Appendix D Vapor Liner Recommended Specifications

**Soil Management Plan  
3<sup>rd</sup> & Poplar Project Brownfields Site  
W. 3<sup>rd</sup> Street and S. Poplar Street  
Charlotte, North Carolina  
NC Brownfields Program  
Project No. 18017-14-060  
H&H Job No. GSL-001**

**1.0 Introduction**

This Soil Management Plan (SMP; a.k.a. environmental management plan) is being submitted to address construction and site development activities planned for a 0.6-acre vacant property located on the eastern corner of W. 3<sup>rd</sup> Street and S. Poplar Street in Charlotte, North Carolina (subject property, Figure 1). The property is currently vacant land paved with asphalt and utilized as a surface parking lot. It is our understanding that GUGV Poplar Charlotte Property Owning LP (GUGV, formerly Greystar GP II, LLC) plans to develop the property with a multi-story mixed-use residential/commercial tower.

H&H previously conducted Phase I and Phase II Environmental Site Assessment (ESA) activities on the property in 2010 and 2014 and identified low concentrations of petroleum impacts in soil associated with a former gas station. H&H recently assisted GUGV and Parker Poe Adams & Bernstein PLLC (PPAB) with obtaining eligibility into the NC Department of Environment and Natural Resources (DENR) Brownfields Program. The purpose of this SMP is to develop a strategy to manage impacted media that may be encountered during site development and construction activities. In accordance with the pending Brownfields Agreement for the 3<sup>rd</sup> & Poplar Project Brownfields Site, the SMP is being submitted to the DENR prior to disturbing soil on the property. The actions described in this SMP will be completed under the pending NC DENR Notice of Brownfields Property (NBP) currently being prepared on behalf of GUGV (the Prospective Developer) during development of the property.

## 2.0 Environmental Action Objectives

It is our understanding that the pending Brownfields Agreement for the subject property will limit the land use of the property to a number of uses, including multi-family residential and commercial use. Actions described in this plan account for a range of site conditions that may arise during development of the property and may be modified by the Prospective Developer and DENR as the project progresses to accommodate the final design and conditions encountered in the field during construction of the project.

Actions described in this SMP are intended to provide conditions on the property during development which are adequately protective of site construction/utility workers and future site users, with regard to the following potential exposure risks:

- Exposure to contaminated soil – dermal contact; ingestion; inhalation of contaminated dust; or inhalation of vapors from volatile organic compounds (VOCs) in soil intruding into the excavation and work areas.
- Exposure to contaminated groundwater – dermal contact or ingestion of groundwater in excavations for construction and utility workers, and inhalation of vapors from VOCs in groundwater for future site occupants, visitors, and workers.

## 3.0 Site Conditions

### 3.1 Overview

As noted previously, H&H previously conducted Phase I and II ESA activities on the property in 2010 and 2014 and identified low concentrations of petroleum impacts in soil associated with a former gas station. A summary of Phase I and II assessment activities conducted on the former gas station and the former auto sales/service facility are summarized below.

#### Former Gas Station

During Phase I ESA activities, H&H identified that a store with a gasoline underground storage tank (UST) and a former gas station with three gasoline USTs were previously located in the southern portion of the subject site. The store reportedly operated during the 1920s and 1930s, and the gas station reportedly operated during the 1940s and 1960s. The former gas station is identified in the environmental database report operating under the name "Stack Mal A". As part of the 2010 Phase II ESA activities, a utility locator performed a ground penetrating radar (GPR) survey in the area of the former store and gas station to determine if USTs or underground lines remain in this area. No probable USTs were identified by the geophysical survey; however, the utility locator identified anomalies indicative of possible former underground product lines.

During previous Phase II ESA activities, H&H collected soil and groundwater samples to assess the potential for impacts to the subject property in the area of the former service station. The results of soil sample analyses indicate that total petroleum hydrocarbons as gasoline range organics (TPH-GRO) were detected above the DENR Action Level of 10 mg/kg for UST petroleum releases in DPT-7 (0 to 2 ft). Groundwater results from DPT-7 indicated the presence of lead (22 µg/L) slightly above its NC 2L Standard of 15 µg/L, and well below the DENR UST Program gross contamination level (GCL) of 15,000 µg/L.

#### Former Auto Sales/Service Facility

An auto sales and service facility is depicted on the 1929 and 1951 Sanborn maps located in the northwestern portion of the subject site. The auto sales and service facility was demolished in 1960s and the existing parking lot was developed. During our site inspection, H&H did not

identify evidence of the former auto sales and service operations; however, a potential exists that petroleum products use and storage may have been associated with former auto sales and service activities that occurred in the northwestern portion of the site.

### 3.2 Summary of Redevelopment Considerations

H&H reviewed conceptual drawings depicting the proposed development of the subject property (Appendix B). Based on our review of the development plans, a multi-story mixed use commercial/residential building with a parking deck has been proposed for construction on the property. Construction details relevant to the SMP are listed below.

- The buildings footprint measures approximately 19,100 square ft. On the building's ground level, approximately 14,800 square ft will be building on a concrete slab foundation and developed as future retail space, a lobby and elevator shaft (for access to upper level parking and residential units), mail room, mechanical areas, fire command center, trash recycling room, and a utility telecom room. The rest of the ground floor area (approximately 4,300 square ft) will be developed as vehicular access driveways and/or a ramp to a multi-level parking deck that will begin on the second level of the building.
- An approximate 2,750 square ft subgrade transformer area will be constructed to a depth of approximately 12 ft below the ground surface below the ground level driveway and pump room. Metal grates will be installed at multiple locations above the transformer vault to allow for passive air ventilation of the space.
- As many as 45 reinforced concrete pile caps will be constructed below the ground surface as foundations for the building's steel support columns. The pile caps will be constructed to depths up to 6 ft below the ground surface and the dimensions of the pile caps will vary based on the pile cap's anticipated load.

Previous assessment findings indicate the following conditions pertinent to the subject construction and excavation activities proposed at the property:

- Historical records reviewed for the 2010 and 2014 Phase I ESAs indicate that a former gas station previously operated in the southern portion of the site in an area where a vehicle access driveway off of W. 3<sup>rd</sup> Street is proposed. A portion of the ground level retail space, pump room, and stairwell B are also located in this area. As noted above, a subgrade transformer area will be constructed to a depth of approximately 12 ft below the ground surface below the ground level driveway and pump room. In addition, approximately six reinforced concrete pile caps will also be constructed in this area that will require excavation to a depth of approximately 6 ft below the ground surface. During previous Phase II ESA activities, low-level petroleum impacts were reported in a shallow soil sample (DPT-7 0 to 2 ft) collected in this area. Groundwater results from DPT-7 also indicated the presence of lead slightly above its NC 2L Standard but below its GCL.
- Historical records also indicate that a former auto sales and service facility previously operated in the northwestern portion of the site in an area where a vehicle access driveway off of S. Poplar Street and the building's lobby have been proposed. H&H did not collect samples at this location during previous Phase II ESA activities but noted that a potential exists that petroleum products use and storage associated with former auto sales and service activities may have occurred in this portion of the site.
- Shallow groundwater was identified at a depth of 11 ft to 12 ft below ground surface during Phase II ESA activities, a potential exists that groundwater will be encountered during construction activities. VOCs, volatile petroleum hydrocarbons/extractable petroleum hydrocarbons (VPH/EPH), and metals were not detected above NC 2L standards in groundwater samples collected from two temporary monitoring wells (DPT-7 and DPT-9) sampled in proximity of the former gas station site, with the exception of a lead detection in the DPT-7 sample at a concentration slightly above its NC 2L standard. Lead was detected at 22 µg/L versus the 15 µg/L NC 2L standard. Because the 15 µg/L

NC 2L standard is based on unrestricted residential exposure criteria, the low-level 22 µg/L lead detection in groundwater is not expected to pose an ingestion or dermal contact concern for workers during building construction. Appropriate worker safety and work zone demarcation measures will be taken to mitigate worker contact with contaminated groundwater.

Benzene and C5-C8 aliphatics were detected above the NC 2L Standards (but well below GCLs) in a groundwater sample collected from a temporary monitoring well (DPT-3A) advanced near closed-in-place 10,000-gallon former heating oil UST located 290 ft east-southeast of the subject site. The potential for impact to the subject site appears low due to distance and the lack of significant impact to groundwater.

- No probable USTs were identified by the geophysical survey; however, the utility locator identified anomalies indicative of possible former underground product lines.
- The presence of existing and proposed sub-surface utilities at the site may provide preferential pathways for contaminant migration. Special attention will be given to locations where any new excavation may intercept an existing utility corridor that is in contact or close proximity with contaminated soil or groundwater at the property.
- The subject property and the surrounding area are served by Charlotte Mecklenburg Utilities water service and there are no potable water groundwater users in the vicinity of the subject property.
- By virtue of the presence of environmental impacts at the property, work conducted within areas of known impacts will take into consideration the health and safety precautions necessary for safe execution of the proposed site development and construction activities. The construction contractor should be required to provide a Health & Safety Plan to inform and ensure the safety of workers in areas of potential impacts. An example of a Health and Safety Plan, similar to what will be used by an environmental consultant overseeing the work, is provided in Appendix C.

## 4.0 Environmental Goals

As explained in this SMP, available data indicate impacted soil and groundwater may be encountered during soil excavation activities in the northwestern and southern portions of the site. In the event that impacts are encountered, the remedial goals below will be applied in considering the appropriate corrective actions to be taken during or subsequent to installation.

### 4.1 Remedial Goals for Soil

In general, the preliminary soil remedial goals will be the NC DENR Inactive Hazardous Sites Branch (IHSB) Preliminary Residential Health-Based Soil Remediation Goals (SRGs) for portions of the site where future residential occupants may encounter the soil. Metal concentrations detected in soil samples will also be compared to published naturally-occurring values where appropriate. Following the conclusion of construction and related soil disturbance, but prior to non-construction worker occupation of the site, surficial soils shall be sampled as described in Section 5.0.

### 4.2 Remedial Goals for Groundwater

If groundwater suspected to be contaminated is encountered during excavation activities at the subject property and must be collected to allow construction to continue (see Section 5.1), samples will be collected. As noted in Section 3.2, there are no identified groundwater impacts identified on the site, with the exception of a lead detection in the DPT-7 sample at a concentration slightly above its NC 2L standard (22 µg/L detected versus 15 µg/L 2L standard). Because the NC 2L standard is based on unrestricted residential exposure criteria, the 22 µg/L lead detection in groundwater is not judged to pose an ingestion or dermal contact concern for utility workers during building construction. Groundwater concentrations for other constituents of interest (if detected) will be compared to NC 2L groundwater standards. In the event VOCs are detected, the concentrations will be compared to the values provided in the North Carolina Division of Waste Management (DWM) Residential Vapor Intrusion Screening Table to determine if vapor intrusion is a potential risk to construction workers and future site structures.

If determined to be necessary due to currently unforeseen conditions, site-specific risk-based screening criteria for groundwater may be developed.

There are no groundwater receptors in the site area, municipal water is available in the site area, and groundwater is not proposed to be utilized in the future. Appropriate worker safety and work zone demarcation measures will be taken to mitigate worker contact with contaminated groundwater and groundwater use will be restricted at the subject property.

#### **4.3 Underground Storage Tanks (USTs)**

No probable USTs were identified by the geophysical survey; however, the utility locator identified anomalies indicative of possible former underground product lines. Impacts associated with USTs may be encountered in the vicinity of the former gas station and vehicle sales and service facility. In the event that impacts uniquely associated with a UST release are found to be present in the vicinity of the excavation areas during construction, they will be addressed as required either in accordance with the DENR Brownfields Program or in accordance with the DENR UST Section if the property owners seek to achieve regulatory closure for the UST release incident.

## 5.0 Proposed Environmental Actions

### 5.1 Environmental Action Criteria

Construction activities will generally include initial site grading and excavation, installation of security and work zone controls; removal and relocation of existing utilities that may interfere with development; installation of utilities; pile cap construction; and backfilling and earthwork to achieve the desired final grade. Based on site development and grading plans, approximately 2,500 - 3,000 cubic yards of soil may be excavated on the subject property for the subgrade transformer area and the reinforced concrete pile caps. Additional soil may be generated at the site that may require management during site grading activities.

In the event that impacts are encountered during site development activities, and are confirmed to exceed the criteria noted in Section 4.0, the environmental actions noted below will be taken during or subsequent to construction.

1. Soil excavated during site development activities may be placed back in the same excavation or, as approved by DENR, elsewhere at the site. In the event that contamination is suspected in this soil, it will be managed as described below.
2. Soil excavated during site development activities that is suspected to be impacted by contamination may be stockpiled and covered in a secure area to allow construction to progress while samples are collected and analyzed. Results will be evaluated to determine the appropriate disposition of the stockpiled soil. Stockpiles will be covered with plastic sheeting, configured to minimize contact with surface flow, and additional measures will be taken as needed to prevent erosion.
3. If contamination is discovered at the site during construction activities that is not similar in nature to impacts identified elsewhere at the site during prior assessment activities, the Prospective Developer will contact DENR to discuss the appropriate course of action. Such soil may be stockpiled in a secure area and covered while awaiting characterization.

Stockpiles will be covered with plastic sheeting, configured to minimize contact with surface flow, and additional measures will be taken as needed to prevent erosion.

4. If excavation of impacted soils occurs during construction activities, sampling will be conducted for purposes of recording areas of impacts remaining at the site. It is anticipated that such samples will be collected at regular intervals along the base and the sidewalls of a given excavation. Base samples will not be collected if the estimated groundwater elevation is within 1.5 ft the excavation floor. Based on the primary constituents of concern identified at the site, it is likely that samples that may be taken will be analyzed for VOCs and lead. A sampling approach will be discussed with DENR before backfilling an area suspected of being impacted by contamination.
5. If determined to be necessary for construction purposes, soil samples described above will be used to determine the appropriate corrective measure for soil beyond the excavation limits as may be required for construction of the building. Such corrective measures are described in the items below. In such cases, areas of remaining soil impacts following implementation of the corrective action(s) will be noted on project records.
6. Corrective actions will ensure there is a barrier between future site visitors/occupants/workers and soil in the project area. To accomplish this:
  - a. A vapor liner (with a recommended minimum 10-mil thickness, see Appendix D) will be placed below the subgrade utility area and on the vertical walls of this area, and below the ground floor occupied areas (i.e., future retail space, a lobby, elevator shaft, mail room, mechanical areas, fire command center, trash recycling room, and a utility telecom room).
  - b. The barrier outside the areas covered by the vapor barrier may include paving, hardscape surface, or clean soil/landscaping of a 2 ft minimum thickness.
  - c. In all areas not covered as stated above, DENR requires a post-construction sampling and analysis plan to be submitted to DENR. Such sampling and analysis plan may include confirmation that any such fill has no known constituent above

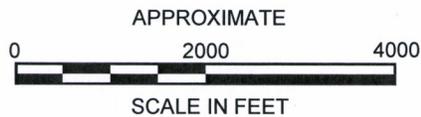
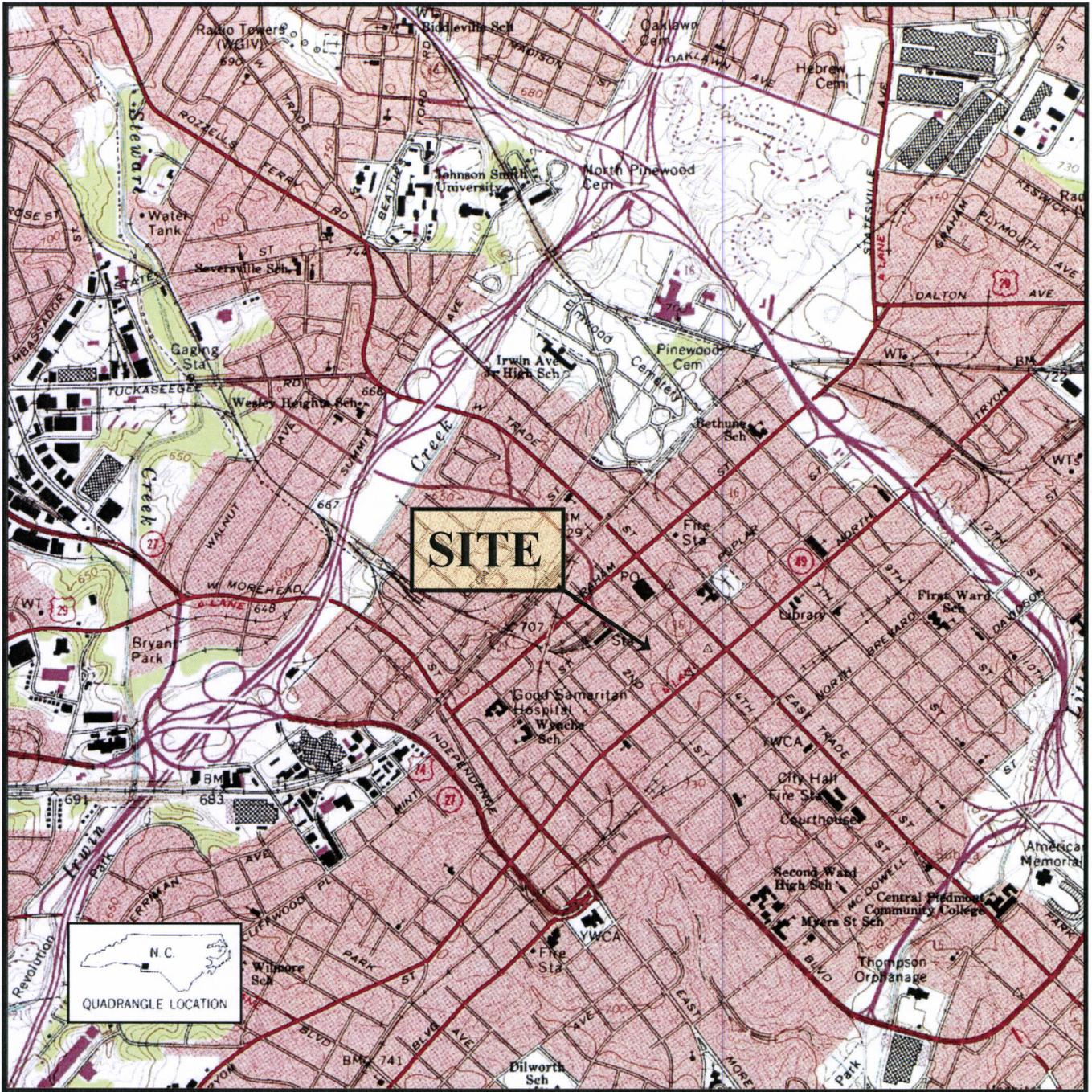
residential SRGs. This may be completed at the conclusion of redevelopment or phases of redevelopment of the property.

7. In preparing the construction plan and performing construction, the following will be considered:
  - a) If soil at the site is contaminated above the corresponding remedial goal and can be left in place, it will be covered as described in Item #6 above.
  - b) With DENR's approval, contaminated soil above the corresponding remedial goal may be moved to an alternate on-site location provided the soil is placed under a barrier as described in Item #6 above. Where requested by DENR, existing data or supplemental analyses will be used to confirm the soil to be moved is not characteristically hazardous.
  - c) If soil from an impacted area must be transported offsite, it will be profiled based on existing site data and other analyses as may be required by the disposal facility, and transported to an appropriately permitted facility.
8. If excavation of impacted soil proceeds into an existing City-controlled roadway or utility corridor, but is within or at the bounds of the subject property, actions will be taken to minimize unnecessary disruption of roadway traffic and/or utility service. In such an instance, confirmation sampling and subsequent over-excavation may not be conducted beyond the extent mandated by construction needs or beyond the bounds of the subject property. Such conditions will be discussed with DENR should they occur.
9. If a sub-grade feature or pit is encountered during construction and does not require removal for geotechnical or construction purposes, it will be filled with soil or suitable fill and construction will proceed. Where appropriate, the bottom may be penetrated before backfilling to prevent water accumulation. If the feature or pit has waste in it, the waste may be set aside in a secure area, be sampled as required by DENR and disposed off-site. If the feature or pit must be removed and the observed waste characteristics indicate the concrete

may potentially be contaminated to a significant degree, the concrete will be sampled and analyzed by methods specified by the disposal facility and approved by DENR.

10. If buried piping is encountered and must be removed to allow installation to proceed, the contractor will inspect the pipe for fluids, collect and sample fluids where appropriate, and look for signs of a release using field methods. If a release is suspected, DENR will be contacted to discuss the appropriate course of action.
11. Excavations will be bermed or covered to minimize run-off in the event of substantial rainfall. If surface water run-off or groundwater gathers in an open excavation within an area determined during construction to be impacted, appropriate worker safety measures will be undertaken. The accumulated water will be allowed to evaporate, used for dust control in areas of known contamination, tested and disposed off-site, or discharged to the City sewer where approved by the City.
12. In the event that impacted soil and/or water within an excavation cannot be dried adequately for construction purposes using the methods described above, the soil may be amended with clean soil, aggregate, drying agents, and/or stabilizing agents to achieve the desired geotechnical qualities. Amendment may be conducted inside or outside the excavation and the material replaced into the excavation. Such amendments will be discussed with DENR in advance.
13. In the event groundwater accumulates to a degree that requires pumping during construction and the water exhibits evidence of impacts beyond the previously identified low-level lead concentration, the water will be sampled. If the collected groundwater sample exceeds the remedial goals noted in Section 4.2, DENR will be contacted to discuss management alternatives. Appropriate worker safety and work zone demarcation measures will be taken to mitigate worker contact with contaminated groundwater and groundwater use will be restricted at the subject property.
14. Demolition debris will be segregated as needed and disposed of or recycled at an approved facility, or reused on site as beneficial fill.

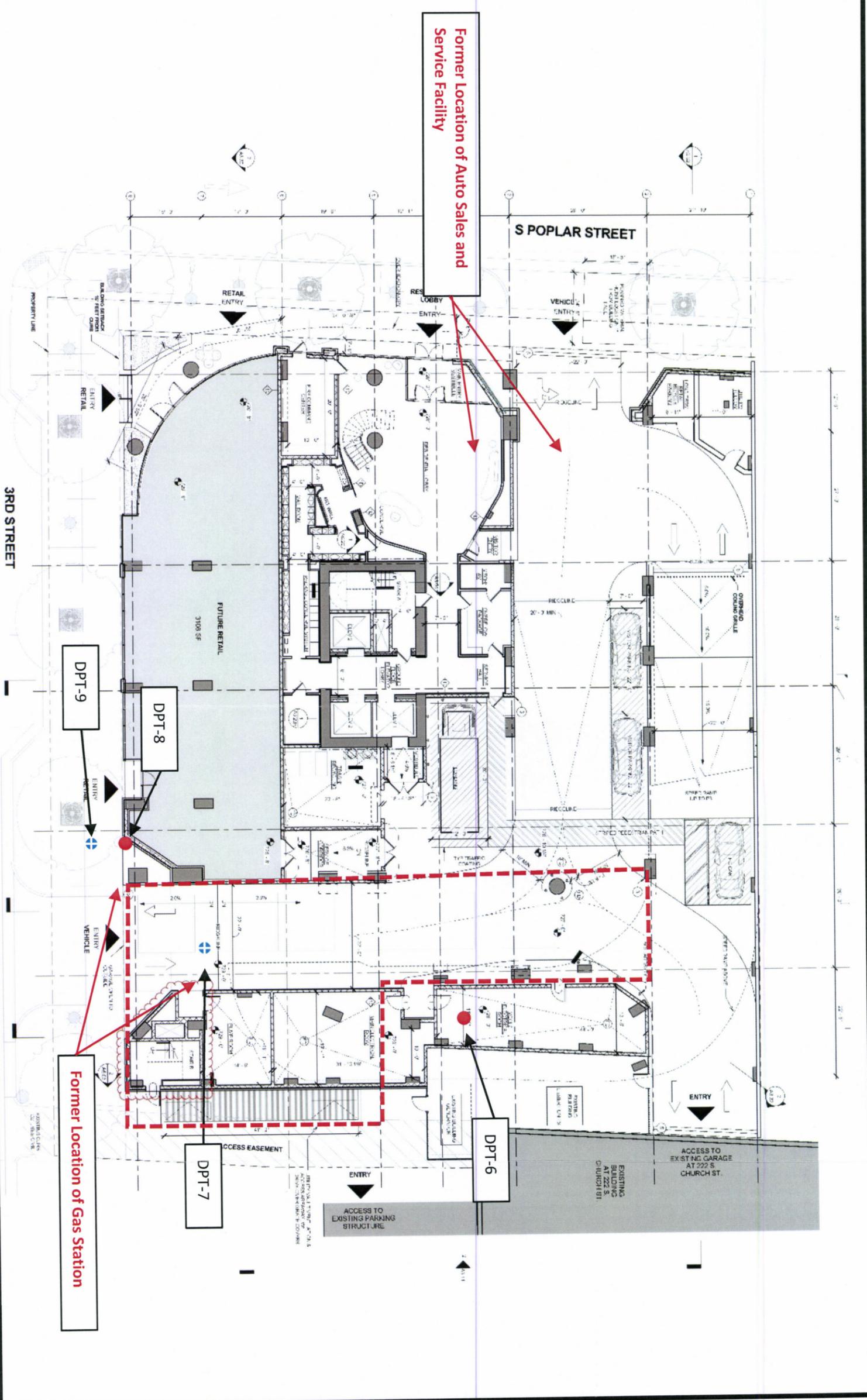
15. Potentially contaminated dirt will be shaken from land clearing debris to the degree practical with land clearing equipment. The land clearing debris will be disposed off-site at an approved land clearing and inert debris landfill.
16. Dust generation will be monitored visually during construction and if observed, dust control measures such as wetting the soils will be implemented.



U.S.G.S. QUADRANGLE MAP  
 CHARLOTTE EAST, NC 1991

QUADRANGLE  
 7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE	<b>SITE LOCATION MAP</b>	
PROJECT	W. 3 <sup>rd</sup> STREET and S. POPLAR STREET CHARLOTTE, NORTH CAROLINA	
		2923 S. Tryon Street, Suite 100 Charlotte, NC 28203 704.586.0007(p) 704.586.0373(f)
DATE:	3-5-14	REVISION NO: 0
JOB NO:	GSL-001	FIGURE: 1



Base Map of Ground Floor Plan



APPROXIMATE



SCALE IN FEET

- + Temporary Monitoring Well/Soil Boring Location
- Soil Boring Location
- Proposed Excavation Area to 12 ft for Transformer Vault

**SITE MAP**

<b>W. 3rd Street and S. Poplar Street</b> Charlotte, North Carolina		DATE: 09/28/2014 JOB NO: GSL-001	REVISION NO: 0 FIGURE NO: 2
--	--	-------------------------------------	--------------------------------

2923 S. Tryon Street, Suite 100  
 Charlotte, NC 28203  
 704.586.0007(p) 704.586.0373(f)

**Appendix A**  
**Previous Environmental Reports**  
**(Text, Tables, and Figures)**

- 2010 Phase I ESA
- 2014 Phase I ESA



**Via Email**

November 17, 2010

Red F c/o Vision Ventures  
214 W. Tremont Ave., Suite 300  
Charlotte, NC 28203

Attention: Mr. Ted Hill

Re: Phase II ESA  
Commercial Office Building  
222 S. Church Street  
Charlotte, North Carolina  
H&H Job No. RED-001

2923 South Tryon Street  
Suite 100 Charlotte, NC  
28203-5449

704-586-0007 phone  
704-586-0373 fax  
www.harthickman.com

Dear Ted:

**1.0 Introduction**

At your request, Hart & Hickman (H&H) has conducted a Phase II Environmental Site Assessment (ESA) at a commercial office building site located at 222 S. Church Street in Charlotte, North Carolina. The subject site consists of an approximate 0.9-acre land parcel improved with an approximate 109,125-square ft office building and an adjacent parking deck. A site location map is presented as Figure 1, and a site plan is presented as Figure 2.

Based upon Phase I ESA activities conducted by H&H in October 2010, H&H identified the following recognized environmental conditions (RECs) at the site:

- A 10,000-gallon heating oil underground storage tank (UST) was closed-in-place in 1990 and is reportedly located southeast of the office building below the concrete sidewalk within the S. Church Street right-of-way. Previous environmental reports indicate that the heating oil UST may extend partially below the office building. Soil borings and one permanent monitoring well (MW-1) were advanced in the vicinity of the heating oil UST during assessment activities conducted between 1990 and 1992. Total petroleum hydrocarbons

(TPH) and benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected at concentrations above State regulatory action levels. The constituents identified in soil and ground water during assessment of the heating oil UST are more typical of gasoline hydrocarbons than heating oil constituents indicating that another source may exist either on, or at a location upgradient of the subject site. A soil vapor recovery well was installed at the location of the MW-1 monitoring well in 1992, and contractors performed remediation by soil ventilation. The remediation system is no longer present. It is unknown how long the soil venting system operated. According to the North Carolina Department of Environment and Natural Resources (DENR), the heating oil release incident is currently in a "response" phase and has not been closed out.

H&H contracted a utility locator to perform a geophysical survey on the property utilizing ground penetrating radar (GPR) and a magnetometer. The purpose of the geophysical survey was to identify geophysical anomalies indicative of potential existing or former USTs and/or associated piping. However, the utility contractor encountered significant radar signal interference during the GPR survey within the S. Church Street right-of-way and therefore could not verify the presence or absence of USTs.

- Four gasoline USTs are depicted on the 1929 and 1951 Sanborn maps located in front of the office building within the S. Church Street right-of-way. The USTs are shown at locations approximately 20 to 40 ft north of the closed-in-place 10,000-gallon heating oil UST. Gasoline USTs are not identified in the DENR UST database records provided in the EDR environmental database report for the site, and H&H did not find record that the gasoline USTs were either assessed, closed, or removed from the property. Although it does not appear that previous sampling activities were conducted to specifically assess soil and ground water in the vicinity of the four gasoline tanks, petroleum constituents more typical of gasoline than heating oil were identified in soil and ground water downgradient of the gasoline USTs during assessment of the nearby closed-in-place 10,000-gallon heating oil UST. Geophysical anomalies were not identified in the vicinity of the gasoline UST

locations during the GPR survey. However, as mentioned previously, the utility contractor encountered significant radar signal interference during the GPR survey within the S. Church Street right-of-way, and therefore could not verify the presence or absence of USTs.

- A heating oil easement is depicted on an ALTA survey map located in the southern corner of the subject property along S. Church Street. H&H did not identify evidence of a heating oil UST at this location during Phase I ESA activities or evidence of a geophysical anomaly in the area during the GPR survey.
- An auto sales and service facility operated at the site southwest of the office building during the 1940s and early 1950s. The auto sales and service facility was demolished in 1952, and a two-level parking deck was constructed on the property. Field observations and a GPR survey identified what appears to be an in-ground automobile lift that previously operated in this area.
- An auto repair shop operated in the northern portion of a former parking garage during the 1940s and early 1950s. This parking garage was converted into the existing five-story office building in 1952. This area is currently occupied by an emergency generator and a pad-mounted transformer. The auto repair shop was demolished in 1952 when the parking garage was renovated into an office building.
- A store with a gasoline UST and a former gas station with three gasoline USTs are depicted on the 1929 and 1951 Sanborn maps, respectively, located in the western portion of the subject site. The store reportedly operated during the 1920s and 1930s, and the gas station reportedly operated during the 1940s and 1950s. The former gas station is identified in the environmental database report operating under the name "Stack Mal A". A GPR survey was conducted in the area of the former store and gas station to determine if USTs or underground lines remain in this area. No geophysical anomalies suggesting probable USTs were identified by the geophysical survey; however, the utility locator identified anomalies indicative of possible former underground product lines.

H&H conducted Phase II soil and ground water sampling at the site to assess these potential areas of concern. The methods, results, and conclusions of the assessment activities are presented below.

## 2.0 Phase II ESA Sampling and Analysis

On November 2 and 3, 2010, H&H conducted Phase II ESA soil and ground water sampling activities to assess the potential areas of concern at the site. Ten borings were advanced in the following locations (associated sample identifications are listed in parenthesis):

- Two borings in the area of four gasoline USTs identified on Sanborn Maps along S. Church Street (DPT-1 and DPT-2)
- One boring in the area of the closed in place 10,000-gallon heating oil UST along S. Church Street (DPT-3A)
- One boring in the area of the heating oil UST easement depicted on the preliminary ALTA survey in the southern corner of the property (DPT-3B)
- Two borings in the area of the former auto sales and service facility southwest of the office building and below a two-story parking deck (DPT-4 and DPT-5)
- One boring in the area of the former auto repair facility in the northern portion of the site (DPT-6)
- Three borings in the area of the former gas station in the western portion of the property (DPT-7, DPT-8, and DPT-9)

Prior to ground water sampling activities, H&H obtained a Subsurface Investigation Permit (SIP) from the Groundwater and Wastewater Services Section of the Mecklenburg County Land Use and Environmental Services Agency (LUESA). Phase II ESA sampling locations are shown on Figure 2.

## 2.1 Sampling Methodology

H&H utilized Probe Technology, Inc. to advance 10 soil borings using Geoprobe<sup>®</sup> direct-push technology (DPT) equipment at the sampling locations noted above. Please note that borings DPT-4 and DPT-5 were advanced through the concrete floor of a subgrade parking garage at an estimated floor elevation of 6 to 7 ft below the surrounding grade. At DPT boring locations, soil cores were continuously retrieved using a MacroCore sampler within acetate sleeves for visual characterization and soil vapor screening with a photo-ionization detector (PID). Based upon field screening results, 12 soil samples from the 10 borings were submitted for laboratory analysis. Note that three soil samples at different depths were collected from boring DPT-3A at the closed in place heating oil UST to satisfy the soil sampling requirements of a Phase I Limited Site Assessment for petroleum UST releases. Boring logs with PID readings are included in Appendix A. A sample summary and analysis table is included as Table 1.

Three soil borings were converted to temporary ground water monitoring wells (DPT-3A, DPT-7, and DPT-9). The temporary monitoring wells were constructed of 1-inch PVC casing with 10 ft of 0.010-slot pre-packed PVC well screen placed to bracket the water table. Additional filter sand was added to the well annulus to approximately 2 ft above the screened interval followed by a bentonite seal. Monitoring well construction information is provided in Table 2. Well construction and abandonment records are included in Appendix B.

Following well installation, H&H purged the wells until field measurements of temperature, pH, and conductivity stabilized. H&H also ensured that the ground water samples collected for lead analysis from DPT-7 and DPT-9 had a relatively low turbidity value and were visibly clear. Ground water samples were collected from DPT-3A using a dedicated disposable polyethylene bailer. Ground water samples were collected from DPT-7 and DPT-9 using a peristaltic pump connected to polyethylene tubing. Samples for volatile organic compound (VOC) analysis were collected from DPT-7 and DPT-9 using a dedicated disposable polyethylene bailer.

Soil and ground water samples were submitted to Test America, Inc., a North Carolina-certified laboratory. Laboratory-supplied sample kits and bottles were used for sample collection. Samples were placed in an iced cooler after collection. A chain-of-custody record was completed for the samples collected and included the sample description, date collected, time collected, matrix, sample container information, and analyses required. The chain-of-custody was signed by H&H prior to placement in the iced sample cooler for delivery to the laboratory. Laboratory analytical data reports are provided in Appendix C.

## **2.2 Ground Water Gauging**

H&H gauged depth-to-ground water in each temporary monitoring well using an electronic water level meter prior to sample collection. Depth to ground water was measured relative to the ground surface in each well. The depth to ground water ranged from approximately 11 ft below grade (western portion of the site) to 25 ft below grade (eastern portion of the site). Based upon area topography, H&H estimates that the ground water flow direction in the site area is generally to the west and northwest. Depths to ground water measurements are included in Table 2.

## **3.0 Soil and Ground Water Sampling Results**

The results of analysis of the soil and ground water samples are summarized in Tables 3 and 4, respectively. The laboratory analytical data reports and chain-of-custody records are included in Appendix C. The soil analytical results were compared to the North Carolina Department of Environment and Natural Resources (DENR) UST Section soil to ground water, residential, and industrial/commercial Maximum Soil Contaminant Concentrations (MSCCs) for compound-specific analyses. For TPH analyses, the data were compared to the DENR UST Section Action Levels for UST and non-UST petroleum releases. The ground water analytical results were compared the North Carolina 2L Ground Water (NC 2L) Standards and the DENR UST Section Gross Contamination Levels (GCLs).

The results of soil sample analyses indicate that TPH as gasoline range organics (TPH-GRO) were detected above the DENR Action Level of 10 mg/kg for UST and non-UST petroleum releases in DPT-1 (3 to 5 ft), DPT-2 (5 to 7 ft), DPT-5 (2 to 4 ft below subgrade parking garage floor), and DPT-7 (0 to 2 ft). TPH as diesel range organics (TPH-DRO) were detected above the DENR Action Level of 10 mg/kg for petroleum UST releases in DPT-3B (2 to 4 ft) and above the DENR Action Level of 40 mg/kg for petroleum non-UST releases in DPT-5 (2 to 4 ft, below subgrade parking garage floor). TPH was not detected above the laboratory reporting limits in DPT-4 (2 to 4 ft, below subgrade parking garage floor), DPT-6 (4 to 6 ft), DPT-8 (2 to 4 ft), and DPT-9 (2 to 4 ft). Volatile organic compounds (VOCs) and volatile petroleum hydrocarbons (VPH) were detected in soil samples collected from soil boring DPT-3A; however, detected concentrations were below DENR MSCCs.

Ground water analytical results from temporary well DPT-3A indicate the presence of benzene (14.2 µg/L) and C5-C8 aliphatics (1,020 µg/L) above the NC 2L Standards of 1.0 µg/L and 400 µg/L, respectively. Additional petroleum-related compounds were detected in DPT-3A; however, the detected concentrations were below the NC 2L Standards. Ground water results from DPT-7 indicate the presence of lead (22 µg/L) above its NC 2L Standard of 15 µg/L. No detected compounds in DPT-3A or DPT-7 exceeded DENR UST Section GCLs. No target compounds were detected above laboratory reporting limits in ground water sample DPT-9.

#### 4.0 Recommendations

Based upon the field evidence and collected data, it appears that petroleum releases from non-UST sources were identified at the site. Petroleum releases identified at borings DPT-1, DPT-2, DPT-3A, and DPT-7 appear to be associated with UST releases and the petroleum release at DPT-5 appears to be from a non-UST source. DENR requirements for addressing releases from UST sources are different than non-UST sources because petroleum UST releases are eligible for risk-based incident closure which is not available for non-UST petroleum releases.

### UST Releases

Based upon the presence of TPH impacts in soil in the vicinity of former gasoline USTs located adjacent and east of the office building (soil borings DPT-1 and DPT-2), TPH impacts in soil near the heating oil UST easement (soil boring DPT-3B), and TPH impacts in soil and lead-impacted ground water at the former gas station in the western portion of the site (soil boring/well DPT-7), H&H recommends that a Phase I LSA be performed by advancing LSA soil borings/temporary monitoring wells in the locations of the previous soil borings in these areas. The sampling requirements for a Phase I LSA in the area of the closed in place heating oil UST (DPT-3A) were completed during this assessment. In addition, in accordance with DENR guidelines, we also recommend that a receptor survey and land use survey be completed. Based upon results of the recommended Phase I LSA, a risk-based closure may be pursued for the above UST-related petroleum impacts through the DENR UST Section.

### Non-UST Release

Based upon the presence of TPH impacts in soil in the vicinity of the former auto sales facility (soil boring DPT-5), H&H recommends one of the following two options:

1. Conduct additional soil sampling to determine the extent of impacted soil. Then, excavate impacted soil and collect post-excavation soil samples to confirm that soil impacts have been adequately removed. Please note that a monitoring well will need to be installed in the excavation and a ground water sample collected if ground water is encountered within the excavation.
2. Conduct additional soil sampling to determine the extent of impacted soil. In addition, collect representative source area samples for full scan volatile and semi-volatile organic compounds to evaluate if individual petroleum-related compounds are below soil to ground water MSCCs. If concentrations are below MSCCs, then the release would potentially be eligible for a no further action (NFA). If concentrations are above MSCCs,

Mr. Ted Hill  
November 17, 2010  
Page 9

then further evaluation such as site-specific leach tests and/or ground water sampling may be warranted.

Thank you for the opportunity to assist you with this project. Should you have any questions or require any additional information concerning this report, please feel free to contact us at (704) 586-0007.

Very truly yours,

*Hart & Hickman, PC*



Matt Ingalls  
Project Manger



Steve Hart, PG  
Principal

### **Attachments**

Table 1	Phase II ESA Sample Summary
Table 2	Monitoring Well Data Summary
Table 3	Summary of Phase II ESA Soil Sample Results
Table 4	Summary of Phase II ESA Ground Water Sample Results
Figure 1	Site Location Map
Figure 2	Site Plan and Sample Location Map
Appendix A	Boring Logs
Appendix B	Well Construction and Abandonment Records
Appendix C	Laboratory Analytical Data Sheets

Table 1  
Phase II ESA Sample Summary  
222 S. Church Street Project  
Charlotte, North Carolina  
H&I Job No. RED-001

Soil Boring Designation	Soil Boring Location	Boring Depth (ft bgs)	TMW Depth (ft bgs)	DTW (ft bgs)	Soil Sample Depth (ft bgs)	Soil Sample Analysis	Ground Water Sample Analysis
DPI-1	Former gasoline USTs along S. Church Street	9	NA	NA	3-5	TPH GRO	NS
DPI-2	Former gasoline USTs along S. Church Street	9	NA	NA	5-7	TPH GRO	NS
DPI-3A	10,000-gallon heating oil UST (closed-in-place)	32	32	21.82	2-4 9-11 18-20	VOCs (8260 B), SVOCs (8270 D), MADEP, EPH, and VPH MADEP, EPH, and VPH VOCs (8260 B), VOCs (8270 D), MADEP, EPH, and VPH	VOCs (602 w/ xylenes), SVOCs plus 10 THCs (625), MADEP, EPH, MADEP, VPH
DPI-3B	Former heating oil UST easement as presented on AITA Survey	8	NA	NA	2-4	TPH DRO	NS
DPI-4	Former auto sales facility (southern portion of the site)	10	NA	NA	2-4	TPH DRO/GRO	NS
DPI-5	Former auto sales facility (southern portion of the site)	10	NA	NA	2-4	TPH DRO/GRO	NS
DPI-6	Former auto repair facility (northern portion of the site)	15	NA	NA	4-6	TPH DRO/GRO	NS
DPI-7	Former gas station (western portion of the site)	20	20	13.5	0-2	TPH GRO	VOCs w/ ethanal, BPE, and MTBE (6200 B), MADEP, VPH, lead (6010K)
DPI-8	Former gas station (western portion of the site)	10	NA	NA	2-4	TPH GRO	NS
DPI-9	Former gas station/service garage area (western portion of the site)	20	20	11.10	2-4	TPH DRO/GRO	VOCs w/ ethanal, BPE, and MTBE (6200 B), MADEP, VPH, lead (6010K)

Notes:  
DPI = direct push technology  
TAW = temporary monitoring well  
ft bgs = feet below ground surface  
DTW = depth to ground water  
DPI-3A = Phase I Limited Site Assessment soil boring at location of UST closed in place as per 1998 UST Report prepared by PSI  
DPI-3B = soil boring to assess UST heating oil easement depicted on the AITA survey  
Soil borings DPI-1, DPI-2, DPI-3B, DPI-4, and DPI-5 were advanced within subgrade parking garage or parking deck areas  
EPA Method shown in parenthesis  
TPH = total petroleum hydrocarbons, DRO = diesel range organics, GRO = gasoline range organics  
VOCs = Volatile Organic Compounds  
SVOCs = Semi-Volatile Organic Compounds  
MADEP = Massachusetts Department of Environmental Protection, EPH = Extractable Petroleum Hydrocarbons, VPH = Volatile Petroleum Hydrocarbons  
IPE = Isopropyl Ether, MTBE = Methyl Tert Butyl Ether  
PAHs = Polynuclear Aromatic Hydrocarbons  
NA = not applicable  
NS = no sample

**Table 2**  
**Monitoring Well Data Summary**  
**222 S. Church Street**  
**Charlotte, North Carolina**  
**H&H Job No. RED-001**

Well ID	Date Installed	Total Depth (ft)	Screen Length (ft)	Approximate Screened Interval (ft bgs)	Depth to Water (ft bgs)
DPT-3A	11/2/2010	32	10	22 - 32	24.82
DPT-7	11/2/2010	20	10	10 - 20	12.50
DPT-9	11/2/2010	20	10	10 - 20	11.10

Notes:  
 ft bgs = feet below ground surface

Table 3  
 Summary of Phase II ESA Soil Sample Results  
 222 S. Church Street  
 Charlotte, North Carolina  
 H&H Job No. RED-001

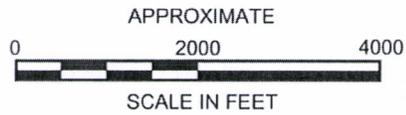
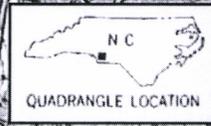
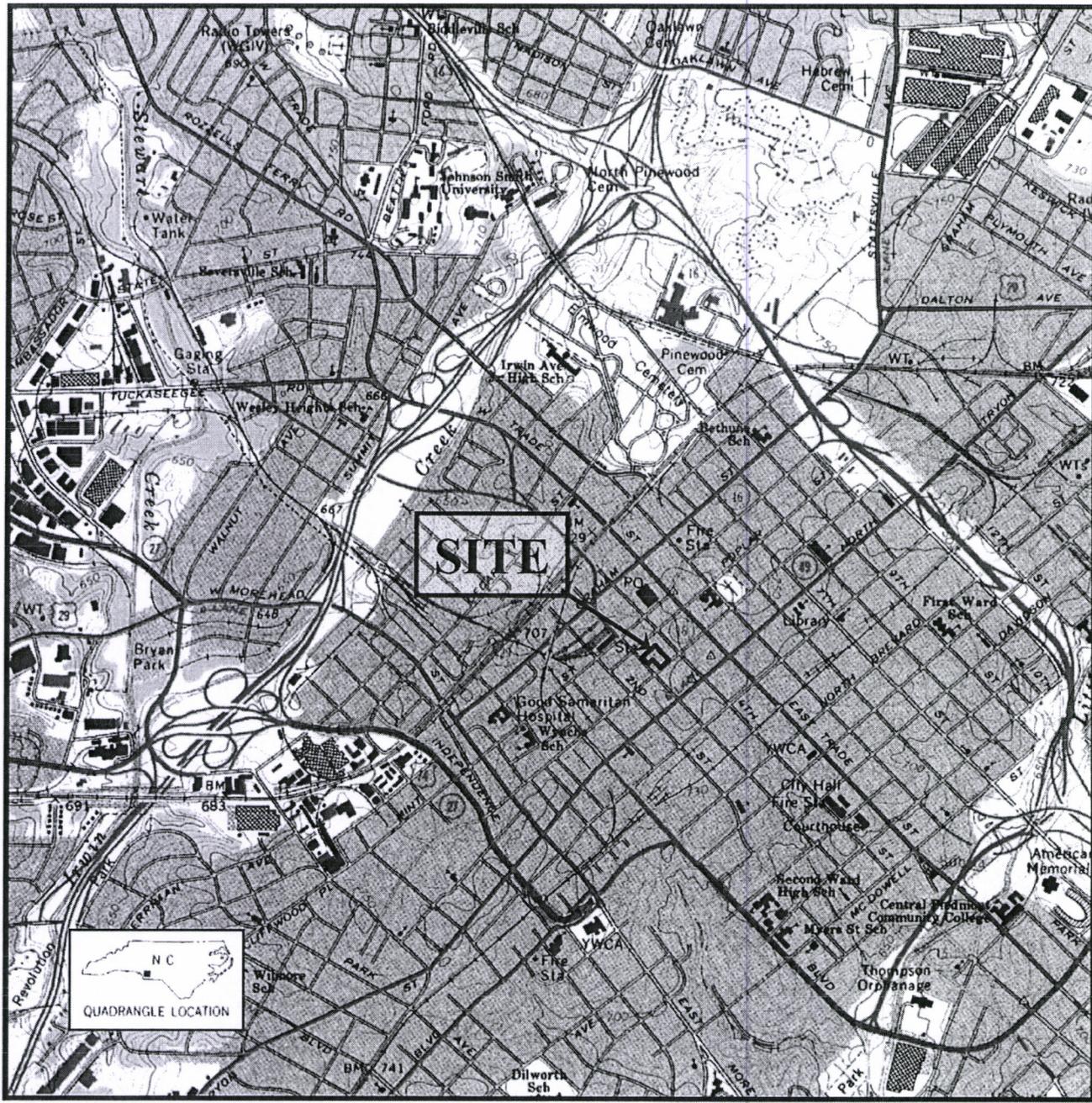
Area of Concern Sample ID Date Depth (ft)	Former Gasoline USTs		10,000-gallon Heating Oil UST - Closed In Place		Former Heating Oil UST Easement DPT-3B 11/2/2010 2-4	Former Auto Sales Facility		Former Auto Repair Facility		Former Gas Station		Former Gas Station/Service Garage		NC DENR UST Section Regulatory Screening Levels		
	DPT-1 11/2/2010 3-5	DPT-2 11/2/2010 5-7	DPT-3A 11/2/2010 2-4	DPT-3A 11/2/2010 8-11		DPT-3A 11/2/2010 18-20	DPT-4 11/2/2010 2-4	DPT-5 11/2/2010 2-4	DPT-6 11/3/2010 4-6	DPT-7 11/2/2010 0-2	DPT-8 11/2/2010 2-4	DPT-9 11/2/2010 2-4	Soil-to-Ground Water MSCC (mg/kg)	Residential MSCC (mg/kg)	Industrial/ Commercial MSCC (mg/kg)	Action Level (mg/kg)
TPH-DRO (8015C)	NA	NA	NA	NA	NA	<6.23*	44.2**	<6.27*	NA	NA	NA	<5.97*	---	---	10*/10**	
TPH-GRO (8015C)	67.6	482	NA	NA	NA	<4.93	189	<4.98	239	<3.86	<4.45	---	---	---	10	
VOCs (8250B)	NA	NA	0.0495	NA	<0.0524	NA	NA	NA	NA	NA	NA	NA	24	14,000	360,000	
Acetone	NA	NA	<0.00187	NA	0.00456	NA	NA	NA	NA	NA	NA	NA	4.3	676	16,350	
n-Butylbenzene	NA	NA	<0.00187	NA	0.00217	NA	NA	NA	NA	NA	NA	NA	3.3	626	16,350	
sec-Butylbenzene	NA	NA	<0.00187	NA	0.00375	NA	NA	NA	NA	NA	NA	NA	2.10	3,129	81,750	
Dichlorodifluoromethane	NA	NA	<0.00187	NA	0.00391	NA	NA	NA	NA	NA	NA	NA	NS	NS	NS	
p-Isopropyltoluene	NA	NA	<0.00187	NA	0.00391	NA	NA	NA	NA	NA	NA	NA	NS	NS	NS	
SVOCs (8270D)	NA	NA	All BRL	NA	All BRL	NA	NA	NA	NA	NA	NA	NA	---	---	---	---
MADEP/UP/HEPH	NA	NA	All BRL	NA	All BRL	NA	NA	NA	NA	NA	NA	NA	---	---	---	---
VPH C5-C8 Aliphatics	NA	NA	<5.28	<5.04	<5.78	NA	NA	NA	NA	NA	NA	NA	68	939	24,528	
VPH C9-C12 Aliphatics	NA	NA	<5.28	<5.04	8.06	NA	NA	NA	NA	NA	NA	NA	NS	NS	NS	
EPH C9-C18 Aliphatics	NA	NA	<11.1	<10.9	<13.0	NA	NA	NA	NA	NA	NA	NA	NS	NS	NS	
Total C9-C18 Aliphatics	NA	NA	ND	ND	8.06	NA	NA	NA	NA	NA	NA	NA	540	1,500	40,000	
EPH C19-C36 Aliphatics	NA	NA	<11.1	<10.9	<13.0	NA	NA	NA	NA	NA	NA	NA	>100%	31,000	810,000	
VPH C9-C10 Aromatics	NA	NA	<5.28	<5.04	<6.78	NA	NA	NA	NA	NA	NA	NA	NS	NS	NS	
EPH C11-C22 Aromatics	NA	NA	<11.1	<10.9	<13.0	NA	NA	NA	NA	NA	NA	NA	NS	NS	NS	
Total C9-C22 Aromatics	NA	NA	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	31	469	12,264	

Notes  
 Concentrations reported in mg/kg  
 Laboratory analytical method shown in parentheses  
 Values in bold exceed the a NC DENR regulatory screening level  
 NC DENR = North Carolina Department of Environment and Natural Resources  
 MADEP = Massachusetts Department of Environmental Protection, VPH = Volatile Petroleum Hydrocarbons  
 EPH = Extractable Petroleum Hydrocarbons, NA = Not Analyzed, ND = Not Detected, NS = Not Specified  
 mg/kg = milligrams per kilogram, VOCs = Volatile Organic Compounds, SVOCs = Semi-Volatile Organic Compounds,  
 BRL = Below Reporting Limit  
 Soil Borings: DPT-1, DPT-2, DPT-3B, DPT-4, and DPT-5 were advanced within subgrade parking garage or parking deck areas  
 Total Petroleum Hydrocarbon (TPH) Diesel-Range Organics (DRO) Action Level for UST petroleum releases  
 \*\* TPH-DRO Action Level for non-UST petroleum releases

Table 4  
**Summary of Phase II ESA Ground Water Sample Results**  
 222 S. Church Street  
 Charlotte, North Carolina  
H&H Job No. RED-001

Area of Concern	Former 10,000-gallon Heating Oil UST - Closed In Place	Former Gas Station		Former Gas Station/Service Garage		North Carolina 2L Ground Water Standards (µg/L)	Gross Contamination Levels for Ground Water (µg/L)
		DPT-7	DPT-9	DPT-7	DPT-9		
Sample ID	DPT-3A	11/2/2010	11/3/2010				
Date	11/2/2010	11/2/2010	11/3/2010				
<u>VOCs (6200B/602)</u>	14.2	<0.500	<0.500	<0.500	<0.500	1	5,000
Benzene	7.96	<0.500	<0.500	<0.500	<0.500	600	84,500
Ethylbenzene	17.57	<1.00	<1.00	<1.00	<1.00	500	85,500
Xylenes							
<u>SVOCs + TICs (625)</u>	All BRL	NA	NA	NA	NA	---	---
<u>MADEP VPH/EPH</u>							
VPH C5-C8 Aliphatics	1,020	<100	<100	<100	<100	400	NS
VPH C9-C12 Aliphatics	177	<100	<100	<100	<100	NS	NS
EPH C9-C18 Aliphatics	<100	NA	NA	NA	NA	NS	NS
Total C9-C18 Aliphatics	177	ND	ND	ND	ND	700	NS
EPH C19-C36 Aliphatics	<100	NA	NA	NA	NA	10,000	NS
VPH C9-C10 Aromatics	127	<100	<100	<100	<100	NS	NS
EPH C11-C22 Aromatics	<100	NA	NA	NA	NA	NS	NS
Total C9-C22 Aromatics	127	ND	ND	ND	ND	200	NS
<u>Metals (6010C)</u>	NA						
Lead	NA	22		<5.00		15	15,000

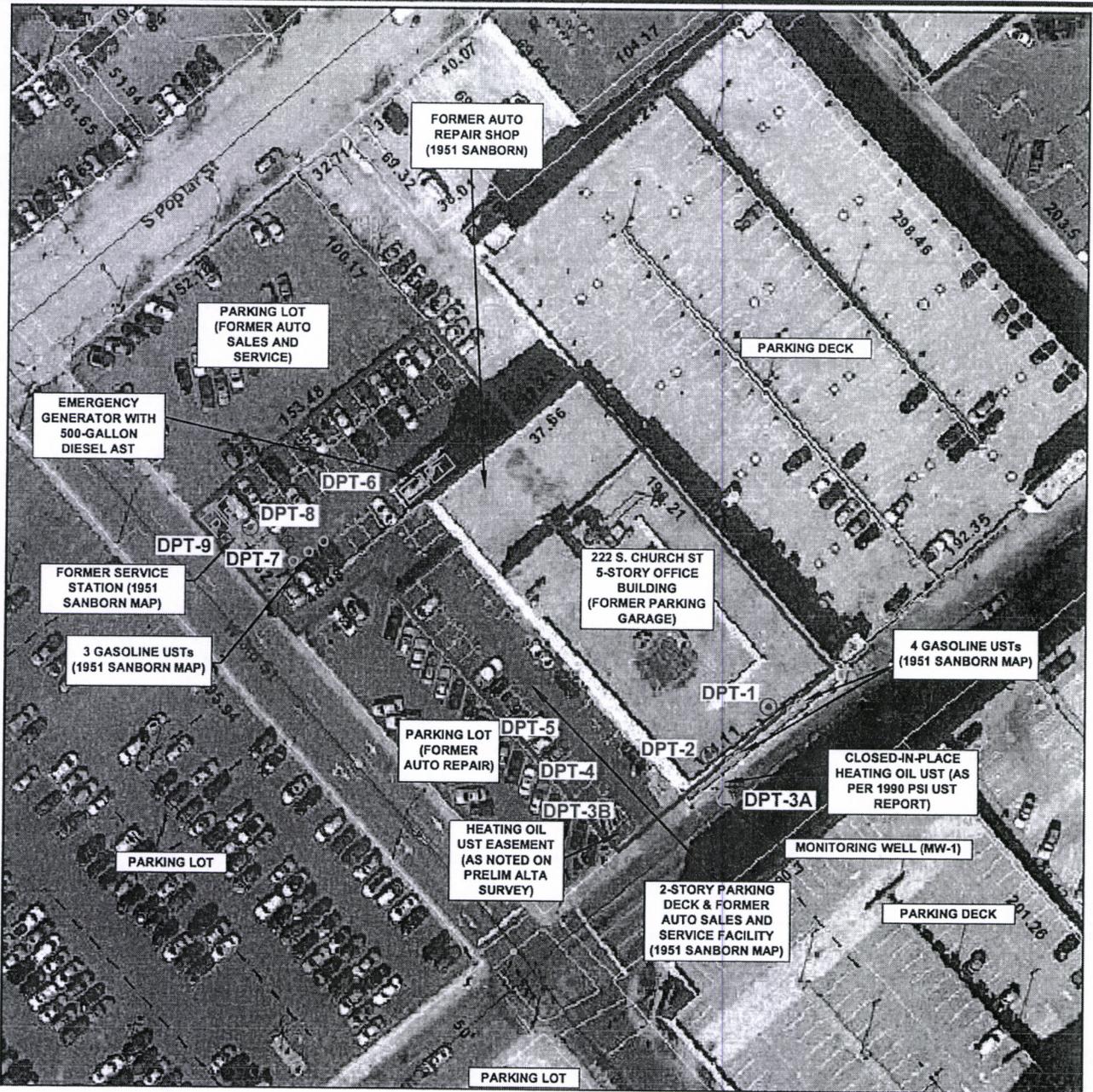
Notes:  
 Concentrations reported in µg/L  
 Values in bold exceed the NC 2L Ground Water Standard  
 Laboratory analytical method shown in parentheses  
 MADEP = Massachusetts Department of Environmental Protection; VPH = Volatile Petroleum Hydrocarbons;  
 EPH = Extractable Petroleum Hydrocarbons; NA = Not Analyzed; ND = Not Detected; NS = Not Specified; ug/L = Micrograms per Liter;  
 VOCs = Volatile Organic Compounds; SVOCs = Semi-Volatile Organic Compounds; TIC = Tentatively Identified Compound;  
 BRL = Below Reporting Limit



U.S.G.S. QUADRANGLE MAP  
CHARLOTTE EAST, NC 1991

QUADRANGLE  
7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE	SITE LOCATION MAP	
PROJECT	222 S. CHURCH STREET CHARLOTTE, NORTH CAROLINA	
	 2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 A PROFESSIONAL CORPORATION 704-586-0007 (p) 704-586-0373 (f)	
DATE:	11-11-10	REVISION NO: 0
JOB NO:	RED-001	FIGURE: 1



**LEGEND**

-  PAD-MOUNTED TRANSFORMER
-  DUMPSTER
-  EXISTING MONITORING WELL
-  SOIL BORING/ TEMPORARY MONITORING WELL LOCATION
-  SOIL BORING LOCATION

<b>TITLE</b>	
<b>SITE PLAN AND SAMPLE LOCATION MAP</b>	
<b>PROJECT</b>	
222 S. CHURCH STREET CHARLOTTE, NORTH CAROLINA	
 <b>Hart &amp; Hickman</b> <small>A PROFESSIONAL CORPORATION</small>	
2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f) License # C-1269	
DATE: 11-9-10	REVISION NO. 0
JOB NO: RED-001	FIGURE: 2

S:\AAA-Master Projects\RED\F\RED-001\Figures\FIGURE 2\_RED-001.dwg, PROP SAMPLE MAP, 11/16/2010 3:50:50 PM, 250



2923 South Tryon Street-Suite 100  
Charlotte, North Carolina 28203  
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street  
Raleigh, North Carolina 27607  
919-847-4241(p) 919-847-4261(f)

# BORING NUMBER DPT-1

PROJECT: 222 S. Church St.

JOB NUMBER: RED-001

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0					Concrete			0.0
5.0			0	2	Slightly moist - moist, stiff, brown and orange, fine-medium sandy SILT, petroleum-like odor			5.0
2.5			0	1023				2.5
10.0			0	967				10.0
7.5			0	2770				7.5
10.0					Bottom of borehole at 9.0 feet.			10.0

LOG OF BORING - HART HICKMAN GDT - 11/11/10 14:45 - S:\AAA-MASTER GINT PROJECTS\RED-001.GPJ

DRILLING CONTRACTOR: Probe Technology  
 DRILL RIG/ METHOD: 54DT / DPT  
 SAMPLING METHOD: Acetate Sleeve  
 LOGGED BY: RJC  
 DRAWN BY:

BORING STARTED: 11/3/10  
 BORING COMPLETED: 11/3/10  
 TOTAL DEPTH: 9  
 SURFACE ELEV:  
 DEPTH TO WATER:

Remarks:  
 Soil sample collected from 3-5 ft



# BORING NUMBER DPT-2

2923 South Tryon Street-Suite 100  
 Charlotte, North Carolina 28203  
 704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street  
 Raleigh, North Carolina 27607  
 919-847-4241(p) 919-847-4261(f)

PROJECT: 222 S. Church St.

JOB NUMBER: RED-001

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0					Concrete			0.0
2.5	90		0	3.2	Moist, very stiff, fine-medium sandy CLAY w/ trace silt, petroleum-like odor			2.5
5.0	100		0	149				5.0
7.5	100		0	170	Slightly moist, loose, orange and brown, silty fine-medium SAND, petroleum-like odor			7.5
9.0			0	320				9.0
10.0					Bottom of borehole at 9.0 feet.			10.0

LOG OF BORING - HART HICKMAN GDT - 11/1/10 14.45 - S:\AAA-MASTER GINT PROJECTS\RED-001.GPJ

DRILLING CONTRACTOR: Probe Technology  
 DRILL RIG/ METHOD: 54DT / DPT  
 SAMPLING METHOD: Acetate Sleeve  
 LOGGED BY: RJC  
 DRAWN BY:

BORING STARTED: 11/3/10  
 BORING COMPLETED: 11/3/10  
 TOTAL DEPTH: 9  
 SURFACE ELEV:  
 DEPTH TO WATER:

Remarks:  
 Soil sample collected from 5-7 ft



# BORING NUMBER DPT-3A

2923 South Tryon Street-Suite 100  
Charlotte, North Carolina 28203  
704-586-0007(p) 704-586-0373(f)

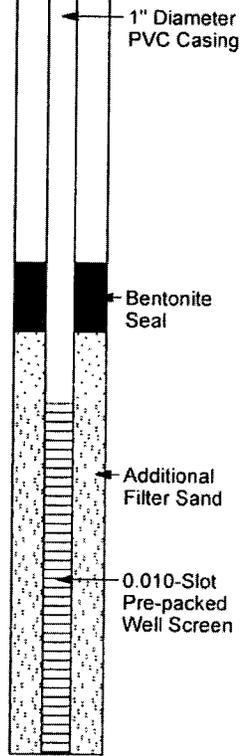
3334 Hillsborough Street  
Raleigh, North Carolina 27607  
919-847-4241(p) 919-847-4261(f)

PROJECT: 222 S. Church St.

JOB NUMBER: RED-001

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0					Concrete			0
					Gravel			
50			0	0	Very moist, dense, brown and orange, clayey fine SAND			
5			0	0	Very moist, stiff, brown, fine sandy CLAY			5
100			0	0	Moist, stiff, brown/orange/gray, clayey SILT w/ fine sand, slight petroleum-like odor			10
10			0	0				10
100			0	0				15
15			0	0				15
100			0	9.4	Moist, stiff, greenish gray and brown, fine sandy SILT w/ weathered quartz, petroleum-like odor			20
20			0	91.4				20
75			0	571				25
25			0	1405	Wet, very stiff, greenish brown and brown, silty fine SAND w/ clay			25
75			0	133				30
30								30
Bottom of borehole at 32.0 feet.								



LOG OF BORING - HART HICKMAN GDT - 11/11/10 15:45 - S WAAA-MASTER GINT PROJECTS/RED-001.GPJ

DRILLING CONTRACTOR: Probe Technology  
 DRILL RIG/ METHOD: 6610DT / DPT  
 SAMPLING METHOD: Acetate Sleeve  
 LOGGED BY: RJC  
 DRAWN BY:

BORING STARTED: 11/2/10  
 BORING COMPLETED: 11/2/10  
 TOTAL DEPTH: 32  
 SURFACE ELEV:  
 DEPTH TO WATER:

Remarks:  
 Soil samples collected from 2-4 ft, 9-11 ft, and 18-20 ft



2923 South Tryon Street-Suite 100  
Charlotte, North Carolina 28203  
704-586-0037(p) 704-586-0373(f)

3334 Hillsborough Street  
Raleigh, North Carolina 27607  
919-847-4241(p) 919-847-4261(f)

# BORING NUMBER DPT-3B

PROJECT: 222 S. Church St.  
JOB NUMBER: RED-001  
LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0					Concrete			0.0
2.5			3	3		Slightly moist, stiff, orange/tan/brown, clayey SILT		2.5
5.0			3	3				5.0
7.5			3	3		Slightly moist, stiff, orange/tan/brown, fine sandy SILT		7.5
8.0						Bottom of borehole at 8.0 feet.		8.0
10.0								10.0

LOG OF BORING - HART HICKMAN GDT - 11/11/10 14:45 - S:\AAA-MASTER GINT PROJECTS\RED-001.GPJ

DRILLING CONTRACTOR: Probe Technology  
DRILL RIG/ METHOD: 54DT / DPT  
SAMPLING METHOD: Acetate Sleeve  
LOGGED BY: RJC  
DRAWN BY:

BORING STARTED: 11/3/10  
BORING COMPLETED: 11/3/10  
TOTAL DEPTH: 8  
SURFACE ELEV:  
DEPTH TO WATER:

Remarks:  
Soil sample collected from 2-4 ft



**BORING NUMBER DPT-4**

2923 South Tryon Street-Suite 100  
Charlotte, North Carolina 28203  
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street  
Raleigh, North Carolina 27607  
919-847-4241(p) 919-847-4261(f)

PROJECT: 222 S. Church St.

JOB NUMBER: RED-001

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG	SAMP				
0.0						Concrete		0.0
2.5			0	0		Slightly moist, medium stiff, brown, fine sandy SILT		2.5
5.0			0	0		Slightly moist, medium stiff, brown, clayey SILT		5.0
7.5			0	0		Moist, stiff, brownish yellow, silty CLAY		7.5
10.0			0	0		Moist, medium dense, brownish yellow, fine-medium SAND		10.0
						Bottom of borehole at 10.0 feet.		

LOG OF BORING - HART HICKMAN GDT - 11/16/10 15:53 - S:\AAA-MASTER GINT PROJECTS\RED-001.GPJ

DRILLING CONTRACTOR: Probe Technology  
 DRILL RIG/ METHOD: 54DT / DPT  
 SAMPLING METHOD: Acetate Sleeve  
 LOGGED BY: RJC  
 DRAWN BY:

BORING STARTED: 11/3/10  
 BORING COMPLETED: 11/3/10  
 TOTAL DEPTH: 10  
 SURFACE ELEV:  
 DEPTH TO WATER:

Remarks:  
 Soil sample collected from 2-4 ft



2923 South Tryon Street-Suite 100  
Charlotte, North Carolina 28203  
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street  
Raleigh, North Carolina 27607  
919-847-4241(p) 919-847-4261(f)

# BORING NUMBER DPT-5

PROJECT: 222 S. Church St.

JOB NUMBER: RED-001

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Concrete		0.0
2.5			3.2	3.6		Moist, medium stiff, grayish green, fine sandy SILT w/ trace clay, petroleum-like odor		2.5
5.0			3.2	796				5.0
7.5			3.2	1059				7.5
10.0			2	2		Moist, medium dense, brown and tan, silty fine SAND		10.0
10.0			2	2				10.0
						Bottom of borehole at 10.0 feet.		

LOG OF BORING - HART HICKMAN GDT - 11/16/10 15:53 - S:\AAA-MASTER GINT PROJECTS\RED-001.GPJ

DRILLING CONTRACTOR: Probe Technology  
DRILL RIG/ METHOD: 54DT / DPT  
SAMPLING METHOD: Acetate Sleeve  
LOGGED BY: RJC  
DRAWN BY:

BORING STARTED: 11/3/10  
BORING COMPLETED: 11/3/10  
TOTAL DEPTH: 10  
SURFACE ELEV:  
DEPTH TO WATER:

Remarks:  
Soil sample collected from 2-4 ft



2923 South Tryon Street-Suite 100  
Charlotte, North Carolina 28203  
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street  
Raleigh, North Carolina 27607  
919-847-4241(p) 919-847-4261(f)

# BORING NUMBER DPT-6

PROJECT: 222 S. Church St.

JOB NUMBER: RED-001

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0						Asphalt		0
						No recovery		
10						Wet, soft, brown, fine-coarse sandy CLAY		
			3	4.4				
						Very moist, very stiff, gray, fine sandy CLAY		
5								5
			3	5.7				
90						Moist, stiff, orange and tan, clayey SILT w/ fine sand,		
			3	4.2				
						Moist, medium dense, orange and tan, fine sandy SILT		
10	100							10
			3	4.3				
						Very moist, loose, orange and tan, silty fine SAND		
			3	4.2				
			2	3.2				
100								100
15						Bottom of borehole at 15.0 feet.		15

LOG OF BORING - HART HICKMAN GDT - 11/11/10 14:45 - S:\AAA-MASTER GINT PROJECTS\RED-001.GPJ

DRILLING CONTRACTOR: Probe Technology  
 DRILL RIG/ METHOD: 54DT / DPT  
 SAMPLING METHOD: Acetate Sleeve  
 LOGGED BY: RJC  
 DRAWN BY:

BORING STARTED: 11/3/10  
 BORING COMPLETED: 11/3/10  
 TOTAL DEPTH: 15  
 SURFACE ELEV:  
 DEPTH TO WATER:

Remarks:  
 Soil sample collected from 4-6 ft



# BORING NUMBER DPT-7

2923 South Tryon Street-Suite 100  
Charlotte, North Carolina 28203  
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street  
Raleigh, North Carolina 27607  
919-847-4241(p) 919-847-4261(f)

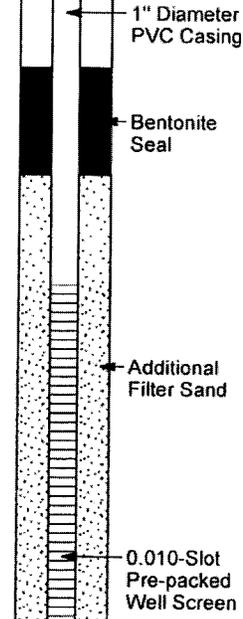
PROJECT: 222 S. Church St.

JOB NUMBER: RED-001

LOCATION: Charlotte, NC

LOG OF BORING - HART HICKMAN GDT - 11/11/10 15.43 - S:\AAA-MASTER GINT PROJECTS\RED-001.GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0					Asphalt			0
0-80			0.9	39.6	Moist, stiff, dark brown, fine sandy CLAY, petroleum-like odor			0
80-5			0.9	15.4	Moist, stiff, tan, fine sandy CLAY			5
5-100			0.9	4.5				5
100-10			0.9	4.4				10
10-100			0.9	4.6	Moist, very dense, brown/tan/orange, silty fine-medium SAND			10
100-15			0.9	9.3				15
15-100			0.9	6.6	Very moist-wet, soft, brown, fine sandy SILT			15
20					Bottom of borehole at 20.0 feet.			20



DRILLING CONTRACTOR: Probe Technology  
 DRILL RIG/ METHOD: 6610DT / DPT  
 SAMPLING METHOD: Acetate Sleeve  
 LOGGED BY: RJC  
 DRAWN BY:

BORING STARTED: 11/2/10  
 BORING COMPLETED: 11/2/10  
 TOTAL DEPTH: 20  
 SURFACE ELEV:  
 DEPTH TO WATER:

Remarks:  
 Soil sample collected from 0-2 ft



2923 South Tryon Street-Suite 100  
 Charlotte, North Carolina 28203  
 704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street  
 Raleigh, North Carolina 27607  
 919-847-4241(p) 919-847-4261(f)

# BORING NUMBER DPT-8

Sheet 1 of 1

PROJECT: 222 S. Church St.

JOB NUMBER: RED-001

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0					Asphalt			0.0
2.5	50		0	0	[Hatched Lithology Pattern]	Moist, medium stiff, brown, fine sandy CLAY		2.5
5.0			0	0		Moist, very dense, tan, clayey fine SAND		5.0
7.5	50		0	0		Moist, very stiff, yellowish brown, CLAY		7.5
10.0			0	0		Bottom of borehole at 10.0 feet.		10.0

LOG OF BORING - HART HICKMAN GDT - 11/11/10 14:45 - S:\AAA-MASTER GINT PROJECTS\RED-001.GPJ

DRILLING CONTRACTOR: Probe Technology  
 DRILL RIG/ METHOD: 6610DT / DPT  
 SAMPLING METHOD: Acetate Sleeve  
 LOGGED BY: RJC  
 DRAWN BY:

BORING STARTED: 11/2/10  
 BORING COMPLETED: 11/2/10  
 TOTAL DEPTH: 10  
 SURFACE ELEV:  
 DEPTH TO WATER:

Remarks:  
 Soil sample collected from 2-4 ft



# BORING NUMBER DPT-9

Sheet 1 of 1

2923 South Tryon Street-Suite 100  
Charlotte, North Carolina 28203  
704-586-0007(p) 704-585-0373(f)

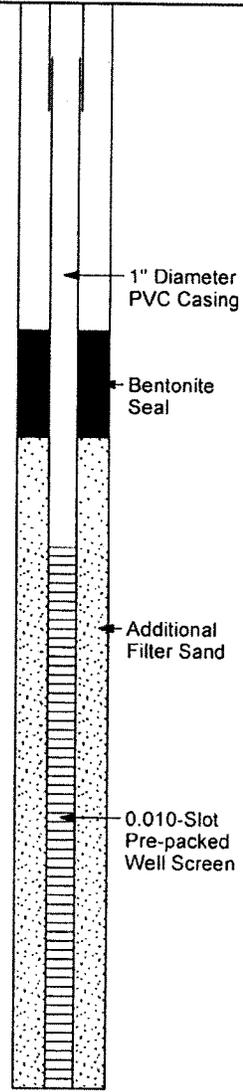
3334 Hillsborough Street  
Raleigh, North Carolina 27607  
919-847-4241(p) 919-847-4261(f)

PROJECT: 222 S. Church St.

JOB NUMBER: RED-001

LOCATION: Charlotte, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0					Asphalt			0
0-5			0	0	Slightly moist, stiff, dark brown, fine sandy CLAY			0-5
5-10			0	0.5	Moist, medium dense, brown, clayey fine SAND			5-10
10-15			0	0	Moist, medium stiff, orange/tan/gray, silty CLAY w/ fine sand			10-15
15-20			0	0	Moist, medium stiff, orange/tan/gray, clayey SILT			15-20
20			0	0		Bottom of borehole at 20.0 feet.		20

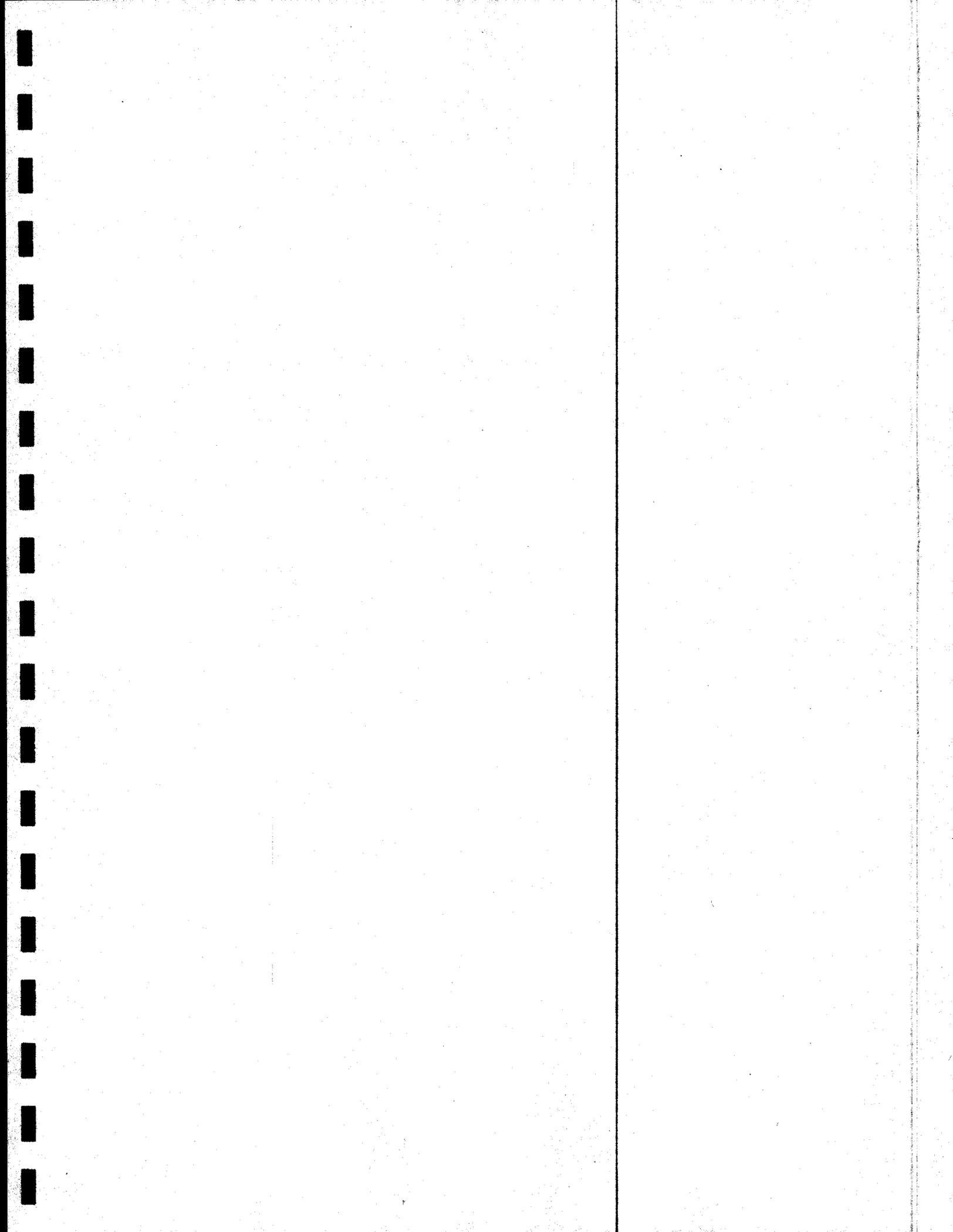


LOG OF BORING - HART HICKMAN GDT - 11/1/10 15:45 - S VAAA-MASTER GINT PROJECTS\RED-001.GPJ

DRILLING CONTRACTOR: Probe Technology  
 DRILL RIG/ METHOD: 6610DT / DPT  
 SAMPLING METHOD: Acetate Sleeve  
 LOGGED BY: RJC  
 DRAWN BY:

BORING STARTED: 11/2/10  
 BORING COMPLETED: 11/2/10  
 TOTAL DEPTH: 20  
 SURFACE ELEV:  
 DEPTH TO WATER:

Remarks:  
 Soil sample collected from 2-4 ft



**Phase I ESA  
Parking Lot (Lots 1 and 2)**

**W. 3<sup>rd</sup> Street and S. Poplar Street  
Charlotte, North Carolina**

**H&H Job No. GSL-001  
March 14, 2014**



**SMARTER ENVIRONMENTAL SOLUTIONS**

2923 South Tryon Street, Suite 100  
Charlotte, NC 28203  
704.586.0007 main

3334 Hillsborough Street  
Raleigh, NC 27607  
919.847.4241 main

[www.harthickman.com](http://www.harthickman.com)

**Phase I Environmental Site Assessment  
 Parking Lot (Lots 1 and 2)  
 W. 3<sup>rd</sup> Street and S. Poplar Street  
 Charlotte, North Carolina  
 H&H Job No. GSL-001**

**Table of Contents**

**1.0 Executive Summary .....1**

    1.1 Property Summary .....1

    1.2 Findings, Opinions, and Conclusions .....3

**2.0 Introduction.....7**

    2.1 Purpose and Scope of Services .....7

    2.2 Methodology .....7

    2.3 Limitations and Exceptions of Assessment .....8

    2.4 Special Terms and Conditions .....8

**3.0 Site and Area Description .....10**

    3.1 General Site Description and Use .....10

    3.2 Site Structures and Improvements .....10

    3.3 Property Owner, Manager, and Occupants .....10

    3.4 Vicinity Characteristics .....11

    3.5 Physical Setting .....11

**4.0 Records Review .....13**

    4.1 Standard Environmental Record Sources – Federal, State and Local .....13

    4.2 Regulatory Agency File and Records Review .....16

    4.3 Interviews .....19

    4.4 Historical Use Information .....20

**5.0 Site Reconnaissance .....26**

    5.1 Hazardous Substances .....26

    5.2 Storage Tanks and Sumps .....26

    5.3 Water and Wastewater Issues .....26

    5.4 Indications of PCBs .....27

    5.5 Indications of Waste Disposal .....27

5.6 Surface Conditions .....	28
5.7 Stormwater and Flood Information.....	28
<b>6.0 Signatures of Environmental Professionals .....</b>	<b>30</b>
<b>7.0 Qualifications of Environmental Professionals Conducting the Phase I ESA.....</b>	<b>31</b>

**List of Figures**

Figure 1	Site Location Map
Figure 2	Site Map

**List of Appendices**

Appendix A	User Questionnaire
Appendix B	Mecklenburg County Tax Records
Appendix C	EDR Environmental Database Report
Appendix D	Previous Environmental Documents
Appendix E	Site Photographs
Appendix F	Curriculum Vitae

**Phase I Environmental Site Assessment  
Parking Lot (Lots 1 and 2)  
W. 3<sup>rd</sup> Street and S. Poplar Street  
Charlotte, North Carolina**

**H&H Job No. RED-001**

**1.0 Executive Summary**

Hart & Hickman, PC (H&H) has performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of ASTM Practice E 1527-13 on two contiguous lots (Lots 1 & 2) currently developed as a parking lot located east of the intersection of W. 3<sup>rd</sup> Street and S. Poplar Street in Charlotte, Mecklenburg County, North Carolina. Any exceptions to, or deletions from, this practice are described in this report.

**1.1 Property Summary**

H&H has presented a brief summary of the current and former uses of the site below:

Subject Site

- The subject property is currently a 0.6-acre parking lot and is comprised of Mecklenburg County parcel #s 07301505 and a portion of 07301506. Vehicles access the parking lot via W. 3<sup>rd</sup> Street. A dumpster pad and an emergency generator associated with the adjacent Packard Place office building are located in the eastern portion of the site.
- A gas station (with three gasoline underground storage tanks [USTs]) previously operated in the southwestern portion of the subject site from the 1940s until the 1960s. An auto sales and service facility previously operated in the northwestern portion of the property along S. Poplar Street from the 1920s until the 1960s. Prior to development of these commercial properties, seven residential structures occupied the southwestern and northwestern portions of the site along E. 3<sup>rd</sup> Street and S. Poplar Street from as early as the 1900s until the 1920s. In the 1960s, the gas station and auto sales/service facility were demolished and the property was utilized as a parking lot.

### Nearby Area

- Properties surrounding the subject site include a parking lot and parking garage to the northeast; the Packard Place office building (222 S. Church Street) and parking lot to the southeast; W. 3<sup>rd</sup> Street to the southwest with a city park located beyond; and S. Poplar Street to the northwest with a parking lot located beyond.
- Surrounding properties have included residences, auto sales, service and repair facilities, warehouses, stores, and parking lots from 1900 until the 1960s. Development of office towers and parking garages began in the surrounding area in the 1970s. The Addison garage (current Packard Place), a five-story parking deck, was developed east of the site in 1928. Prior to 1928, residences occupied adjacent properties along S. Church Street. An auto sales and service facility previously operated southeast of the subject site from the 1920s until 1952. The auto sales and service facility was demolished in 1952 and an existing two-level parking deck was constructed on this adjacent property.

An auto repair shop previously operated from the 1940s to 1950s in the northern portion of the Addison parking garage located on the adjacent property to the east. In 1952, the parking garage was renovated into a commercial office building and was identified as the Packard Place building. Since development of the office building in 1952, miscellaneous professional office tenants, retail tenants, and a restaurant have occupied the building. Additionally, multiple auto service facilities have operated in the area northeast of the site along W. 4<sup>th</sup> Street, southwest of the site along W. 3<sup>rd</sup> Street, and northwest of the site along S. Poplar Street between the 1920s and the 1960s.

## 1.2 Findings, Opinions, and Conclusions

The purpose of a Phase I ESA is to identify recognized environmental conditions (RECs) in connection with the property. RECs are environmental conditions that include the presence or likely presence of hazardous substances or petroleum products on the property that indicate an existing release, a past release, or a material threat of a release in structures on the property, or into the ground, groundwater, or surface water on the property. Our findings regarding RECs are based upon our review of historical records and maps; review of regulatory database records and/or regulatory agency files; interviews with persons familiar with the property; observations during the site reconnaissance; and data evaluation. Based upon our completion of Phase I ESA activities, H&H has determined the following:

**This assessment has revealed no evidence of recognized environmental conditions (RECs) in connection with the property except for the following:**

- In November 2010, H&H conducted a Phase I and II ESA on the southeastern portion of the subject site and on the adjacent property southeast of the site occupied by the Packard Place office building and a two-level parking deck. During Phase I ESA activities, H&H identified that a store with a gasoline UST and a former gas station with three gasoline USTs were previously located in the southern portion of the subject site. The store reportedly operated during the 1920s and 1930s, and the gas station reportedly operated during the 1940s and 1960s. The former gas station is identified in the environmental database report operating under the name "Stack Mal A". As part of the 2010 Phase II ESA activities, utility locator performed a ground penetrating radar (GPR) survey in the area of the former store and gas station to determine if USTs or underground lines remain in this area. No probable USTs were identified by the geophysical survey; however, the utility locator identified anomalies indicative of possible former underground product lines.

A monitoring well exists downgradient of the former gas station in the southern portion of the subject site on a parcel currently owned by RBC Bank and managed by Wells Fargo. It appears that the monitoring well was installed in the southern portion of the site to assess water quality downgradient from the former gas station. H&H researched the North Carolina Department of Environment and Natural Resources (DENR) database but did not locate a release incident or environmental documents associated with the gas station or monitoring well. H&H also requested environmental reports from site contact Ms. Lisa Oldham (Wells Fargo) that would document groundwater assessment activities associated with the on-site monitoring well. To date, environmental reports have not been located.

During previous Phase II ESA activities, H&H collected soil and groundwater samples to assess the potential for impacts to the subject property in the area of the former service station. The results of soil sample analyses indicate that total petroleum hydrocarbons as gasoline range organics (TPH-GRO) were detected above the DENR Action Level of 10 mg/kg for UST petroleum releases in DPT-7 (0 to 2 ft). Groundwater results from DPT-7 indicated the presence of lead (22 µg/L) slightly above its NC 2L Standard of 15 µg/L but below its gross contamination level (GCL). H&H considers the presence of documented and potential soil and groundwater impacts in the southern portion of the site to be a REC.

- An auto sales and service facility is depicted on the 1929 and 1951 Sanborn maps located in the northwestern portion of the subject site. The auto sales and service facility was demolished in 1960s and the existing parking lot was developed. During our site inspection, H&H did not identify evidence of the former auto sales and service operations; however, H&H considers potential use and storage of petroleum products and possible solvent use associated with former auto sales and service activities in the northwestern portion of the site to be a REC.

H&H identified the following potential environmental concerns (PECs) which, based upon our review, are not considered RECs:

- During 2010 Phase I ESA activities, H&H inspected the adjacent Packard Place property and identified the following potential environmental concerns:
  - A 10,000-gallon heating oil UST on the Packard Place office building to the east was closed-in-place in 1990 and is located approximately 250 ft east and upgradient of the subject site. The closed-in-place UST is located adjacent to the Packard Place office building below a concrete sidewalk within the S. Church Street right-of-way. TPH and benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected at concentrations above state action levels. The constituents identified in soil and groundwater during assessment of the heating oil UST are more consistent with gasoline than heating oil indicating that another source may exist either on, or at a location upgradient of, the adjacent Packard Place site. According to DENR, the heating oil release incident is in a “response” phase and has not been closed out.
  - Four gasoline USTs are depicted on the 1929 and 1951 Sanborn maps located in front of the adjacent Packard Place office building within the S. Church Street right-of-way at locations approximately 250 ft east of the subject site. The gasoline USTs are not identified in the EDR environmental database report.
  - An auto sales and service facility previously operated at a location approximately 150 ft east and topographically upgradient of the subject site on the adjacent Packard Place office property during the 1940s and early 1950s. The auto sales and service facility was demolished in 1952 and the two-level parking deck was constructed on the property. Field observations and a sub-surface survey by ground penetrating radar (GPR) identified what appears to be an in-ground automobile lift that previously operated in this area.

- A heating oil easement is depicted on an ALTA survey map located approximately 250 ft southeast of the subject site along S. Church Street. H&H did not identify evidence of a heating oil UST at this location during Phase I ESA activities or evidence of a geophysical anomaly in the area during the GPR survey.

On November 2 and 3, 2010, H&H conducted Phase II ESA soil and groundwater sampling activities to assess the potential areas of concern at the adjacent Packard Place property. The results of soil sample analyses indicated that total petroleum hydrocarbons (TPH) as gasoline and diesel range organics (TPH-GRO and TPH-DRO) were detected above the DENR Action Level in soil samples collected near the heating oil UST, the four gasoline USTs, and the former auto sales and service facility on the Packard Place property. A groundwater sample near the closed-in-place 10,000-gallon heating oil UST and the four former gasoline USTs indicated the presence of benzene and C5-C8 aliphatics above the NC 2L Standards but well below DENR Gross Contamination Levels (GCLs). Although soil and groundwater impacts were identified on the adjacent Packard Place property during previous assessment activities, the potential for impact to the subject site appears low due to distance and the lack of significant impact to groundwater. Therefore, H&H does not consider the impacts to soil and groundwater on the adjacent Packard Place property to be a REC for the subject site.

- Multiple historical service stations and historical cleaners operated in the vicinity of the subject site and are listed on environmental databases in the EDR report. However, based on their distance, area topography, and the lack of reported release incidents, the potential for impact to the subject site from these historical service station and cleaner sites appears to be low.

## 2.0 Introduction

This report presents the results of a Phase I ESA conducted on two contiguous lots (Lots 1 & 2) currently developed as a parking lot located east of the intersection of W. 3<sup>rd</sup> Street and S. Poplar Street in Charlotte, Mecklenburg County, North Carolina. H&H conducted this assessment for Greystar GP II, LLC (Greystar) in accordance with our authorized scope of work.

### 2.1 Purpose and Scope of Services

The purpose of this assessment was to identify, to the extent feasible pursuant to the processes prescribed herein, recognized environmental conditions in connection with the property. Such environmental conditions include the presence or likely presence of any hazardous substances or petroleum products in, on, or at the property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. 'Release' shall have the same meaning as the definition of 'release' as defined in CERCLA 42 U.S.C. § 9601(22) and 'environment' shall have the same meaning as the definition of 'environment' as defined in CERCLA 42 U.S.C. § 9601(8). In this assessment, 'migrate' and 'migration' refers to the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface.

### 2.2 Methodology

H&H performed this Phase I ESA in general conformance with current ASTM Standard E 1527-13, *Standard Practice for ESAs: Phase I Environmental Site Assessment Process*. The Phase I ESA is also compliant with the statutory criteria for all appropriate inquiries currently accepted by the United States Environmental Protection Agency under ASTM Standard 1527-13. The scope of services for the Phase I ESA includes the following tasks:

- Acquisition and Review of Data on Historical Use of the Property;
- Site Reconnaissance, Review of Adjacent Properties, and Interviews with Knowledgeable Individuals;
- Review of Environmental Databases;
- Contacts with Regulatory Officials, as Appropriate; and
- Data Analysis and Reporting.

### **2.3 Limitations and Exceptions of Assessment**

The following items were beyond the scope of this assessment, and H&H did not address them in this report:

- cultural, historical, and archaeological sites survey
- radon and indoor air testing
- responsibilities of the User of this Phase I ESA to meet all appropriate inquiry as defined in ASTM E1527-13
- asbestos, mold, or lead-based paint survey
- drinking water testing
- rare and endangered species survey
- wetlands verification/delineation

The User of this Phase I ESA has certain responsibilities to meet all appropriate inquiry as defined in ASTM E1527-13. H&H provided a User Questionnaire to Mr. Todd Wigfield of Greystar. H&H has provided a copy of the completed User Questionnaire in Appendix A.

### **2.4 Special Terms and Conditions**

The conclusions presented in this report are professional opinions, based solely upon visual observations of the site and vicinity and are our interpretation of the available historical information, documents reviewed, and analytical results as described in this report. They are

intended exclusively for the purpose outlined herein and at the site location and the project indicated.

This report is intended for the sole use of Greystar. The report may not be relied upon by other parties without the express written consent of H&H and Greystar. The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or the findings, conclusions, or recommendations presented herein is at the sole risk of said user.

It should be recognized that this study was not intended to be a definitive investigation of contamination at the subject property. It is possible that currently unrecognized contamination may exist at the site. Opinions and recommendations presented herein apply to site conditions existing at the time of our investigation and those reasonably foreseeable. They necessarily cannot apply to site changes of which H&H is unaware and has not had the opportunity to evaluate.

### 3.0 Site and Area Description

#### 3.1 General Site Description and Use

A general site description and the property use is noted below:

*Site Description:* parking lot (Lots 1 and 2)  
*Site Address:* W. 3<sup>rd</sup> Street and S. Poplar Street, Charlotte, Mecklenburg Co., NC  
*Parcel Size:* 0.6 acre  
*Parcel Occupants:* leased parking spaces

#### 3.2 Site Structures and Improvements

Structures and improvements identified on the property included the following:

*Building(s):* none  
*Other Improvements:* asphalt-paved parking lot  
concrete sidewalks  
dumpster pad (for Packard Place)  
emergency generator  
*Utilities:* Municipal Water – Charlotte Mecklenburg Utilities  
Sanitary Sewage – Charlotte Mecklenburg Utilities  
Electricity - Duke Energy  
Natural Gas – Piedmont Natural Gas

H&H identified multiple sub-surface utility lines depicted with markings along W. 3<sup>rd</sup> Street and S. Poplar Street. H&H did not observe obvious environmental concerns associated with the utility lines in the area of the subject site.

#### 3.3 Property Owner, Manager, and Occupants

Based upon our site visit and a review of the Mecklenburg County tax records, the property owner, parcel identification, site contact, and site occupants were identified as follows:

*Property Owners:* RBC Corporation (c/o Wachovia) and Red City Properties, LLC

*Parcel ID #s:* 07301505  
07301506 (portion of)  
Mecklenburg County (see Property Record in Appendix C)

*Site Contacts:* Mr. Dan Roselli (Packard Place)  
Ms. Lisa Oldham (Wells Fargo)

H&H interviewed site contacts Mr. Roselli (Packard Place) and Ms. Oldham (Wells Fargo) to obtain information regarding site history and current operations. A summary of interviews is provided in Section 4.3.

### 3.4 Vicinity Characteristics

The table below summarizes properties that surround the subject site:

#### Land Use Surrounding the Subject Site

Location	Property Description
Northeast	parking lot and parking garage
Southeast	Packard Place office building (222 S. Church St), parking lot, and parking deck
Southwest	W. 3 <sup>rd</sup> Street with a city park located beyond
Northwest	S. Poplar Street with a parking lot located beyond

### 3.5 Physical Setting

The subject property's physical setting is presented as follows:

#### Topography

*7.5-Minute Topographic Map:* Charlotte East, NC (dated 1988)

*Site Elevation:* 730 ft above mean sea level

*Topographic Gradient:* west

The subject site is located one block west of a topographic high point at the intersection of Tryon Street and Trade Street, and the gradient in the vicinity of the subject property is toward the west. H&H has provided a copy of the topographic map as Figure 1.

### Geology

The subject property is located in the Piedmont Physiographic Province of North Carolina. The area land surface is generally characterized as gently sloping, which may become moderately steep where intersected by streams.

According to the *Geologic Map of North Carolina* dated 1985, the subject property lies within the Charlotte Belt of the Piedmont. In the site area, underlying bedrock is comprised of metamorphosed quartz diorite. In the Piedmont, the bedrock is overlain by a mantle of weathered rock termed saprolite or residuum. The saprolite consists of unconsolidated clay, silt, and sand with lesser amounts of rock fragments. Due to the range of parent rock types and their variable susceptibility to weathering, the saprolite ranges widely in color, texture, and thickness. Generally, the saprolite is thickest near interstream divides and thins toward streambeds. In profile, the saprolite normally grades from clayey soils near the land surface to highly weathered rock above the competent bedrock.

### Hydrogeology

The occurrence and movement of groundwater in the Piedmont is typically within two separate but interconnected water-bearing zones. A shallow water-bearing zone occurs within the saprolite, and a deeper water-bearing zone within the underlying bedrock.

Groundwater in the shallow saprolite zone occurs in the interstitial pore spaces between the grains comprising the saprolite soils and in the deeper partially weathered rock horizon also in fractures. Groundwater in this zone is typically under water table or unconfined conditions. Groundwater movement is generally horizontal from recharge areas to small streams that serve as localized discharge points.

## 4.0 Records Review

### 4.1 Standard Environmental Record Sources – Federal, State and Local

H&H utilized Environmental Data Resources, Inc. (EDR), an environmental database search service, for a cursory review of Federal and State regulatory database files regarding regulated sites within the ASTM-specified search radii. EDR searched federal, state, local, tribal, and EDR proprietary databases on February 26, 2014. The EDR report is included as Appendix D.

Upon our review of the EDR report, H&H identified and summarized the following information pertaining to the subject property, off-site properties, and unmappable orphan properties.

#### Subject Property

The subject site was identified under the following names in the EDR report.

- *Mecklenburg Motors Co.* (226 W. 3<sup>rd</sup> Street at the corner with S. Poplar Street) is located in the northwestern portion of the site and is listed on the EDR Historical Auto Station database. According to information provided in the database, Mecklenburg Motors Co. is listed in a city directory at this address in 1949 and reportedly operated as a gasoline and auto service station. The EDR report did not identify a release incident associated with this address.
- *Stack Mal A* (216 W. 3<sup>rd</sup> Street) is located in the southern portion of the site and is listed on the EDR Historical Auto Station database. According to information provided in the database, Stack Mal A is listed in a city directory at this address in 1944 and reportedly operated as a gasoline and auto service station. The EDR report did not identify a release incident associated with this address.

### Off-Site Properties

EDR identified multiple database listings for off-site properties located in the vicinity of the subject site. Based upon our review of the EDR database report, H&H determined that the following properties warrant further discussion based upon their potential for impact to the subject site.

- *US Small Business Administration* (222 S. Church Street) is reportedly located adjacent, east, and topographically upgradient of the subject site and is identified on the Resource Conservation and Recovery Act (RCRA) Large Quantity Generator (LQG) database. According to information provided in the database, the type of hazardous waste generated is not specified and no violations were reported. During previous Phase I ESA activities conducted in 2010, H&H contacted property manager Mr. Brett Gray of Percival McGuire who reported that he did not remember the US Small Business Administration as a former tenant and he has no knowledge of hazardous materials stored or generated on the premises. Based on this information, the potential for impact to the subject site appears low.
- *Packard Place/AD PAC* (222 S. Church Street) is located adjacent, east, and topographically upgradient of the subject site and is identified on the Incident Management Database (IMD) and the leaking underground storage tank (LUST) database. According to information provided in the databases, petroleum contaminated soil and groundwater were discovered during assessment of a 10,000-gallon heating oil UST located in the S. Church Street right of way in 1990. DENR reported that the release incident is currently in “response” phase. Additional information is provided in Section 4.2.
- *Beardon Park 2 – Waste Oil UST* (301 S. Mint Street) is located 400 ft west and topographically downgradient of the subject site and is identified on LUST database. According to information provided in the databases, petroleum contaminated soil was discovered during assessment of a diesel UST in October 2012. Groundwater

contamination was not reported and the status of the release incident is not reported. Due to distance, area topography, and the lack of reported impact to groundwater, the potential potential for impact to the subject site appears low.

- *Beardon Park 3 – Diesel UST* (316 S. Church Street) is located 500 ft south and topographically upgradient to cross-gradient of the subject site and is identified on the LUST database. According to information provided in the databases, petroleum contaminated soil was discovered during assessment of a diesel UST in October 2012. Groundwater contamination was not reported and the status of the release incident is not reported. Due to distance, area topography, and the lack of reported impact to groundwater, the potential for impact to the subject site appears low.
- *Urbco, Inc.* (318 S. Church Street) is located approximately 600 ft south and topographically upgradient to cross-gradient of the subject site and is identified on the IMD, LUST, and Recovered Government Archive (RGA) LUST databases. According to information provided in the databases, groundwater contamination was discovered during assessment of a UST system in July 1987. DENR closed the release incident in December 2001. Due to distance, area topography, and the closed status of the release incident, the potential for impact to the subject site appears low.
- *Hesta-Carillion* (227 W. Trade Street) is located approximately 300 ft northeast and topographically cross-gradient of the subject site and is identified on the Hazardous Substance Disposal Site (HSDS) database. According to information provided in the database and our review of previous environmental documents, solvent contamination has been identified in groundwater below the Hesta-Carillion site. Due to the area topography, the potential for impact to the subject site appears to be low.
- A LUST incident was reported on a property located approximately 300 ft southeast and topographically upgradient of the subject site at the address 237 S. Tryon Street. Soil contamination was identified on the property; however, DENR subsequently closed the

with three gasoline USTs were previously located in the southern portion of the subject site. The store reportedly operated during the 1920s and 1930s, and the gas station reportedly operated during the 1940s and 1960s. The former gas station is identified in the environmental database report operating under the name "Stack Mal A". As part of the 2010 Phase II ESA activities, utility locator performed a ground penetrating radar (GPR) survey in the area of the former store and gas station to determine if USTs or underground lines remain in this area. No probable USTs were identified by the geophysical survey; however, the utility locator identified anomalies indicative of possible former underground product lines.

During previous Phase II ESA activities, H&H collected soil and groundwater samples to assess the potential for impacts to the subject property in the area of the former service station. The results of soil sample analyses indicate that total petroleum hydrocarbons as gasoline range organics (TPH-GRO) were detected above the DENR Action Level of 10 mg/kg for UST petroleum releases in DPT-7 (0 to 2 ft). Groundwater results from DPT-7 indicated the presence of lead (22 µg/L) slightly above its NC 2L Standard of 15 µg/L but below its gross contamination level (GCL).

A copy of the November 2010 Phase II ESA (H&H) is included in Appendix E.

#### 4.3 Interviews

##### Fire Department

*Fire Department Contact:*

Chief Garry McCormick of the Charlotte Fire Department

H&H sent a Freedom of Information (FOI) request by fax to Chief McCormick requesting information regarding responses from the fire department to the subject site for fires, spills, or other environmental concerns. To date, the Fire Department has not responded to our request for information.

### Site Contact Interviews

H&H identified site contacts Mr. Dan Roselli (Packard Place) and Ms. Lisa Oldham (Wells Fargo) during our Phase I ESA activities to obtain information regarding site history and operations. Both Mr. Roselli and Ms. Oldham reported that the subject site has historically been leased to tenants for parking. Mr. Roselli reported no issues associated with a diesel AST associated with a generator or with a dumpster pad (utilized by the Packard Place tenants) located in eastern portion of the site. H&H requested information from Ms. Oldham regarding a monitoring well that exists in the western portion of the subject site on a parcel currently owned by Wells Fargo. To date, environmental reports have not been located that would include groundwater data from the monitoring well.

### **4.4 Historical Use Information**

H&H conducted a review of aerial photographs to identify past site usage. The results of the review are provided in the following table.

Aerial Photograph Table

Year	Scale	Site Property	Surrounding Property
1938 (A)	1"=1,320'	the subject site is developed as what appears to be a small structure (store) located in the southern portion of the site; the rest of the property appears to be a parking lot	surrounding properties include retail and office buildings along S. Poplar Street, W. 4 <sup>th</sup> Street, and S. College Street to the northwest, northeast, east, and southeast of the site; residences are visible along W. 3rd Street southwest of the site
1951 (A)	1"=1,320'	a gas station structure is visible in the southern portion of the property and a vehicle sales and service building is visible in the northwestern portion of the property	commercial and office building structures are visible on properties surrounding the subject site
1966 (B)	1"=200'	the subject site is a parking lot	additional commercial and office building structures are visible on properties surrounding the subject site
1975 (B)	1"=400'	similar to the 1966 aerial photograph	large office towers are visible northeast of the subject site along W. Trade Street and southeast of

			subject site along S. Tryon Street
1983 (B)	1"=200'	similar to 1975 aerial photograph.	development of more large office towers are visible northeast and southeast of the subject site
1997 (B)	1"=200'	similar to 1983 aerial photograph.	development of large office towers are visible northeast, southeast, and southwest of the subject site
2007 (C)	1"=400'	similar to the 1997 aerial photograph.	similar to the 1997 aerial photograph
2013 (C)	1"=400'	similar to the 2007 aerial photograph	similar to the 2007 aerial photograph

Aerial Photograph Sources: (A) Mecklenburg County Soil and Water Conservation Office  
(B) Mecklenburg County Mapping Department  
(C) Mecklenburg County POLARIS website

User Questionnaire

*User Questionnaire completed by:* Mr. Todd Wigfield (Greystar)

Mr. Wigfield reported that the User is aware of obvious indicators that point to the presence or likely presence of contamination and that the purchase price reflects the fair market value of the property. Mr. Wigfield indicated that the User is not aware of past use of the property, commonly known or reasonably ascertainable information to assists with identifying conditions indicative of a release, environmental cleanup, environmental cleanup liens, or activity or use limitations related to contamination. H&H has included a copy of the completed User Questionnaire in Appendix A.

City Directories

*City and Cross Reference Directory coverage:* 1904 to 2012 (source - Public Library of Charlotte Mecklenburg County)

*Subject Property:*

prior to 1904 – no listing

1920s to the early 1940s – residences

1940s to the mid 1960s – Mecklenburg Motors (226 W. 3<sup>rd</sup> Street) and Stack Mal A (266 W. 3<sup>rd</sup> Street)

mid-1960s to the present – no listings

*Surrounding Area:*

prior to 1904 - no listing

1904 to 1960s – residences, warehouses, a factory, auto repair shops, office buildings, auto sales and service facilities, printing, film delivery, stores, livery, print shops, and welding shops

1960s to 1980s – retail stores and office buildings

1980s to the present – office buildings

Sanborn Fire Insurance Maps

*Sanborn Fire Insurance Map coverage:*

1900 to 1951 (source – Public Library of Charlotte and Mecklenburg County)

A summary of the Sanborn maps is provided below.

*1900 Sanborn Map* – the subject site is occupied by three residential structures located along S. Poplar Street and four residential structures located along W. 3<sup>rd</sup> Street. Surrounding properties include:

- a livery sales facility to the northeast;
- residences to the east and southeast,
- W. 3<sup>rd</sup> Street to the southwest with residences located beyond;
- the intersection of W. 3<sup>rd</sup> Street and S. Poplar Street to the west with residences located beyond; and

- S. Poplar Street to the northwest.

*1911 Sanborn Map* – the subject site is occupied by two residential structures located along S. Poplar Street. Surrounding properties include:

- a bottling works, livery sales facility, and a blacksmith shop to the northeast;
- paint factory and a Southern Express Building to the east;
- five residences to the southeast;
- W. 3<sup>rd</sup> Street to the southwest with residences located beyond;
- intersection of W. 3<sup>rd</sup> Street and S. Poplar Street to the west with a jail located beyond;  
and
- S. Poplar Street to the northwest with residences located beyond.

*1929 Sanborn Map* – a small store with a gas tank is depicted in the southern portion of the site and the rest of the property is depicted as an automobile parking lot. Surrounding properties include:

- a bakery and garage to the northeast;
- an auto repair facility to the east;
- the Addison parking garage, an auto sales, and an auto repair facility to the southeast;
- W. 3<sup>rd</sup> Street to the southwest with residences located beyond;
- the intersection of W 3<sup>rd</sup> Street and S. Poplar Street to the west with a jail located beyond;  
and
- S. Poplar Street to the northwest with a film exchange, store, and a private garage (with a gas tank) located beyond.

*1929 Sanborn Map (revised in 1951)* – a gas station with three gasoline tanks is visible in the southern portion of the subject property along W. Third Street and an auto sales and service garage is visible in the northwestern portion of the subject site along S. Poplar Street. Surrounding properties include:

- a printing facility and a garage to the northeast; plumbing warehouse to the east;
- the Addison garage, an auto sales and service facility, and an auto repair facility to the southeast;

- W. 3<sup>rd</sup> Street to the southwest an auto repair shop and film delivery facility located beyond;
- intersection of W. 3<sup>rd</sup> Street and S. Poplar Street to the west with a warehouse located beyond; and
- S. Poplar Street to the northwest with a film exchange facility, store, and auto repair shop located beyond.

*1929 Sanborn Map (revised in 1953)* – the auto sales and service building remains visible in the northwestern portion of the subject property; however, the gas station and the gasoline tanks are no longer visible in the southern portion of the subject site. Surrounding properties include:

- a printing facility and a garage to the northeast; plumbing warehouse to the east;
- office building (formerly the Addison garage) and parking lot to the southeast;
- W. 3<sup>rd</sup> Street to the southwest an auto repair shop and film delivery facility located beyond;
- intersection of W. 3<sup>rd</sup> Street and S. Poplar Street to the west with a warehouse located beyond; and
- S. Poplar Street to the northwest with a film exchange facility, store, and auto repair shop located beyond.

#### Historical Use Summary

A gas station (with three gasoline underground storage tanks [USTs]) previously operated in the southwestern portion of the subject site from the 1940s until the 1960s. An auto sales and service facility previously operated in the northwestern portion of the property along S. Poplar Street from the 1920s until the 1960s. Prior to development of these commercial properties, seven residential structures occupied the southwestern and northwestern portions of the site along E. 3<sup>rd</sup> Street and S. Poplar Street from as early as the 1900s until the 1920s. In the 1960s, the gas station and auto sales/service facility were demolished and the property was utilized as a parking lot.

Surrounding properties have included residences, auto sales, service and repair facilities, warehouses, stores, and parking lots from 1900 until the 1960s. Development of office towers and parking garages began in the surrounding area in the 1970s. The Addison garage (current Packard Place), a five-story parking deck, was developed east of the site in 1928. Prior to 1928, residences occupied adjacent properties along S. Church Street. An auto sales and service facility previously operated southeast of the subject site from the 1920s until 1952. The auto sales and service facility was demolished in 1952 and an existing two-level parking deck was constructed on this adjacent property.

An auto repair shop previously operated from the 1940s to 1950s in the northern portion of the Addison parking garage located on the adjacent property to the east. In 1952, the parking garage was renovated into a commercial office building and was identified as the Packard Place building. Since development of the office building in 1952, miscellaneous professional office tenants, retail tenants, and a restaurant have occupied the building. Additionally, multiple auto service facilities have operated in the area northeast of the site along W. 4<sup>th</sup> Street, southwest of the site along W. 3<sup>rd</sup> Street, and northwest of the site along S. Poplar Street between the 1920s and the 1960s.

## 5.0 Site Reconnaissance

Mr. Matt Ingalls of H&H conducted a visual reconnaissance of the subject site on March 3, 2014. The weather condition at the time of the site visit was clear and sunny with temperatures in the high 50s °F. General images of the shopping center are included as Photographs 1 and 4 presented in Appendix E.

### 5.1 Hazardous Substances

H&H did not observe potentially hazardous materials stored on the subject site.

### 5.2 Storage Tanks and Sumps

Information regarding storage tanks and sumps is summarized below.

<i>Underground Storage Tanks (USTs):</i>	none observed or reported on-site
<i>Aboveground Storage Tanks (ASTs):</i>	500-gallon diesel AST (emergency generator)
<i>Sumps</i>	none observed or currently reported on-site

H&H identified a 500-gallon diesel AST located below an emergency generator in a service area for the adjacent Packard Place office building (Photograph 5). The diesel AST appeared to be in good condition and H&H did not observe evidence of a product release to the concrete surface below the AST.

### 5.3 Water and Wastewater Issues

Water and wastewater use and issues are summarized below.

#### Water

<i>Municipal Water:</i>	supplied by Charlotte Mecklenburg Utilities
<i>Water Supply Wells:</i>	none observed

## Wastewater

*Sanitary Sewage:* service provided by Charlotte Mecklenburg Utilities  
*Septic Systems:* none observed

H&H identified a monitoring well installed in the southern portion of the property (Photograph 6). H&H researched the DENR database but did not locate a release incident or environmental documents associated with the monitoring well. H&H also requested environmental reports from Ms. Lisa Oldham (Wells Fargo) that would document assessment activities associated with the on-site monitoring well. To date, a report with groundwater data has not been located for the monitoring well.

## **5.4 Indications of PCBs**

Polychlorinated biphenyls (PCBs) are sometimes found in mineral oils used in electrical equipment including transformers. PCBs are a potential environmental contaminant.

*Transformer:* one pad transformer (located in utility area near emergency generator)

*Transformer Owner:* Duke Energy

H&H contacted Duke Energy who verified that Duke Energy owns the transformer located on the property. Duke Energy could not verify the PCB concentration of the insulating oils within the transformer without testing the insulating oil for a fee. The pad transformer is new and is located in a fenced utility area located west of the adjacent office building. H&H inspected the transformer and did not observe evidence of an oil spill to the transformer's protective casing or to the ground surface below the transformer. The transformer is the responsibility of Duke Energy, and the landowner is not responsible for leaks or spills from the site transformer.

## **5.5 Indications of Waste Disposal**

During the site reconnaissance, H&H identified the following waste disposal areas:

*Waste Containers:* 2 dumpsters  
grease bin

H&H observed small stains to the concrete pavement below the dumpsters and grease bin which are staged in a fenced area near the eastern corner of the property (Photographs 7 and 8). However, the stains appear to be associated with cooking grease and do not appear to have migrated below the concrete pavement. H&H considers the apparent cooking grease stains to be a *de minimis* condition in accordance with the ASTM-1527-13 standard.

*Debris Piles:* none observed

## 5.6 Surface Conditions

During our reconnaissance of the subject property, H&H identified the following surface conditions:

*Surface conditions:* asphalt-paved parking areas  
concrete sidewalks

Except for cooking grease stains identified in the dumpster staging area and *de minimis* oil stains identified in the parking lot area associated with parked vehicles, H&H did not identify environmental concerns associated with surface conditions on the property.

H&H identified multiple sub-surface utility lines depicted with marking along W. 3<sup>rd</sup> Street and S. Poplar Street. H&H did not observe obvious environmental conditions associated with the utility lines in the area of the subject site.

## 5.7 Stormwater and Flood Information

The following is a summary of stormwater and flood information at the subject site:

Stormwater

Stormwater from the property flows in a westerly direction toward storm drains located along W. 3rd Street. H&H also identified storm drains located on S. Poplar Street. H&H did not observe obvious environmental concerns associated with the stormwater or the stormwater drains.

Flood Information

*FEMA Flood Insurance Rate Map (FIRM):* Community Panel #3704544005J (dated March 2, 2009)

The FEMA map indicates that the subject property is not located with the 100- or 500-year flood zones.

## 6.0 Signatures of Environmental Professionals

Matt Ingalls declares that to the best of his professional knowledge and belief, that he meets the definition of *Environmental professional* as defined in Section 312.10 of 40 CFR, and he has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. H&H has developed and performed the all appropriate inquiries as set forth for the environmental professional in 40 CFR Part 312.

Environmental Professional



---

Matt Ingalls  
Project Manager

Reviewed by:



---

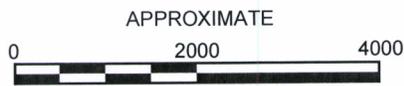
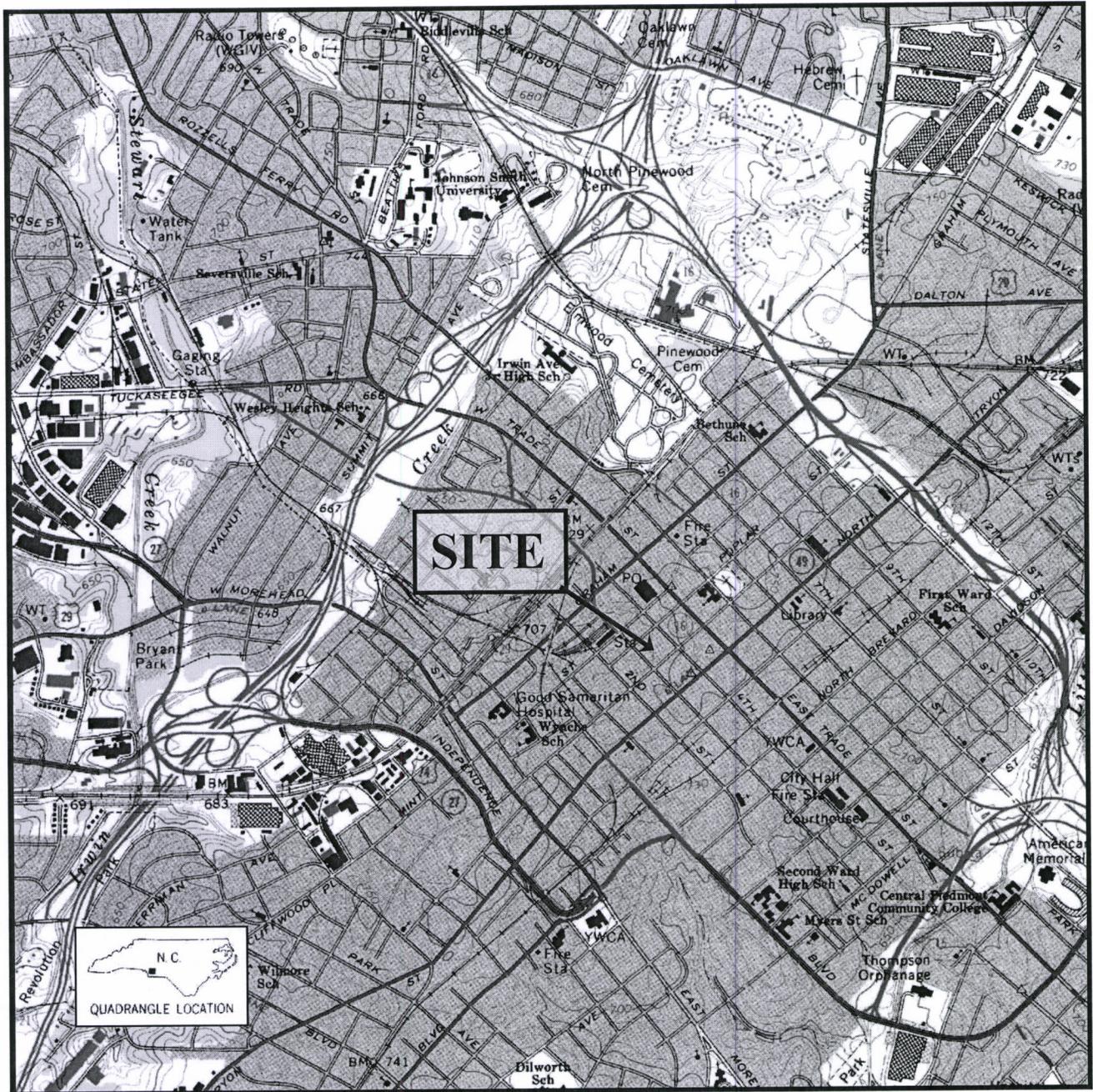
Steve Hart, PG  
Principal

## 7.0 Qualifications of Environmental Professionals Conducting the Phase I ESA

**Matthew Ingalls, Project Manager**, has over seventeen years of experience in environmental site assessments, asbestos, lead-based paints, and wetland projects. Mr. Ingalls is a US EPA certified asbestos building inspector and management planner.

**Steven C. Hart, PG, Principal**, has over 20 years of experience conducting site assessments at industrial facilities, commercial sites, RCRA, CERCLA and Brownfield facilities, and petroleum underground storage tank sites.

Curriculum vitae for each individual are included in Appendix G.

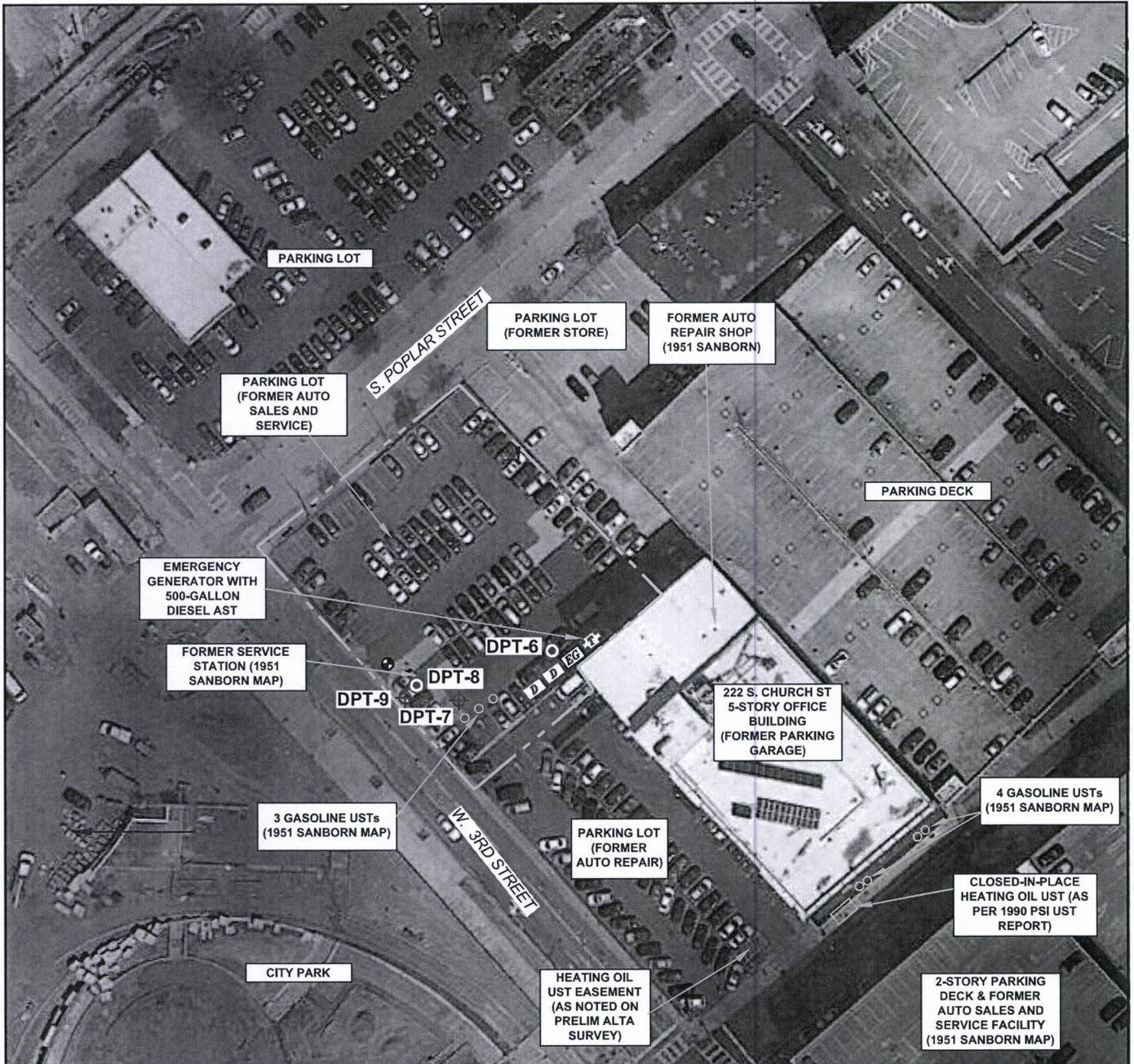


SCALE IN FEET

U.S.G.S. QUADRANGLE MAP  
 CHARLOTTE EAST, NC 1991

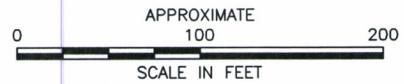
QUADRANGLE  
 7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE	<b>SITE LOCATION MAP</b>	
PROJECT	PARKING LOT (LOTS 1 and 2) W. 3rd STREET and S. POPLAR STREET CHARLOTTE, NORTH CAROLINA	
		2923 S. Tryon Street, Suite 100 Charlotte, NC 28203 704.586.0007(p) 704.586.0373(f)
DATE:	3-5-14	REVISION NO: 0
JOB NO:	GSL-001	FIGURE: 1



**LEGEND**

- SITE PROPERTY BOUNDARY
- PAD-MOUNTED TRANSFORMER
- DUMPSTERS
- EMERGENCY GENERATOR
- EXISTING MONITORING WELL
- SOIL BORING/TEMPORARY MONITORING WELL LOCATION
- SOIL BORING LOCATION
- ← GROUNDWATER FLOW DIRECTION



TITLE	SITE MAP	
PROJECT	PARKING LOTS 1 & 2 W. 3RD STREET AND S. POPLAR STREET CHARLOTTE, NORTH CAROLINA	
		2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f) License # C-1269 / #C-245 Geology
DATE:	03-14-14	REVISION NO. 0
JOB NO.	GPL-001	FIGURE NO. 2

NOTES  
1. AERIAL IMAGE OBTAINED FROM GOOGLE EARTH.



Print

Close

**Parcel Information**

Parcel ID	Account	Parent	Previous
07301505	NC CORP		

**Owner(s)**

Owner Name	Mailing Address	City/State
R B C CORPORATION	PO BOX 36246	CHARLOTTE NC 28236
%WACHOVIA BANK	PO BOX 36246	CHARLOTTE NC 28236

**Legal Information**

Legal	Municipality	Date Annexed	Special District	Fire District	Acreage
NA	CHARLOTTE		DOWNTOWN DISTRICT 2	CITY OF CHARLOTTE	0.35

**Total Parcel Assessment**

Building	Land	Features	Total	Exemptions	Year Approved	Review Date	Amount
0	1380000	0	1380000				

**Sales Information**

Sale	Price	Stamps	Qualify	VI	Type	Legal Ref.	Grantor
Dec 18 1998	0		OTHER	VAC	DEED STAMPS	10124-757	WELLS N WALKER
Apr 4 1997	602000			VAC	DEED STAMPS	09000-942	FOUNDATION FOR THE C

**Land Use**

Use	Units	Type	Neighborhood	Assessment
C700	15333	SF	RE01	1380000

**Building Information**

Bldg	Description	Type	Year	Property Location
				224 W 3RD ST CHARLOTTE

Bldg	Story	Units	Total SqFt	Heated SqFt	Foundation	Ext. Wall	Grade	Value

Bldg	Heat	Fuel	Fire Place	AC	Fixtures	Bedrooms	Full Baths	3/4 Baths	1/2 Baths

**Sub Area**

Bldg	Description	Size

**Depreciation**

Bldg	Physical	Functional	Economic	Special	Override

**Special Features & Yard Items**

Bldg	Built	Type	Quantity	Units	Value

**Notes**

Tax Year	Notes	Note Date
2011	Informal Review Request Received	05/06/2011

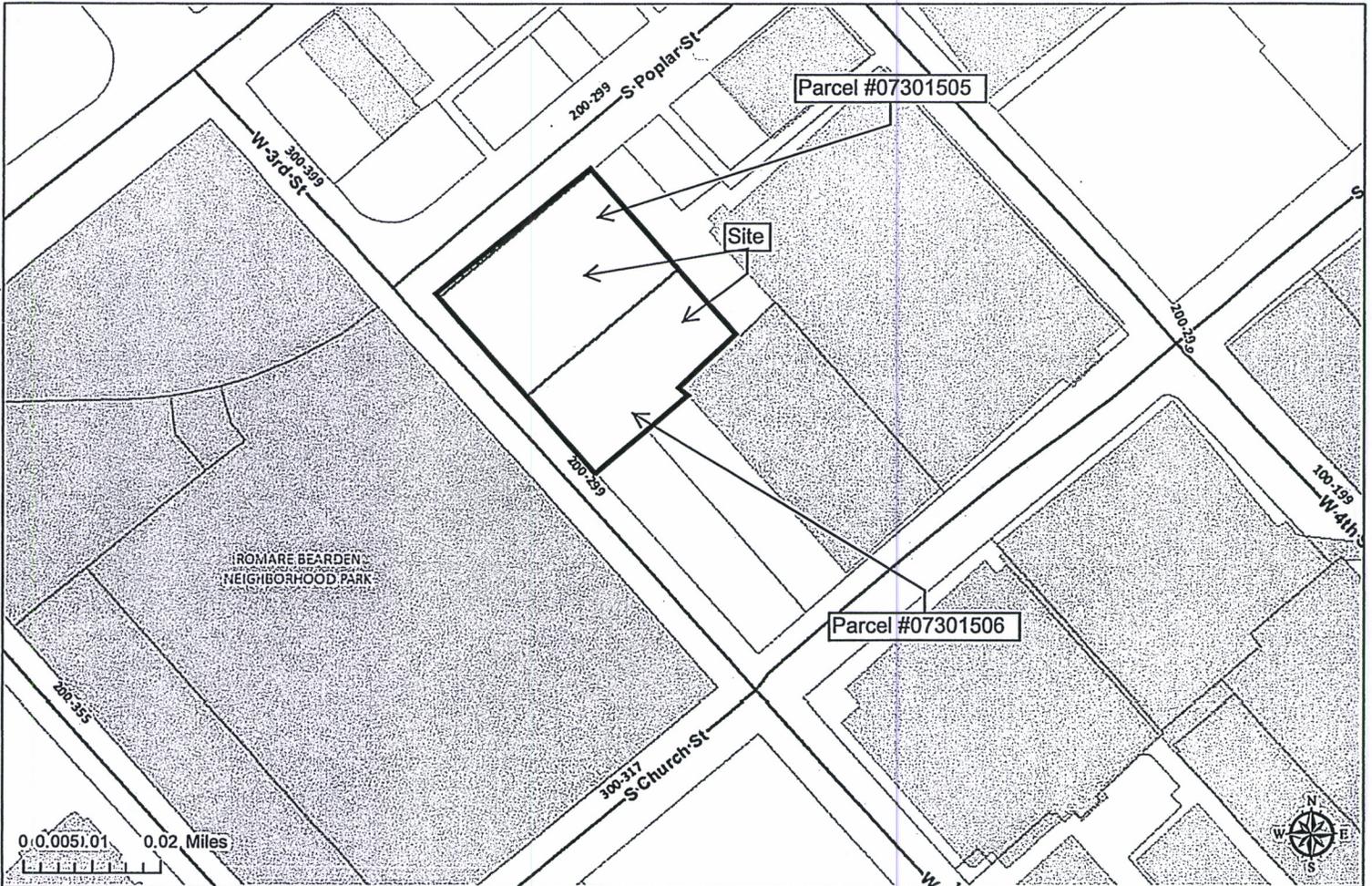
**Value Changes**

Notice Date	Tax Year	Reason	Changed To	Deferred
Mar 21 2011	2011	Countywide Revaluation	2759900	0
Mar 21 2011	2011	Countywide Revaluation	2759900	0
Dec 16 2003	2003	Reviewed - No change in value	1226600	0
Mar 21 2003	2003	Countywide Revaluation	1226600	0
Sep 13 1999	1999	Correction of Land Area	613320	
Sep 13 1999	1999	Correction of Land Area: Acreage/Sw ftg/	613320	
Apr 18 1998	1998	Correction of Land Area	621360	
Apr 18 1998	1998	Correction of Land Area: Acreage/Sw ftg/	621360	
Mar 20 1998	1998	Countywide Revaluation	621400	
Feb 10 1992	1991	Equalization of Value	386700	
Jan 2 1991	1991	Countywide Revaluation	616200	

# Polaris 3G Map – Mecklenburg County, North Carolina

## W. 3rd St and S. Poplar St

Date Printed: 3/14/2014 6:16:49 PM



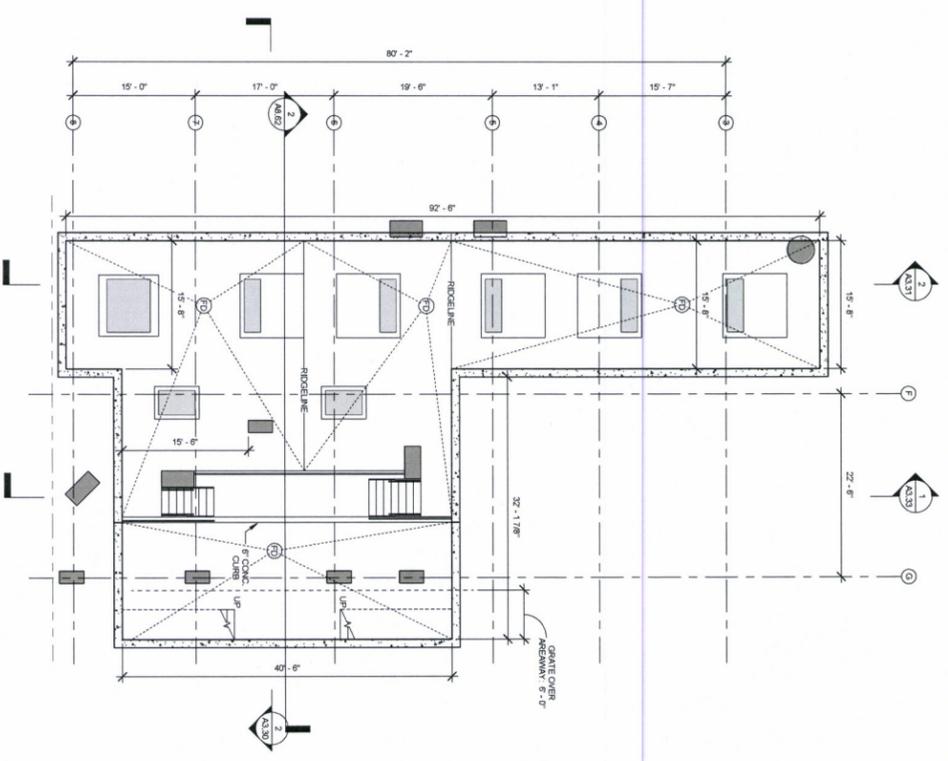
This map or report is prepared for the inventory of real property within Mecklenburg County and is compiled from recorded deeds, plats, tax maps, surveys, planimetric maps, and other public records and data. Users of this map or report are hereby notified that the aforementioned public primary information sources should be consulted for verification. Mecklenburg County and its mapping contractors assume no legal responsibility for the information contained herein.

**Appendix B**  
**Proposed Development Plans**  
**(Provided by R2L Architects)**

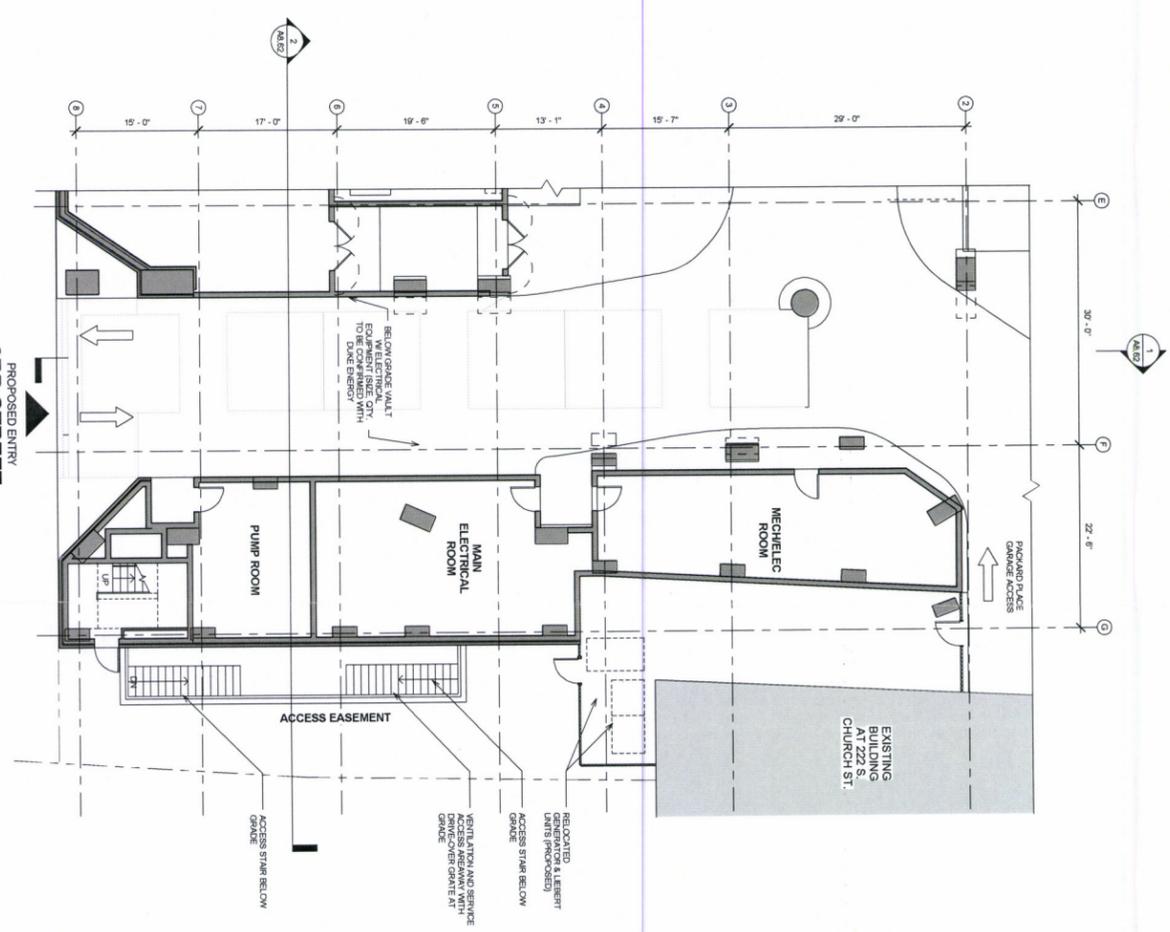
- Ground Floor Plan
- Grading Plan
- Transformer Vault Plan
- Transformer Vault Section
- Ground Floor Framing Plan w/Pile Cap Locations







1 100A-TRANSFORMER VAULT, AT GRADE PLAN  
 SCALE: 1/8" = 1'-0"



2 100B-TRANSFORMER VAULT, AT GRADE PLAN  
 SCALE: 1/8" = 1'-0"

**KEYNOTES**

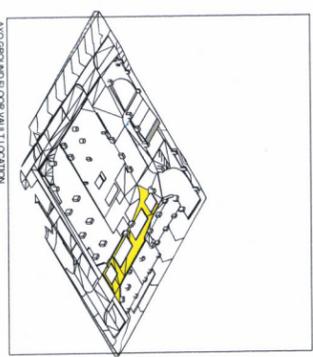
- 1 TRAFFIC COATING
- 2 SLUMP PIT
- 3 CORNER GUARD LOCATION
- 4 8" CONCRETE FILLED PIPE BOLLARD TYP.
- 5 TRENCH DRAIN, SEE PLUMBING
- 6 XXX
- 7 XXX
- 8 XXX
- 9 XXX

**GENERAL NOTES**

1. REFER TO TO 00 SERIES SHEETS FOR ADDITIONAL NOTES, SYMBOLS & ABBREVIATIONS.
2. PARKING SPACE AREAS SHALL BE SIZED AS FOLLOWS UNO.
  - (C) COMPACT SPACES 8'-0"X18'-0"
  - (P) FULL SPACES 8'-0"X18'-0" W/ 9'-0"X5'-0" AISLE
  - (H-C) HANDICAPPED 9'-0"X18'-0" W/ 9'-0"X5'-0" AISLE
  - (H-C-VAN) HANDICAPPED VAN 9'-0"X18'-0" W/ 9'-0"X11'-0" AISLE
3. MAINTAIN THE FOLLOWING CLEAR HEIGHTS IN GARAGE AREAS:
  - 8'-4" ALL DRIVE AISLES, RAMPS, H-C VAN ACCESSIBLE PARKING SPACES
  - 7'-0" ALL FULL & COMPACT PARKING SPACES
4. WHERE WALLS OF DIFFERENT TYPES ARE SHOWN TO ALIGN IN PLAN, ALIGN FINISHED FACE OF WALLS.
5. AT INTERIOR DOORS, INSIDE FACE OF HINGE SIDE LAMB SHALL BE 6" FROM FACE OF ADJACENT INTERSECTING PARTITION, UNO.
6. PROVIDE WATERPROOFING AT INTERIOR FACES OF CML-ENCLOSED SHAFTS THAT ARE EXPOSED TO WEATHER.
7. ALL INTERIOR WALLS ARE TYPE 11C CML UNO.
8. SEE A100 SERIES SHEETS FOR TYPICAL FIRE RESISTANCE RATED WALL FLOOR & CEILING ASSEMBLIES.
9. SEE FINISH SCHEDULES, CORRIDOR ELEVATIONS & DETAILS FOR TYPICAL RESIDENTIAL CORRIDOR FINISHES.
10. MECHANICAL, ELECTRICAL, AND PLUMBING EQUIPMENT SUBJECT TO DAMAGE BY VEHICLES SHALL BE PROTECTED BY A STRUCTURAL STEEL BARRIER CONSTRUCTED OF 2"x2" STEEL ANGLE, PAINTED YELLOW.
11. PROVIDE SLANE SEALER @ FLOOR SLABS IN GARAGE.
12. PAINT CONCRETE @ CMU WALLS EXPOSED TO VIEW FROM MAIN PARKING AREA AND IN ENTRANCE LOBBY.
13. GROUT SOLID BOTTOM 2" OF CMU WALLS WHERE EXPOSED TO AUTOMOBILE TRAFFIC.
14. SEE SHEETS A60A-1 FOR TYPICAL DEVICE, CONTROL, SIGNAGE & WALL MOUNTING INSTALLATION REQUIREMENTS.
15. ALL FLOOR DRAINS TO BE 3" BELOW SPOT ELEVATION OF NEAREST RIDGELINE, UNLESS OTHERWISE NOTED.
16. EMERGENCY GENERATOR ROOM TO HAVE 100% OF CEILING AND 75% OF WALL AREA COVERED WITH 1/2" THICK UNFACED SEMI-RIGID FIBERGLASS EQUAL TO OWENS-CORNING TYPE 705.
17. GENERATOR SHEET (B) THRU (P) ENGLISH, TO HAVE 1/2" THICK PYROCK AC声USTMENT 40' APPLIED TO ALL SURFACES AND CEILING.
18. GARAGE EXHAUST FANS AT P11 LEVEL TO HAVE 100% OF CEILING AND 75% OF WALL AREA COVERED WITH 1/2" THICK UNFACED SEMI-RIGID FIBERGLASS EQUAL TO OWENS-CORNING TYPE 705.

**LEGEND**

- CMU WALL
- CONCRETE COLUMNS / SHEAR WALL
- FLOOR/ROOF DRAIN, SEE PLUMBING
- FIRE EXTINGUISHER & CABINET
- BRACKET-MOUNTED FIRE EXTINGUISHER
- HOSE BIBB LOCATION
- PROPERTY LINE
- BOLLARD



DATE	DESCRIPTION
08/20/24	DESIGN DEVELOPMENT
08/20/24	PERMISSIONS
08/20/24	CONSTRUCTION

OWNER: STARBUCKS  
 18 Broad Street  
 Suite 200  
 Omaha, NE 68102

DESIGNER: RICHARD DOWNS, AIA  
 1001 W. 10th St. Suite 100  
 Lincoln, NE 68502  
 402.441.1111  
 www.rclarchitects.com

PROJECT: TRANSFORMER VAULT

DATE: 08/20/24

SCALE: 1/8" = 1'-0"

PROJECT NO: A8.61

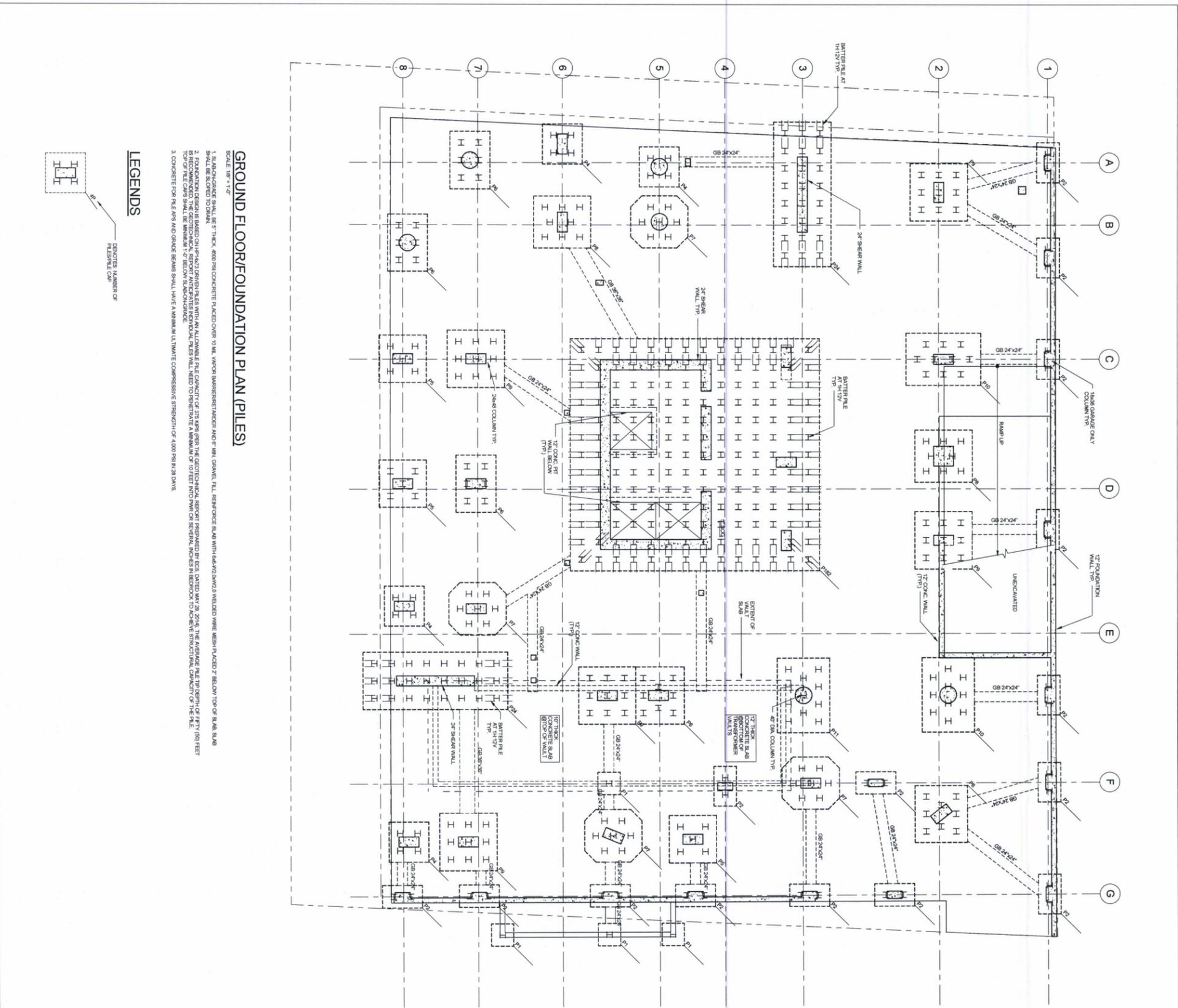
PROJECT: TRANSFORMER VAULT

PROJECT NO: A8.61

PROJECT: TRANSFORMER VAULT

PROJECT NO: A8.61

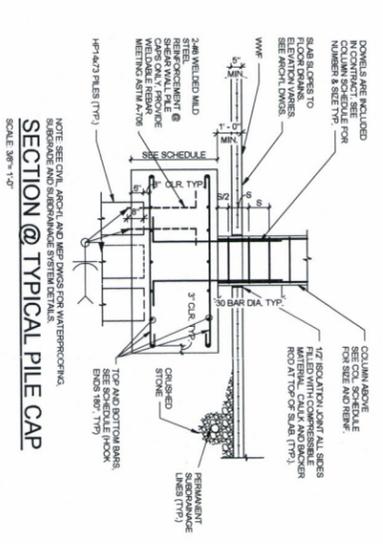
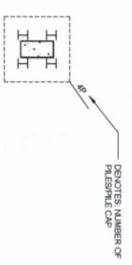




**GROUND FLOOR/FOUNDATION PLAN (PILES)**

- SCALE: 3/8" = 1'-0"
1. SUBGRADE SHALL BE 5" THICK, 4000 PSI CONCRETE PLACED OVER 10" MIN. UNIFORM BARRIER (AGGREGATE AND 7" MIN. GRAVEL, FILL, REFERENCE SLAB WITH 6#4 @ 24" ON CENTER) WELDED WIRE MESH PLACED 7" BELOW TOP OF SLAB. SLAB SHALL BE SLOPED TO DRAIN.
  2. FOUNDATION DESIGN IS BASED ON HP-42 PILES WITH AN ALLOWABLE PILE CAPACITY OF 375 KIPS PER THE GEOTECHNICAL REPORT PREPARED BY E.C.S. DATED MAY 29, 2014. THE ALLOWABLE PILE TIP DEPTH OF FIFTY (50) FEET OF THE CAPS SHALL BE MINIMUM 1'-0" BELOW SUBGRADE.
  3. CONCRETE FOR PILES AND GRADE BEAMS SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 PSI IN 28 DAYS.

**LEGENDS**



**SECTION @ TYPICAL PILE CAP**

**PILE CAP SCHEDULE**

PILE CAPACITY = 375 KIPS

MARK	SIZE	THICKNESS	REINFORCEMENT	
			TOP	BOTTOM
P2	8'-0" x 8'-0"	48"	7-#8	15-#8
P3	8'-0" x 8'-0"	48"	15-#8	15-#8
P4	8'-0" x 8'-0"	48"	9-#10	9-#10
P5	8'-0" x 8'-0"	48"	11-#10	11-#10
P6	11'-0" x 8'-0"	52"	9-#11	12-#10
P7	11'-0" x 10'-0"	52"	10-#11	15-#10
P8	11'-0" x 10'-0"	52"	10-#11	15-#10
P9	11'-0" x 11'-0"	64"	13-#11	13-#11
P10	15'-0" x 10'-0"	64"	19-#11	20-#10
P11	15'-0" x 10'-0"	64"	21-#11	20-#10
P12	20'-0" x 11'-0"	64"	#11@12" O.C.	#11@12" O.C.
P13	30'-0" x 8'-0"	64"	#11@12" O.C.	#11@12" O.C.

**Appendix C**  
**Example Health & Safety Plan**

**HEALTH AND SAFETY PLAN**  
**3<sup>rd</sup> and Poplar Street**  
**Brownfields Site**  
**Charlotte, NC**  
**H&H Job No. GSL-001**

**Site History**

The subject site is a 0.6-acre vacant property located on the eastern corner of W. 3<sup>rd</sup> Street and S. Poplar Street in Charlotte, North Carolina (subject property, Figure 1). The property is currently vacant land paved with asphalt and utilized as a surface parking lot. It is our understanding that Greystar GP II, LLC (Greystar) plans to develop the property with a multi-story mixed-use residential/commercial tower.

H&H previously conducted Phase I and Phase II Environmental Site Assessment (ESA) activities on the property in 2010 and 2014 and identified low concentrations of petroleum impacts in soil associated with a former gas station. H&H recently assisted Greystar and Parker Poe Adams & Bernstein, PLLC (PPAB) with obtaining eligibility into the NC Department of Environment and Natural Resources (DENR) Brownfields Program. The purpose of this SMP is to develop a strategy to properly manage impacted soil that may be encountered during site development and construction activities. In accordance with the pending Brownfields Agreement for the 3<sup>rd</sup> & Poplar Project Brownfields Site, the SMP will be prepared and submitted to the DENR prior to disturbing soil on the property. The actions described in this SMP will be completed under the pending NC DENR Notice of Brownfields Property (NBP) currently being prepared on behalf of Greystar (the prospective developer) during development of the property.

During previous Phase II ESA activities, H&H collected soil and groundwater samples to assess the potential for impacts to the subject property in the area of the former service station. The results of soil sample analyses indicate that total petroleum hydrocarbons as gasoline range organics (TPH-GRO) were detected above the DENR Action Level of 10 mg/kg for UST petroleum releases in DPT-7 (0 to 2 ft). Groundwater results from DPT-7 indicated the presence of lead (22 µg/L) slightly above its NC 2L Standard of 15 µg/L but well below the DENR UST Program gross contamination level (GCL) of 15,000 µg/L.



(4) Other Hazards

- Heat/Cold stress
- Thunderstorms, hail, and lightning.

Training

(1) Minimum Training Required (Review site specific information prior to entering the site).

- 40-hour OSHA HAZWOPER Training
- Medical Monitoring Program Participant
- “Fit for Duty” Clearance from Medical Director and current respirator fit test

(2) Specialized Training or Required Permits

- “Competent Person” training for excavation & trenching preferred but not required for H&H personnel. However, at least one “competent person” as defined by OSHA and provided by the utility contractor shall be on-site during excavation activities.

Emergency Response

(1) On-site emergency contact person and telephone number:

- Not Assigned

(2) Other emergency contacts as appropriate:

- Ambulance, Fire, & Police – phone # 911
- Matt Ingalls, Project Manager (704) 887-4600 (office)
- Shannon Cottrill, Health & Safety Officer (704) 577-8810 (cell)

(3) Hospital: Attach Hospital Route Map or Directions

Carolinas Medical Center – 1000 Blythe Boulevard, Charlotte - phone # (704) 355-2000 (**Map Attached**)

In the event of an emergency situation on the site, on-site personnel are to immediately notify the appropriate emergency responder (i.e., fire, rescue, police, etc.), and take any corrective actions or emergency procedures that can be safely performed (i.e., first aid, CPR, etc.) When conditions permit, on-site personnel must notify the H&H Project Manager and Health & Safety Officer that an incident has occurred. On-site personnel should review and be familiar with the phone number and location of the nearest hospital (listed above).

**Personal Protective Equipment (PPE)**

- (1) PPE Required: (examples: hard hat, safety glasses with side shields, steel toe boots, tyvek coveralls, respirator, rubber boots, gloves, etc.).

The following PPE will be required during the performance of site activities:

<b>Safety glasses</b>	At all times during the performance of site work, regardless of the task
<b>Safety shoes/boots</b>	At all times during the performance of site work, regardless of the task
<b>Traffic safety vest</b>	At all times during the performance of site work, regardless of the task
<b>Hearing Protection</b>	At any time where noise levels are above natural ambient levels, at any time when working within 25 ft of operational heavy equipment (i.e., excavators), and at any time when utilizing portable equipment which creates noise levels above natural ambient levels (i.e., drills, saws, etc)
<b>Leather work gloves</b>	At any time the use of hand protection is warranted, including but not limited to, operations involving the use of hand tools
<b>Nitrile gloves</b>	At any time environmental samples are to be collected or contaminated media is being handled
<b>Hard hat</b>	At any time when working within 25ft of operational heavy equipment and when working within a space with limited overhead clearance and/or overhead obstructions
<b>Tyvek® coveralls</b>	At any time where dermal exposure to contaminants is imminent or assured, or where exposure to liquid or solid wastes is likely. The use of Tyvek® coveralls may require the modification of the PPE level established for the site
<b>Respirator</b>	At any time when volatile organic vapor measurements indicate levels at or in excess of the action level established for the site (see Exposure Monitoring below). When used, the appropriate respirator cartridge must be used (i.e., organic vapor). Consultation with the Project Manager and Health & Safety Officer is <u>required</u> prior to the use of a respirator.

### **Exposure Monitoring**

On an as needed basis during excavation and material handling operations, a photoionization detector (PID) shall be utilized to monitor potential exposure to volatile organic vapors. Monitoring of potential volatile organic vapors will be conducted within the breathing zone (i.e., 5 to 6 ft above ground surface), and will be conducted periodically. A minimum of a single measurement within the breathing zone in the work area(s) should be performed, and data obtained through the performance of this monitoring shall be recorded in the field book, noting the date, time, location and measurement obtained. More frequent vapor monitoring should be conducted as conditions warrant (i.e., recognition of offensive odors).

As a PID detects numerous volatile organic vapors and is not specific to a particular compound, the action level for organic vapors as monitored with the PID at the site is established at a level of 10 parts per million (ppm), above background levels, unless a UST or potentially petroleum impacted soils are identified and being managed. This level is the recommended ACGIH threshold limit value (TLV) for chlorobenzene; 1,2-dichlorobenzene; and naphthalene (ACGIH 2011, TLV & BEIs), Pocket Guide to Chemical Hazards.

If a UST or potential petroleum impacted soils are being managed/investigated, the action level for organic vapors as monitored with the PID at the site is established at a level of 0.5 ppm. This level is the recommended ACGIH threshold limit value (TLV) for benzene (ACGIH 2011, TLV & BEIs), Pocket Guide to Chemical Hazards. If this level is observed or exceeded within the breathing zone for more than 1 minute, a Draeger and/or Rae Systems detector tube will be used to monitor for concentrations of benzene. If the Draeger tube indicates a concentration of benzene less than 0.5 ppm and PID readings are less than 10 ppm (which is the TLV limit as identified above), operations will be allowed to continue. If the Draeger tube indicates a concentration of benzene greater than 0.5 ppm and/or PID readings are greater than 10 ppm for more than 1 minute, operations are to be suspended and personnel will move up wind of the work area until levels dissipate. If volatile organic vapor levels do not dissipate in the work area, contact the Project Manager and Health & Safety Officer, ventilation measures may be necessary in the work area and/or the required PPE may be modified to include donning of an appropriate respirator. To avoid exposure, visual screenings for dust shall be performed.

Note: Calibration, frequency of calibration, and use of the PID must be performed in accordance with the manufacturer's specifications.

Although not likely to be encountered in the proposed areas of investigation, SVOCs and Metals have been detected in soils on other parts of the site. Exposure routes for these constituents generally include dermal contact, inhalation, and ingestion. To avoid exposure, H&H will conduct visual screenings for dust. If visual dust is observed, the utility contractor will take action to reduce the creation of dust such as wetting soils.

### **Decontamination**

Should sampling devices (i.e., stainless steel hand augers and buckets) be needed, they will be decontaminated in accordance with Section 9.1, *Field Equipment Decontamination Procedure*, of the H&H Field Procedures Guide dated February 2010. All other sampling equipment shall be disposable (i.e., nitrile gloves).

**Site Control**

The oversight contractor will instruct the construction contractors to take necessary measures to maintain site control and limit exposure of persons to hazardous conditions or hazardous materials (if identified). The excavation area will be secured if the excavation pit has to be left open overnight.

As needed, H&H and/or the utility contractor shall establish work areas to be demarked with traffic cones, barricades, caution tape, temporary construction fencing (chain link) and/or other appropriate measures. In general, a minimum perimeter of 25 ft should be established around the work area by one or more of the control measures listed above. Where possible, operations will not be conducted in a manner which increases personnel or subcontractor exposure to traffic or other hazards. **No unauthorized personnel are to be allowed in the work areas during operations.**

**Safety Briefings**

Safety briefings will be held on each day during which site work is performed. A minimum of one daily safety briefing will be held on the site by all personnel involved in site operations. Additional safety briefings will be conducted as site conditions or hazards change, when returning to the site following breaks in operation such as lunch or weekends, or at other appropriate times to be determined by on-site personnel or the Project Manager. Records of these safety meetings will be noted on the safety briefing log sheets (provided at the end of this document) and in the field book, and will include the date and time of the briefing, names and affiliations of attendees, and any pertinent subjects of discussion. H&H need not be present at all safety briefings

**Additional Information/Notes**

[Empty rectangular box for additional information/notes]

Reviewed By:



Project Manager



**Hospital Directions and Map**

Map & Directions	Map Only	Directions Only	Print
------------------	----------	-----------------	-------

Carolinas Career Carolinas.JobsOnline.com Carolinas Career. Now Hiring in Your Area.

Ad



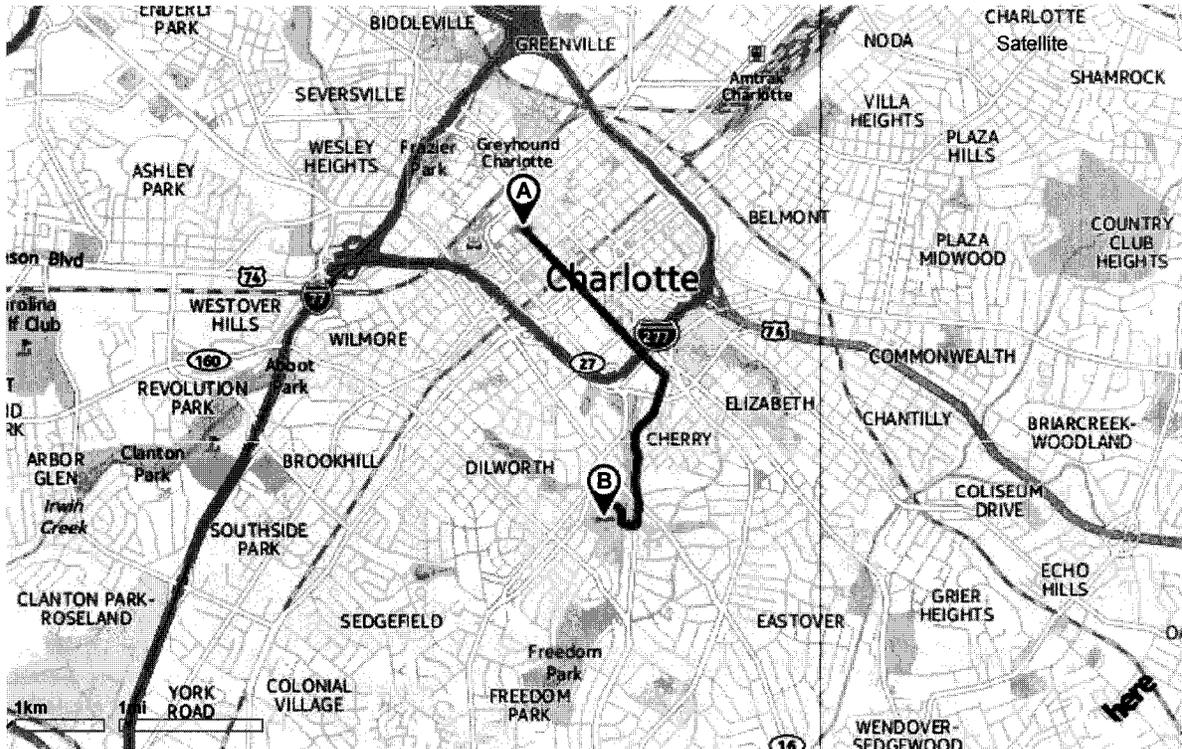
- A** W 3rd St & S Poplar St, Charlotte, NC 28202
- B** Carolinas Medical Center, 1000 Blythe Blvd, Charlotte, NC 28203

Enter notes here

255

Total Distance: 2.31 mi— Total Time: 7 mins

Map Layout



<b>A</b> W 3rd St & S Poplar St, Charlotte, NC 28202	Expand All
Head toward S Church St on W 3rd St	Go for 1.2 mi Hide
Turn right onto S Kings Dr	Go for 0.9 mi Hide
Turn right onto Medical Center Dr	Go for 423 ft Hide
Turn right onto Blythe Blvd	Go for 0.2 mi Hide

Arrive at Blythe Blvd. The trip takes 2.3 mi and 7 mins.

Hide



Carolinas Medical Center, 1000 Blythe Blvd, Charlotte, NC 28203

Expand All

When using any driving directions or map, it is a good idea to double check and make sure the road still exists, watch out for construction, and follow all traffic safety precautions. This is only to be used as an aid in planning

**Appendix D**  
**Vapor Liner Recommended Specifications**



# Stego® Wrap Class A Vapor Retarder

STEGO INDUSTRIES, LLC



**Vapor Retarders**  
**07 26 00, 03 30 00**

**1. Product Name**  
**Stego Wrap Class A  
Vapor Retarder**

**2. Manufacturer**

Stego Industries, LLC  
216 Avenida Fabricante, Suite 101  
San Clemente, CA 92672  
Sales, Technical Assistance  
Ph: (877) 464-7834  
Fx: (949) 257-4113  
www.stegoindustries.com

**3. Product Description**

USES: Stego Wrap Class A is used as an exceptional vapor retarder.  
COMPOSITION: Stego Wrap Class A is a multi-layer plastic extrusion manufactured with only high grade prime, virgin, polyolefin resins.  
ENVIRONMENTAL FACTORS: Stego Wrap Class A can be used in systems for the control of soil gases (radon, methane), soil poisons (oil by-products) and sulfates.

**5. Installation**

UNDER SLAB: Unroll Stego Wrap Class A over an aggregate, sand or tamped earth base. Overlap all seams a minimum of six inches and tape using Stego Tape or Crete Claw® Tape. All penetrations must be sealed using a combination of Stego Wrap and Stego accessories.

For additional information, please refer to Stego's complete installation instructions.

**6. Availability & Cost**

Stego Wrap Class A is available nationally via building supply distributors. For current cost information, contact your local Stego Wrap distributor or Stego Industries' sales department.

**7. Warranty**

Stego Industries, LLC believes to the best of its knowledge, that specifications and recommendations herein are

accurate and reliable. However, since site conditions are not within its control, Stego Industries does not guarantee results from the use of the information provided and disclaims all liability from any loss or damage. No warranty, express or implied, is given as to the merchantability, fitness for a particular purpose, or otherwise with respect to the products referred to.

**8. Maintenance**

None required.

**9. Technical Services**

Technical advice, custom CAD drawings, and additional information can be obtained by contacting Stego Industries' technical assistance department or via the website.

**10. Filing Systems**

- Stego Industries' website
- Buildsite
- 4Specs

**4. Technical Data**

**TABLE 1: PHYSICAL PROPERTIES OF STEGO WRAP CLASS A VAPOR RETARDER**

PROPERTY	TEST	RESULTS
Under Slab Vapor Retarders	ASTM E 1745 Class A, B & C – Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs	Exceeds Class A, B & C
Water Vapor Permeance	ASTM F 1249 – Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor	0.0254 perms
Puncture Resistance	ASTM D 1709 – Test Methods for Impact Resistance of Plastic Film by Free-Falling Dart Method	3466 grams
Tensile Strength	ASTM D 882 – Test Method for Tensile Properties of Thin Plastic Sheeting	50.60 lbf/in.
Permeance After Conditioning (ASTM E 1745 Sections 7.1.2 - 7.1.5)	ASTM E 154 Section 8, F 1249 – Permeance after wetting, drying, and soaking ASTM E 154 Section 11, F 1249 – Permeance after heat conditioning ASTM E 154 Section 12, F 1249 – Permeance after low temperature conditioning ASTM E 154 Section 13, F 1249 – Permeance after soil organism exposure	0.0258 perms 0.0259 perms 0.0241 perms 0.0245 perms
Thickness	ACI 302.1R-04 – Minimum Thickness (10 mils)	10 mils
Roll Dimensions		14 ft. wide x 210 ft. long or 2,940 ft <sup>2</sup>
Roll Weight		140 lbs.

Note: perm unit = grains/(ft<sup>2</sup> \*hr\* in.Hg)

Test results above are for Stego Wrap products made as of March 15, 2013. If you have product made prior to March 15, 2013 please refer to Stego literature dated 10/12 for representative test results or call your local Stego Representative with questions.



## FLORPRUFE® 120

### Integrally bonded vapor protection for slabs on grade

#### Description

Florprufe® 120 is a high performance vapor barrier with Grace's Advanced Bond Technology™ that forms a unique seal to the underside of concrete floor slabs.

Comprising a highly durable polyolefin sheet and a specially developed, non-tacky adhesive coating, Florprufe 120 seals to liquid concrete to provide integrally bonded vapor protection.

Florprufe exceeds ASTM E1745 Class A rating.

#### Advantages

- Forms a powerful integral seal to the underside of concrete slabs
- Protects valuable floor finishes such as wood, tiles, carpet and resilient flooring from damage by vapor transmission
- Direct contact with the slab complies with the latest industry recommendations
- Remains sealed to the slab even in cases of ground settlement
- Ultra low vapor permeability
- Durable, chemical resistant polyolefin sheet
- Lightweight, easy to apply, kick out rolls
- Simple lap forming with mechanical fixings or tape

#### Use

Florprufe 120 is engineered for use below slabs on grade with moisture-impermeable or moisture-sensitive floor finishes that require the highest level of vapor protection.

<sup>1</sup> ACI 302.1R-96

#### Product Advantages

- Forms a powerful integral seal
- Protects valuable floor finishes
- Ultra low vapor permeability
- Durable, chemical resistant
- Lightweight and easy to apply

Florprufe complies with the latest recommendations of ACI Committees 302 and 360, i.e. for slabs with vapor sensitive coverings, the location of the vapor barrier should always be in direct contact with the slab.

The membrane is loose laid onto the prepared sub-base, forming overlaps that can be either mechanically secured or taped. The unique bond of Florprufe to concrete provides continuity of vapor protection at laps. Alternatively, if a taped system is preferred, self-adhered Preprufe® Tape can be used to overband the laps.

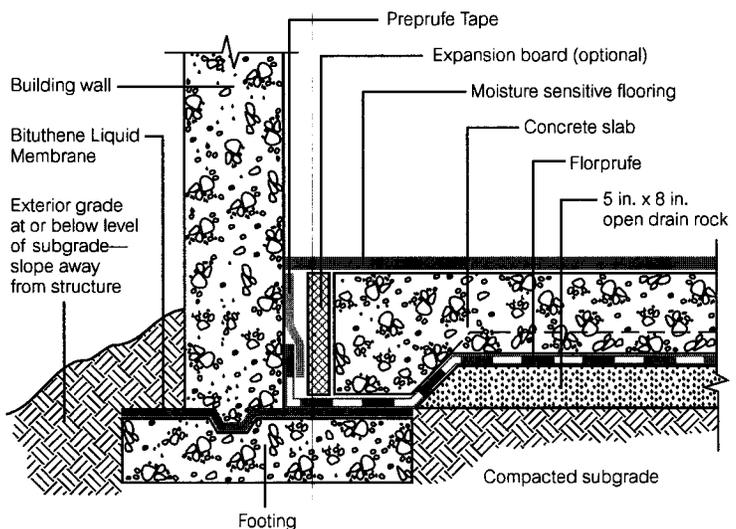
Slab reinforcement and concrete can be placed immediately. Once the concrete is poured, an integral bond develops between the concrete and membrane.

#### Installation

##### Health & Safety

Refer to relevant Material Safety Data Sheet. Complete rolls should be handled by 2 persons.

Florprufe 120 can be applied at temperatures of 25°F (-4°C) or above. Membrane installation is unaffected by wet weather. Installation and detailing of Florprufe 120 are generally in accordance with ASTM E1643-98.



#### Typical Assembly

Drawings are for illustration purposes only. Please refer to [www.graceconstruction.com](http://www.graceconstruction.com) for specific application details.

## Supply

<b>Florprufe 120</b>	
Supplied in rolls	4 ft x 115 ft (1.2 m x 35 m)
Roll area	460 ft <sup>2</sup> (42 m <sup>2</sup> )
Roll weight	70 lbs (32 kg) approx.
<b>Ancillary Products</b>	
Preprufe Tape is packaged in cartons containing 4 rolls that are 4 in. x 49 ft (100 mm x 15 m).	
Bituthene Liquid Membrane is supplied in 1.5 gal (5.7 L) pails.	

## Physical Properties: Exceeds ASTM E1745 Class A rating

Property	Typical Value	Test Method
Color	White	
Thickness (nominal)	0.021 in. (0.5 mm)	ASTM D3767—method A
Water vapor permeance	0.03 perms	ASTM E96—method B1
Tensile strength	65 lbs/in.	ASTM E1541
Elongation	300%	ASTM D412
Puncture resistance	3300 gms	ASTM D17091
Peel adhesion to concrete	>4 lbs/in.	ASTM D903

1. Test methods that comprise ASTM E1745 standard for vapor retarders

Prepare substrate in accordance with ACI 302.1R Section 4.1. Install Florprufe 120 over the leveled and compacted base. Place the membrane with the smooth side down and the plastic release liner side up facing towards the concrete slab. Remove and discard plastic release liner. End laps should be staggered to avoid a build up of layers. Succeeding sheets should be accurately positioned to overlap the previous sheet 2 in. (50 mm) along the marked lap line.

### Laps

#### 1. Mechanical fastening method—

To prevent the membrane from moving and gaps opening, the laps should be fastened together at 39 in. (1.0 m) maximum centers. Fix through the center of the lap area using 0.5 in. (12 mm) long washer-head, self-tapping, galvanized screws (or similar) and allowing the head of the screw to bed into the adhesive compound to self-seal. It is not necessary to fix the membrane to the substrate, only to itself. Ensure the membrane lays flat and no openings occur. (See Figure 1.) Additional fastening may be required at corners, details, etc. Continuity is achieved once the slab is poured and the bond to concrete develops.

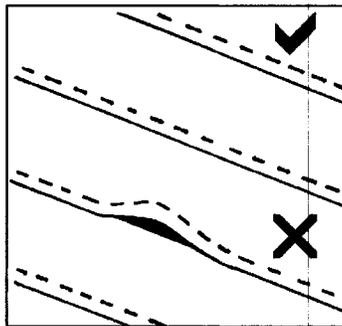


Figure 1

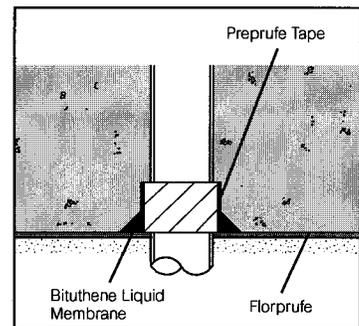


Figure 2

OR

#### 2. Taped lap method—

For additional security use Grace Preprufe Tape to secure and seal the overlaps. Overband the lap with the 4 in. (100 mm) wide Preprufe Tape, using the lap line for alignment. Remove plastic release liner to ensure bond to concrete.

#### Penetrations

Mix and apply Bituthene Liquid Membrane detailing compound to seal around penetrations such as drainage pipes, etc. (See Figure 2 and refer to the Bituthene Liquid Membrane data sheet, BIT-230.)

#### Concrete Placement

Place concrete within 30 days. Inspect membrane and repair any damage with patches of Preprufe Tape. Ensure all liner is removed from membrane and tape before concreting.

[www.graceconstruction.com](http://www.graceconstruction.com)

For technical assistance call toll free at 866-333-3SBM (3726)

Florprufe and Preprufe are registered trademarks of W. R. Grace & Co.—Conn.

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the users' consideration, investigation and verification, but we do not warrant the results to be obtained. Please read all statements, recommendations or suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation or suggestion is intended for any use which would infringe any patent or copyright. W. R. Grace & Co.—Conn., 62 Whittemore Avenue, Cambridge, MA 02140. In Canada, Grace Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

This product may be covered by patents or patents pending.  
PF-001G Printed in U.S.A. 3/07

Copyright 2007. W. R. Grace & Co.—Conn.  
FA/LI/1M

GRACE