



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL

*Prepared for*

**The University of North Carolina at Chapel Hill**  
Department of Environment, Health and Safety  
1120 Estes Drive Extension, CB#1650  
Chapel Hill, NC 27599-1650

# **WORK PLAN ADDENDUM FOR INTERIM MEASURES**

## **UNC-CHAPEL HILL COGENERATION FACILITY CHAPEL HILL, NORTH CAROLINA**

### **SITE ID # NCR000010272**

*Prepared by*

**Geosyntec** ▶  
consultants

engineers | scientists | innovators

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Project Number GN5219

March 2015



I, Eric Nesbit, a Professional Engineer for Geosyntec Consultants of NC, PC do certify that the information in this report is correct and accurate to the best of my knowledge.

Geosyntec Consultants of NC, PC is licensed to practice engineering in North Carolina. The certification number (Firm's License Number) is C-3500.

Geosyntec Consultants of NC, PC is licensed to practice geology in North Carolina. The certification number (Firm's License Number) is C-295.

**LIST OF TABLES**

Table 1: Soil Delineation Results

**LIST OF FIGURES**

Figure 1: Interim Removal Areas

Figure 2: Soil Delineation Results

Figure 3: Soil Excavation Plan

**LIST OF APPENDICES**

Appendix A: Task Hazard Analysis

## **1. Introduction**

On behalf of The University of North Carolina at Chapel Hill (UNC-CH), Geosyntec Consultants of NC, PC (Geosyntec) has prepared this Interim Measures Work Plan Addendum for UNC-CH's Cogeneration Facility (Site) located at 575 West Cameron Avenue, Chapel Hill, North Carolina. This Work Plan advances the scope of work presented in the Remedial Investigation Work Plan Addendum submitted to the Department of Environment and Natural Resources in July 2014.

## **2. Summary**

On September 3, 2010, UNC-CH submitted a *Notification of an Inactive Hazardous Substance or Waste Disposal Site* to the North Carolina Department of Environment and Natural Resources' (NCDENR) Inactive Hazardous Waste Sites Branch (IHSB). UNC-CH submitted this notification because it encountered soils suspected of containing coal combustion by-products (CCBs) during excavation for the construction of a new warehouse building for the UNC-CH Cogeneration Facility.

CCBs include fly ash, bottom ash, boiler slag, and flue gas emission control waste from the combustion of coal and other fossil fuels. CCBs have been beneficially reused by industry and in construction for decades. Coal ash is added to concrete to provide additional strength and is used as structural fill for roadways. While considered solid wastes, CCBs are specifically exempt from being considered hazardous wastes under 40 CFR 261.4(b) (4). However, CCBs do have the potential to contain hazardous substances, such as select metals, polycyclic aromatic hydrocarbons (PAHs), and dioxins/furans [Contaminants of Concern (COC)].

UNC-CH has entered into an Administrative Agreement (AA) dated May 29, 2013 with NCDENR to enroll the Site into the Registered Environmental Consultant (REC) program, a voluntary cleanup program. As part of the REC program, the remediating party contracts with an IHSB-approved environmental consulting firm to direct, implement, regulate, and certify that all investigation and remediation work is performed in compliance with the program regulations found under Title 15A of the North Carolina Administrative Code, Subchapter 13C .0300 (15A NCAC 13C .0300).

UNC-CH contracted with Geosyntec, an approved REC consultant, to conduct a remedial investigation (RI) of the Site. Geosyntec is conducting the investigation in accordance with North Carolina regulations to delineate the lateral and vertical extent of adverse impacts of CCBs in environmental media including soil, groundwater, surface water and sediment.

During the course of the RI, Geostyntec identified two areas with shallow subsurface impacts on one of the University-owned lots south of McCauley Street (Orange County, NC, PIN No. 9788148484). The areas are presented in **Figure 1**.

As an interim measure, the University will excavate both areas and properly dispose of the impacted soil according to the manner and procedures described in this work plan.

### **3. Permitting**

Prior to excavation activities, a series of permits must be obtained from the U.S. Army Corps of Engineers (Corps) and the NC DENR Division of Water Quality (DWQ). As provided in Sections 9 and 10 of the Rivers and Harbors Act (RHA) of 1899 and Section 404 of the Clean Water Act (CWA), the Corps has the statutory authority to “regulate the construction, excavation, or deposition of materials in our Nation’s navigable waters, and to determine the geographical limits of waters of the U.S.” The two proposed excavation areas are positioned adjacent to a drainage feature and as a result, a jurisdictional determination (JD) request must be submitted through the Corps prior to beginning work.

Following JD submittal, a Pre-Construction Notification (PCN) form will be submitted to the Corps and to NC DENR DWQ to obtain a CWA Section 404 Permit and DWQ 401 Water Quality Certification. The PCN form will provide the location of the proposed work, excavation procedures, and strategies used to limit environmental impacts to the surrounding wetland area. The PCN form will also be used to verify that the proposed work plan falls within the limitations of Nationwide Permit 38, which pertains to the cleanup of hazardous and toxic wastes.

The completed permit forms, including the proposed plan of work, will be submitted to the Orange County Department of Environment, Agriculture, Parks and Recreation, as well as to the Town of Chapel Hill for final approval.

All work will be conducted in accordance with the Jordan Lake Nutrient Management Strategy Rules, enacted to maintain nutrient-related water quality standards within the Jordan Lake watershed. The University will seek compliance concurrence from the Town of Chapel Hill and / or Orange County prior to conducting any excavation work.

#### **4. Soil Excavation Process**

Geostenc delineated the horizontal and vertical extent of CCB-impacted soils through the collection of soil samples in the vicinity of both of the excavation areas. The soil sampling results suggest that the impacted soil extends 1.5' (SB-24) and 3' (SB-26) below ground surface in the upstream and downstream areas, respectively; therefore, Geosyntec will excavate soil to these depths within each area. **Figure 1** shows the areas to be excavated.

In the southern most area, soils will be delineated to unrestricted use standards (**Figure 2**). Impacted soil within the delineated boundary will be removed. The excavation will cease at this delineated boundary or upon encountering clean soil within the boundary on a finer scale. No additional confirmation samples are proposed.

In the northernmost area, soils are delineated to unrestricted use standards with the exception of SB-35. As before, all impacted soil within the excavation boundary will be removed including SB-35. At base flow conditions, the depositional “bar” ends approximately 1 foot south of SB-35. The entirety of soil surrounding SB-35 and up to the base flow water surface will be removed. No additional confirmation samples are proposed.

Geosyntec will hire and oversee a NC-qualified firm to excavate the surficial soils in the two areas (280 ft<sup>2</sup> and 301 ft<sup>2</sup>) on the eastern side of the stream bed (**Figure 3**) south of McCauley Street. The subcontractor will provide all equipment, material, and labor used for soil excavation. All work will be done in accordance with the updated Task Hazard Analysis included in **Appendix A**.

Rip-rap material will be utilized as a driveway foundation for safe access to the excavation areas. Access will be from McCauley Street. Crush-and-run gravel will be placed over the rip-rap; all material will be emplaced using a mini-excavator and front end loader. Silt fencing will be installed around a temporary access path to prevent erosion / migration.

An 8-foot wide path will be cleared of small trees and shrubbery. The pathway location will be selected to avoid large trees and to minimize impact. Geostenc will take care to avoid up-rooting vegetation and to minimize cutting trees larger than 2-inches in diameter. The trees/shrubbery will be chipped using a tree grinder. The wood chips will be spread over the crush-and-run driveway to absorb precipitation and/or storm water runoff / run-on.

The mini excavator and / or loader will be used to transport spoils. Both will remain on the western side of the creek bed for the duration of excavation activities. At each location, the excavator operator will safely swing the excavator bucket across the creek to rest on the eastern creek side. The setup will allow for hand-digging soils at each location prior to placing the mass in the excavator bucket. Any root-mass located within the removal areas will be clean-cut with a chain saw to facilitate re-growth. The mini-excavator will subsequently transfer soils to the loader for transport to a staging area (**Figure 3**). Silt fencing will be installed around the perimeter of each excavation area as well as around the soil stockpile area.

Following adequate natural de-watering of excavated soils, the spoils will be transferred to a 20 cubic yard roll-off container. The roll-off container will be stored on the southern side of McCauley Street, near the temporary access road entrance. The roll-off container will be lined with a plastic liner and covered at the end of each work day. Orange fencing to alert vehicular and pedestrian traffic will surround the roll-off container and staging area. Soils will be transported under waste manifest or bill of lading to an approved disposal facility following all excavation activities.

## **5. Site Restoration**

Once excavation is complete, the southernmost excavation area will be backfilled with clean material and topsoil. Either the mini-excavator or loader (tracked vehicle) will be used to compact eroded areas on the west side of the drainage feature. Care will be taken to minimize disturbance to surrounding areas during the compaction process. The excavation area to the north will be allowed to re-stabilize via natural geomorphological process. Rip rap and crush-and-run gravel will be removed from within the 50 feet buffer limits upon completion of the excavations and during site restoration. The rip-rap access path will be left in place to help stabilize the road bank. All areas will be re-vegetated with riparian appropriate species at a pre-determined spacing as determined during the PCN process. All trash and debris generated during the excavation will be disposed of appropriately.

# TABLE

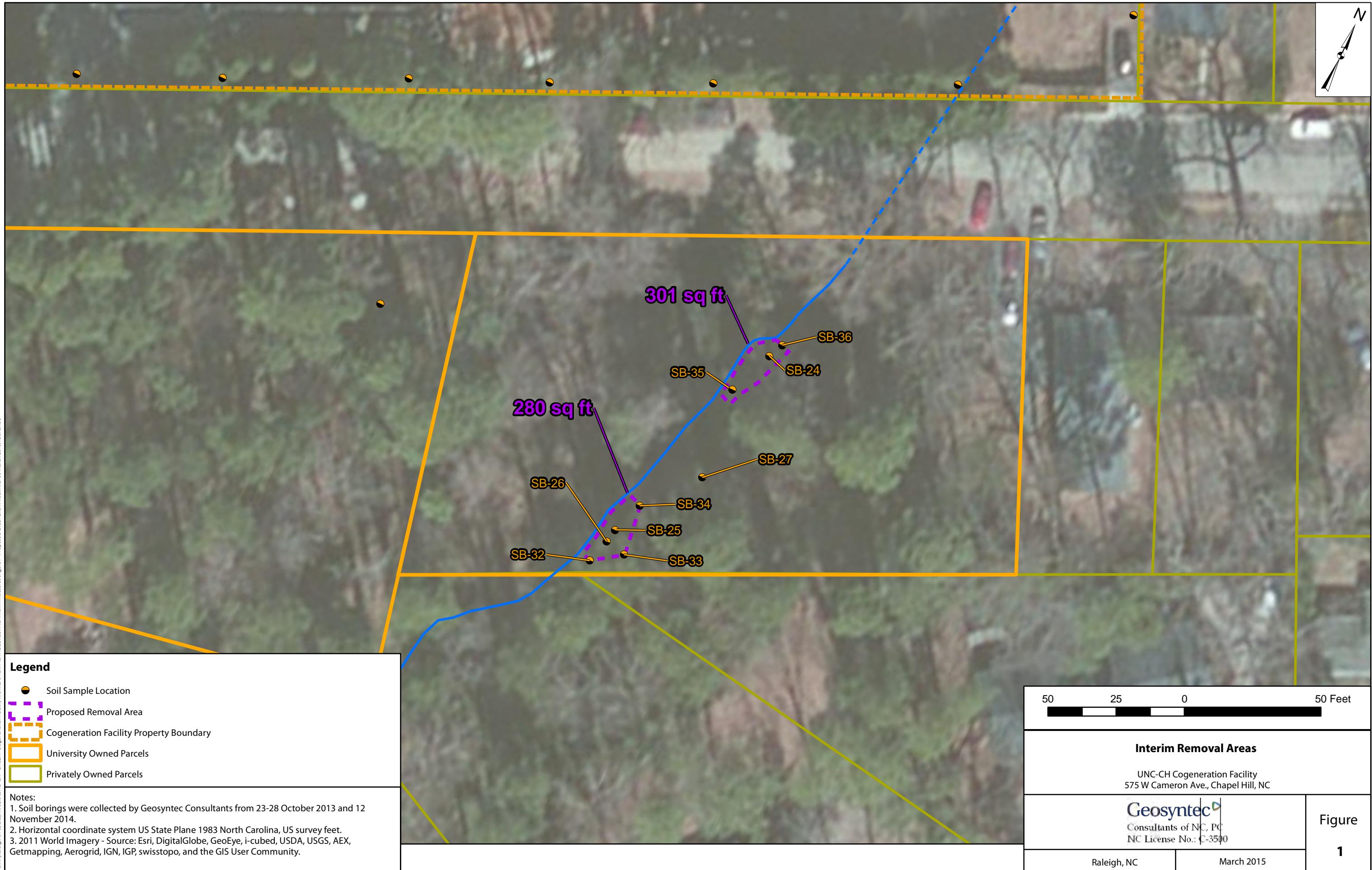
Table 1  
 Soil Delineation Results  
 Work Plan Addendum for Iterim Measures  
 The University of North Carolina at Chapel Hill  
 March 2015

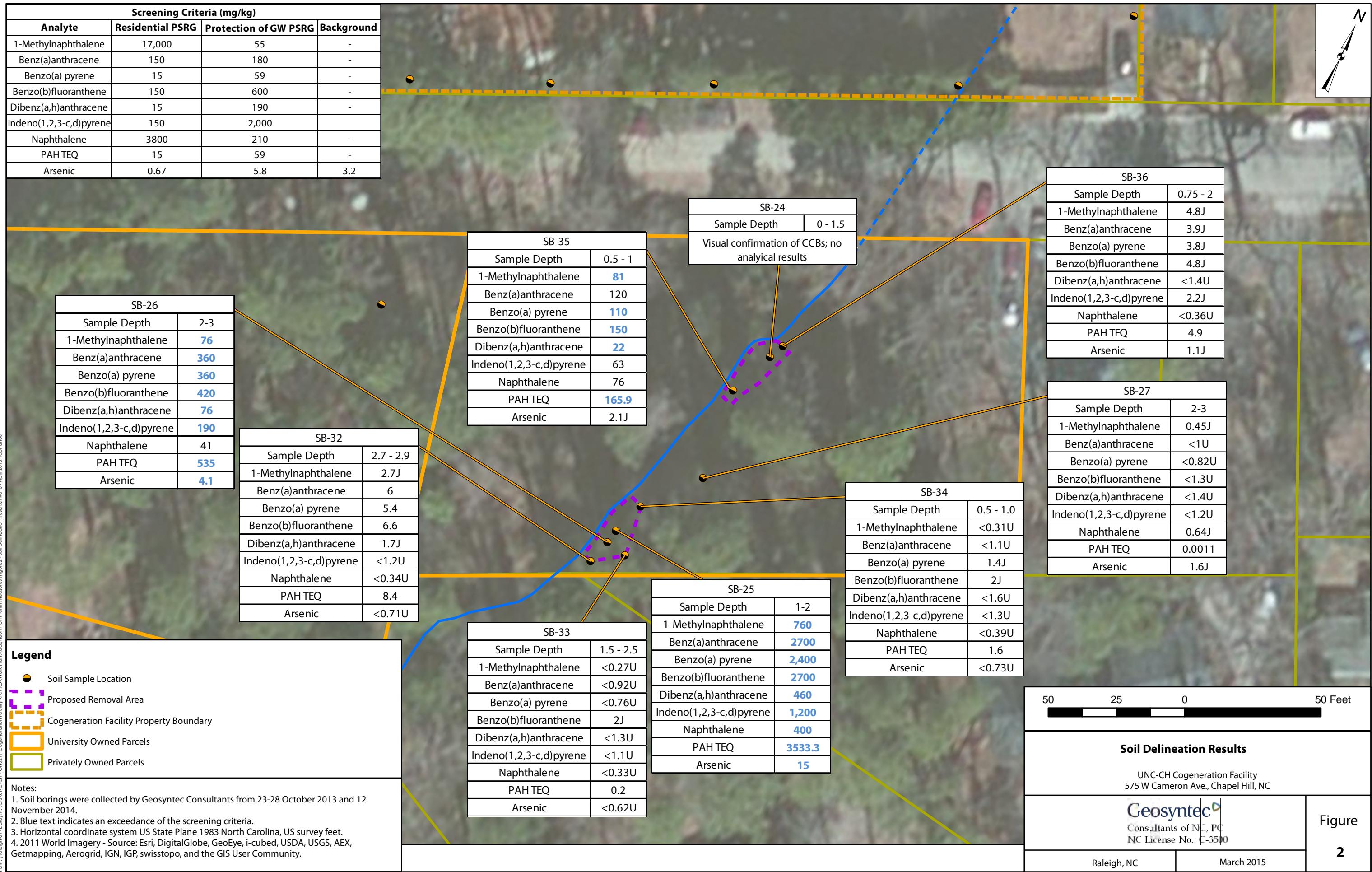
	Location	SB-25	SB-26	SB-27	SB-32	SB-33	SB-34	SB-35	SB-36	Screening Criteria			
		Depth (ft BGS)	1-2	2-3	2-3	2.7-2.9	1.5-2.5	1.5-2.5	0.5-1.0	0.75-2	Residential PSRG	Protection of Groundwater PSRG	Background UTL
		Sample Date	10/30/2013	10/30/2013	10/30/2013	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014			
SVOCs ( $\mu\text{g}/\text{kg}$ )	1-Methylnaphthalene	760	76	0.45J	2.7J	<0.27U	<0.31U	81	4.8J	17,000	55	-	
	2-methylnaphthalene	430	56	0.51J	2J	<0.32U	<0.37U	87	5.2J	46,000	1,600	-	
	Acenaphthene	420	36	<0.18U	<0.17U	<0.16U	<0.19U	11	<0.18U	700,000	8,400	-	
	Acenaphthylene	2,000	290	0.57J	2.4J	<0.17U	<0.2U	41	2.1J	-	21,000	-	
	Anthracene	1,600	190	<0.8U	2.1J	<0.74U	<0.87U	57	1.7J	3,400,000	660,000	-	
	Benz(a)anthracene	2,700	360	<1U	6	<0.92U	<1.1U	120	3.9J	150	180	-	
	Benzo(a) pyrene	2,400	360	<0.82U	5.4	<0.76U	1.4J	110	3.8J	15	59	-	
	Benzo(b)fluoranthene	2,700	420	<1.3U	6.6	2J	2J	150	4.8J	150	600	-	
	Benzo(g,h,i)perylene	1,600	250	<1.2U	<1.2U	<1.1U	<1.3U	78	2.8J	-	7,800,000	-	
	Benzo(k)fluoranthene	950	150	<1.1U	1.8J	<1.0U	<1.2U	43	1.2J	1,500	5,900	-	
	Chrysene	3,800	550	1.1J	8.7	<1.0U	<1.2U	160	5.9	15,000	18,000	-	
	Dibenz(a,h)anthracene	460	76	<1.4U	1.7J	<1.3U	<1.6U	22	<1.4U	15	190	-	
	Fluoranthene	6,600	880	1.7J	10	<1.0U	<1.2U	280	7.4	460,000	330,000	-	
	Fluorene	1,100	110	<0.52U	1.8J	<0.48U	<0.57U	32	1.1J	460,000	56,000	-	
	Indeno(1,2,3-c,d)pyrene	1,200	190	<1.2U	<1.2U	<1.1U	<1.3U	63	2.2J	150	2,000	-	
	Naphthalene	400	41	0.64J	<0.34U	<0.33U	<0.39U	76	<0.36U	3,800	210	-	
	Phenanthrene	8,600	1,000	1.5J	16	<1.1U	<1.3U	280	11	-	68,000	-	
	Pyrene	8,800	1,200	1.4J	14	2.4J	2J	300	9.6	340,000	220,000	-	
	PAH TEQ	3,533	535	0.0011	8.4	0.2	1.6	165.9	4.9	15	59	-	
Metals (mg/kg)	Aluminium	8,500	6,400	18,000	4200	5700	4800	6300	5900	15,000	-	42,996	
	Antimony	<0.55U	<0.4U	<0.44U	<0.41U	<0.36U	<0.42U	<0.47U	<0.43U	6.2	0.9	-	
	Arsenic	15	4.1	1.6J	<0.71U	<0.62U	<0.73U	2.1J	1.1J	0.67	5.8	3.2	
	Barium	160	52	48	30B	41B	33B	34	39B	3,000	580	58.4	
	Beryllium	1.4	0.43J	1.2	0.21J	0.34J	0.31J	0.23J	0.63	32	63	1.4	
	Cadmium	0.25J	<0.043U	<0.047U	<0.044U	<0.039U	<0.045U	0.25J	0.12J	14	3	-	
	Chromium (III+VI)	25	7.1	29	9.0B	8.6B	5.4B	10B	6.6B	24,000	360,000	52.2	
	Cobalt	6.9	3.2	3.5	1.0J	1.2	1.5	4.3	3.1	4.6	0.9	30.9	
	Copper	200	12	40	3.4	5.1	4.4	75	18	620	700	67.3	
	Iron	8,600	6,100B	27,000B	1700	1200	1900	7400	5400	11,000	150	59,291	
	Lead	73	18	11	4.6	5.1	5.4	30	56	400	270	35.0	
	Manganese	86	120	130	53	38	32	81	240	360	65	1,542	
	Mercury	0.072	0.046	0.023	0.013J	0.012J	0.015J	0.055	0.0098J	1.9	1	-	
	Nickel	10	3.4J	5.6	3.4J	2.9J	2.0J	5.1	3.0J	300	130	7.6	
	Selenium	<1.3U	<0.91U	<0.99U	<0.92U	<0.81U	<0.95U	1.3J	<0.96U	78	2.1	1.9	
	Silver	<0.23U	<0.17U	<0.18U	<0.17U	<0.15U	<0.18U	<0.20U	<0.18U	78	3.4	-	
	Thallium	<0.95U	<0.69U	<0.75U	<0.70U	<0.61U	<0.72U	<0.81U	<0.73U	0.16	0.28	-	
	Vanadium	26	13	68	5.6	6.9	6.9	21	11	78	6	96.2	
	Zinc	85	30	57	8.7	9	8.5	58	24	4,600	1,200	257.2	

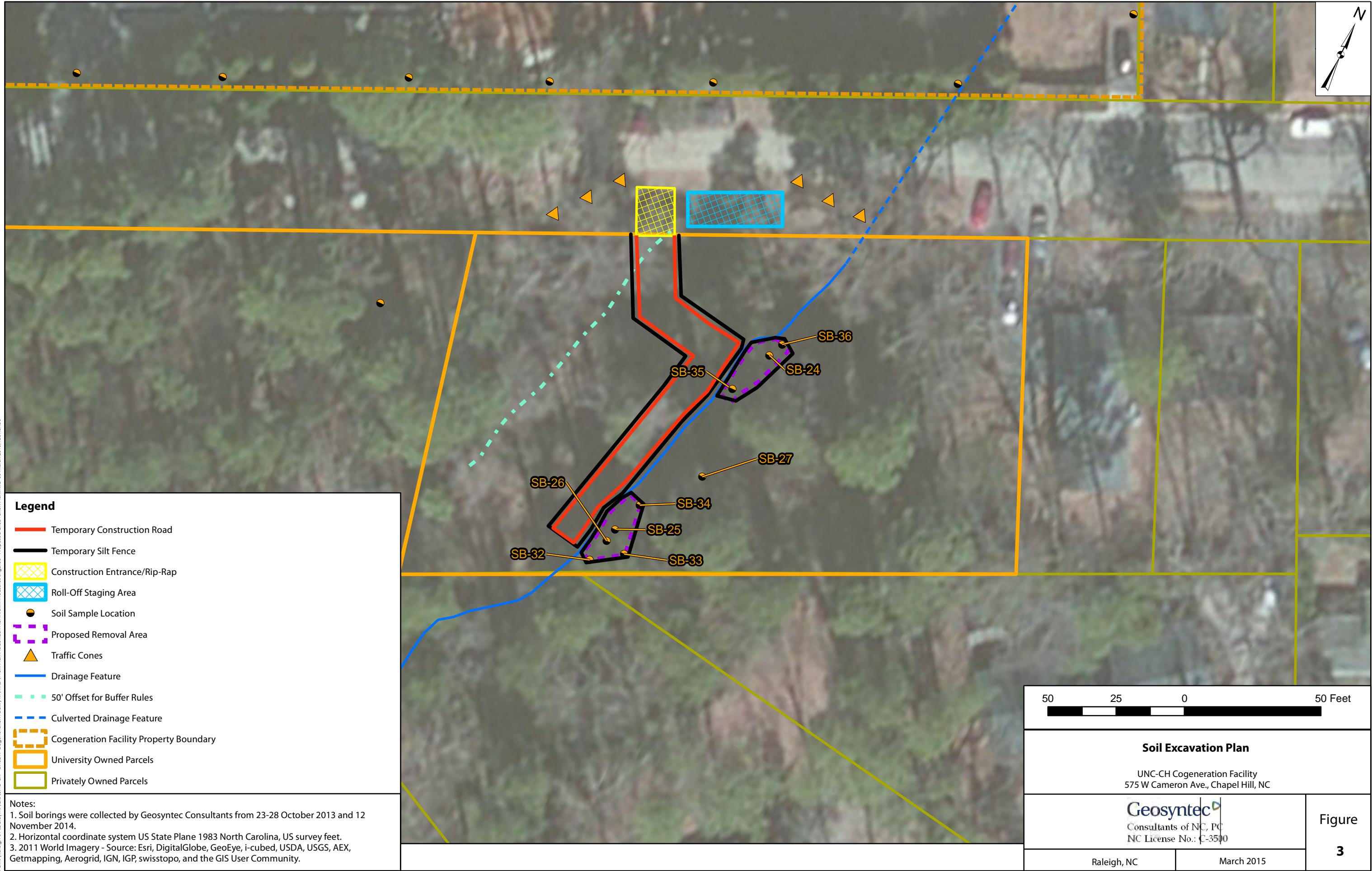
Notes:

1. ng/kg indicates nanogram per kilogram.
2. mg/kg indicates milligram per kilogram.
3.  $\mu\text{g}/\text{kg}$  indicates microgram per kilogram.
4. TEQ indicates total equivalents.
5. ft BGS indicates feet below ground surface.
6. U indicates result was below the method detection limit.
7. J indicates results is an estimate.
8. PSRG indicates preliminary soil remediation goals and reference NCDENR's Inactive Hazardous Sites Branch's tables from September 2014.
9. SVOC indicates semi-volatile organic compound.
10. PAH indicates polycyclic aromatic hydrocarbon.
11. Orange shading indicates an exceedance of the screening criteria.

# FIGURES







## APPENDIX A

<b>THA Title:</b>	Soil Removal	<b>Date:</b>	3/20/2015
<b>Project Name:</b>	UNC Cogeneration Facility	<b>Client Name:</b>	UNC-CH
<b>Project Number:</b>	GC5219	<b>Client Project Manager:</b>	Mary Beth Coza
<b>Project Location:</b>	Chapel Hill, North Carolina	<b>Geosyntec Project Manager:</b>	Eric Nesbit
<b>Scope of Work Summary:</b>	The overall purpose and objective of the Remediation Investigation is to determine the nature and extent of coal combustion byproduct (CCB) impacts at the Site. Based on previous data, CCBs were identified in soils along the discharge pathways to the stream. Contaminated soil will be removed with shovels when possible and with an a mini-excavator. The focus of this THA is soil removal.		
<b>Work Steps</b>	<b>Process or Activity</b>	<b>Hazards</b>	<b>Hazard Control</b>
Task 1: Inspect site and equipment  Mark extents of initial excavation areas. Have utilities located in these areas.	Slip/trip/fall Utility protection Heat/cold stress Biohazards: snakes, bees, spider, ticks, poison ivy Contaminant exposure: metals, dioxins, PAHs	Mark excavation areas and conduct utility locate. Inspect equipment (i.e. excavator) for proper utilization. Review equipment manual.  Avoid direct contact with contaminated matrices.	
Task 2: Soil Removal  Remove soils by hand to 3' below ground surface to protect utilities and then either proceed with shovels or with excavation equipment if necessary.	Removal Hand/foot injury Loud noise (if use removal equipment) Slips, trips, and falls Heat/cold stress Biohazards: snakes, bees, spider, ticks, poison ivy Contaminant exposure: metals, dioxins, PAHs	Wear appropriate PPE, including ear plugs as required, safety glasses, and steel toed boots. Pay attention to excavation areas and proper equipment use. Pay close attention to hand and foot placement, watch for rubble/debris which could disrupt operations, slow deliberate movements – don't hurry.  Avoid direct contact with contaminated matrices.	
Task 3: Back-fill	Slip/trip/fall Hand/foot injury Heat/cold stress Biohazards: snakes, bees, spider, ticks, poison ivy	Wear appropriate PPE. Pay close attention to hand and foot placement, slow deliberate movements – don't hurry.	
<b>Min. Personal Protective Equipment (PPE):</b>	Long pants, safety glasses, safety (steel-toed) boots and nitrile gloves. Safety vest, hard hat and ear plugs where appropriate. Chaps and face shields when using chainsaw.		

Individuals Must Sign the last page of this THA after review.

<b>HAZARD</b>		<b>HAZARD CONTROLS (check all that apply and comment as required)</b>
<b>WALKING/WORKING SURFACES (EHS 210, 501)</b>		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Uneven terrain <input type="checkbox"/> Slippery surfaces	<input checked="" type="checkbox"/> Walkways are cleared of equipment, vegetation, excavated material, tools and debris <input type="checkbox"/> Pits and floor openings are covered or otherwise guarded <input type="checkbox"/> Work areas are illuminated adequately; field operations are not conducted before sunrise or after sunset unless adequate lighting is provided. <input checked="" type="checkbox"/> Spills are cleaned up promptly <input type="checkbox"/> Salt applied to icy areas, snow cleared from walkways
<input type="checkbox"/>	<input type="checkbox"/> LADDERS / STAIRS <input type="checkbox"/> Extension Ladders <input type="checkbox"/> Step Ladders <input type="checkbox"/> Fixed Ladders <input type="checkbox"/> Stairs	<input type="checkbox"/> Employees trained in safe ladder use at safety meeting <input type="checkbox"/> Extension ladders are properly footed, secured at top, and setup at proper angle <input type="checkbox"/> Stepladders are set on level ground or properly shimmed with spreaders locked. <input type="checkbox"/> Stairs have proper rise over run and stairs >4 steps or 4' have guardrails. <input type="checkbox"/> Ladders/Stairs Comments: <input type="checkbox"/> Never use a step ladder as a straight ladder. All straight ladders shall be extended three rungs past leading edge. Never use metal ladders while working with electricity.
<input type="checkbox"/>	<input type="checkbox"/> MANLIFT used to reach work <input type="checkbox"/> Scissor Lift <input type="checkbox"/> Extensible Boom <input type="checkbox"/> Articulated Boom	<input type="checkbox"/> Operators are sufficiently trained, experienced and qualified. <input type="checkbox"/> Equipment is inspected after mobilization and is in good condition. <input type="checkbox"/> Harness & Lanyard worn whenever operating the lift (scissor lifts may be excepted) <input type="checkbox"/> Overhead and surface obstructions are reviewed with operators prior to use.

<b>HAZARD</b>		<b>HAZARD CONTROLS (check all that apply and comment as required)</b>
	<input type="checkbox"/> vertical Lift ("Genie")	<b>Manlift Comments:</b>
<b>WORKING ALONE (EHS 207)</b>		
	<input type="checkbox"/> Getting injured or incapacitated with no one else around to help <input type="checkbox"/> Falling victim to crime	<input type="checkbox"/> Someone else knows your whereabouts, what you're doing and when you should be expected back to their office or project site location. This will be accomplished by communicating three (3) times at a minimum with the supervisor or the project manager 1 – Upon Arrival 2 – Midway through the day 3 – Upon Departure <input type="checkbox"/> Ensure the area has wireless coverage, summon alternate communication method if wireless phones are not operable. <input type="checkbox"/> Checked the weather forecast to avoid being caught up in bad weather conditions; <input type="checkbox"/> Ensured that vehicle has sufficient fuel and is well maintained; <input type="checkbox"/> Allowed self sufficient time for the trip so that you are not rushing; <input type="checkbox"/> Drive with any bags, records and equipment hidden so that you are not seen hiding them as you park; <b>Working Alone Comments:</b>
<b>EXCAVATIONS / TRENCHING/UNDERGROUND HAZARDS (EHS 402)</b>		
	<input type="checkbox"/> Max Depth ≥ 20' <input type="checkbox"/> Max Depth ≥ 5' <input checked="" type="checkbox"/> Max Depth <5' with potential cave-in hazard <input type="checkbox"/> Potential permit-required confined space at depth ≥ 4' <input checked="" type="checkbox"/> Underground utilities <input type="checkbox"/> Structures/foundations <input checked="" type="checkbox"/> Falls into excavations	<input type="checkbox"/> Sloping & shoring for excavations ≥20' are approved by a professional engineer <input type="checkbox"/> Sloping & shoring for excavations ≥5' when persons are exposed to cave-in. (specify below) <input checked="" type="checkbox"/> Sloping & shoring for shallow (<5') excavations with cave-in hazard (specify below) <input type="checkbox"/> Excavations ≥ 4' are classified as a non-permit confined space <input type="checkbox"/> Excavations ≥ 4' are classified as Alternate Entry or Permit-Required (see confined space) <input checked="" type="checkbox"/> Underground utilities have been identified and marked. <input checked="" type="checkbox"/> Local "dig safe" organization has been notified for utility locations in public areas or rights of way. Number: <u>811</u> Date: _____ <input type="checkbox"/> Hand digging within 3' of utility locations. <input checked="" type="checkbox"/> Excavations are protected by perimeter fencing (not barricade tape): ( <input type="checkbox"/> rigid fence - chain link or wood, <input checked="" type="checkbox"/> safety fence 6' from edge.) <b>Excavation Comments:</b>
<b>CONFINED SPACES (EHS 118)</b>		
	<input type="checkbox"/> No Serious Hazards <input type="checkbox"/> Toxic atmosphere <input type="checkbox"/> carbon monoxide <input type="checkbox"/> hydrogen sulfide <input type="checkbox"/> <input type="checkbox"/> Flammable atmosphere <input type="checkbox"/> Low oxygen <input type="checkbox"/> Combustible dust <input type="checkbox"/> Other Serious Hazard:	<input type="checkbox"/> Confined space is altered so that it is no longer a confined space. (describe below) <input type="checkbox"/> Confined space is downgraded to a non-permit confined space. (identify which spaces below) <input type="checkbox"/> Alternate Entry is used. (Identify which space qualify for confined space entry below) <input type="checkbox"/> Full permit-required confined space entry is used due to presence of serious hazards. <input type="checkbox"/> Rescue team has been notified ( <input type="checkbox"/> Paid FD <input type="checkbox"/> Volunteer FD <input type="checkbox"/> Plant Rescue) Rescue Team: _____ Phone Number: _____ <input type="checkbox"/> All entrants and attendants for Alternate Entry and Permit-Required Entry have confined space entry training. <b>Confined Space Comments:</b>
<b>BOAT OPERATIONS/WORKING ON or NEAR WATER and ICE (EHS 306)</b>		
	<input type="checkbox"/> Drowning <input type="checkbox"/> Hypothermia	<input type="checkbox"/> Only qualified employees are operating the boat <input type="checkbox"/> Coast Guard-approved Personal Flotation Device (PFD), sized and adjusted to the wearer, is worn by all when involved in boat operations. <input type="checkbox"/> A float plan is completed prior to leaving dock. <input type="checkbox"/> Emergency equipment like ring buoy, flares and fire extinguishers are present <b>Boat, water operations Comments:</b>
<b>DRILLING (EHS 403)</b>		
	<input type="checkbox"/> Struck By, Run-Over, Caught In Between (pinch points), Roll Over, Fluid Leaks <input type="checkbox"/> Underground utilities, aboveground <input type="checkbox"/> Spills	<input type="checkbox"/> Contractor inspected the drill rig <input type="checkbox"/> High visibility vests, hard hats are being worn near the equipment <input type="checkbox"/> Operators and helpers will maintain a safe distance to moving parts. All those working near moving or rotating parts will secure loose hair, clothing, and equipment. <input type="checkbox"/> Drill rigs will only be moved with masts lowered. Masts will be erected with outriggers fully extended when equipped with outriggers. <input type="checkbox"/> Max. safe slope for rig will be followed <input type="checkbox"/> Spinning parts of the rig are guarded when possible, no loose clothing being worn near the rig <input type="checkbox"/> Local "dig safe" organization has been notified for utility locations in public areas or rights of way. Number: _____ Date: _____ <input type="checkbox"/> IDW is being managed as per regulations <input type="checkbox"/> Area is surveyed for overhead utilities <input type="checkbox"/> Hearing protection is used when working near the rig <input type="checkbox"/> Spill equipment is available for fuel and hydraulic fluid leaks. Spill Kit Located: _____ <b>Drilling operations Comments:</b>

HAZARD	HAZARD CONTROLS (check all that apply and comment as required)
<b>HEAVY EQUIPMENT [other than cranes] (EHS 504)</b>	
<input checked="" type="checkbox"/> Max. safe slope for each vehicle will be followed Struck By, Run-Over, Caught In Between (pinch points), Roll Over, Fluid Leaks <input type="checkbox"/> Bulldozer <input type="checkbox"/> Excavator <input type="checkbox"/> Front Loader <input type="checkbox"/> mini Skid Steer (bobcat) <input checked="" type="checkbox"/> mini Excavator <input type="checkbox"/> Dump Truck <input type="checkbox"/> Drill/Boring Rig <input type="checkbox"/> Lull / Material Handler <input type="checkbox"/> Forklift <input type="checkbox"/> Manlift - specify type(s) <input type="checkbox"/> Land Clearing loader	<input checked="" type="checkbox"/> Qualified persons operate all heavy equipment. (certificate is required for forklift and lull operators) <input checked="" type="checkbox"/> Equipment will be inspected upon mobilization <input checked="" type="checkbox"/> All leaks or defective safety equipment will be repaired before use. <input checked="" type="checkbox"/> Operators will be reminded of seatbelt use by: _Rachel Donahue_____ <input checked="" type="checkbox"/> Eye contact with the operator is made prior to approaching near equipment or swing radius <input checked="" type="checkbox"/> High visibility vests are required <input checked="" type="checkbox"/> Max. safe slope for each vehicle will be followed <input checked="" type="checkbox"/> Counterweight swing radius will be barricaded. <input checked="" type="checkbox"/> Rigging directly to the forks of a lull, forklift, or front loader equipped forks is prohibited. Crane hook attachments will be used (specify):_____ <input checked="" type="checkbox"/> Spill equipment is available for fuel and hydraulic fluid leaks. Spill kit located: one each piece of heavy equipment_____
<b>ENVIRONMENTAL HAZARDS (NON CHEMICAL) (EHS 124, 125, 127)</b>	
<input checked="" type="checkbox"/> Heat Stress <input type="checkbox"/> Cold Stress <input checked="" type="checkbox"/> Insects, spiders, ticks <input checked="" type="checkbox"/> Wild animals <input type="checkbox"/> Mold, fungi <input checked="" type="checkbox"/> Poisonous plants <input checked="" type="checkbox"/> Hazardous noise	<input checked="" type="checkbox"/> Heat/Cold stress are monitored in accordance with Geosyntec procedures EHS 124 & EHS 125 <input checked="" type="checkbox"/> Fluids are provided to prevent worker dehydration <input checked="" type="checkbox"/> Types and injury potential of snakes, insects, spiders are reviewed with workers <input checked="" type="checkbox"/> Insect repellent is used, PPE is used to protect against sting/bite injuries. <input checked="" type="checkbox"/> All potentially poisonous plants such as poison ivy, poison oak, poison sumac are identified, long sleeve shirt or Tyvek is worn or a barrier cream is used when near these plants <input checked="" type="checkbox"/> Hearing protection is used when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period)
<b>Environmental Hazards Comments:</b>	
<b>POWER TOOLS, HAND TOOLS, and EXTENSION CORDS (EHS 121)</b>	
<input checked="" type="checkbox"/> Eye injury, hand/arm cuts, electrical shock, strains, foot injuries, dust <input type="checkbox"/> Grinders <input type="checkbox"/> Needle Gun <input type="checkbox"/> Chop saw <input checked="" type="checkbox"/> Chain saw <input type="checkbox"/> Trimmer <input type="checkbox"/> Concrete/asphalt saw <input type="checkbox"/> Trencher	<input checked="" type="checkbox"/> All tools and electrical cords will be inspected upon mobilization by: _CC1_____ <input checked="" type="checkbox"/> All tools and electrical cords in-use will be inspected daily by: _CC1_____ <input type="checkbox"/> Grinder speeds will not exceed grinding wheel ratings. <input type="checkbox"/> Water or wet cutting performed to control dust <input type="checkbox"/> Respirators used to prevent exposure to dust (respirator type: _____) <input type="checkbox"/> Thorough utility survey conducted prior to any concrete cutting, coring <input checked="" type="checkbox"/> Face shield <u>and</u> safety glasses used (required for all grinders, jackhammers, chain saws, etc) <input checked="" type="checkbox"/> Kevlar chaps and jacket (required for all chainsaw work) <input checked="" type="checkbox"/> Hearing protection required for which tools or areas: _chainsaw_____  <input checked="" type="checkbox"/> All extension cords are in good condition with no cuts through outer insulation, ground plugs are present, and no "vinyl tape" repairs.
<b>Tool &amp; Cord Comments:</b>	
<b>MANUAL MATERIAL HANDLING / MATERIAL STORAGE / HOUSEKEEPING (EHS 401)</b>	
<input checked="" type="checkbox"/> Back or shoulder strain, struck by falling objects, trips and falls, incompatible materials (fire or explosion) <input checked="" type="checkbox"/> hvy manual lifting (>30 lbs) <input type="checkbox"/> chemical storage <input type="checkbox"/> compressed gas storage <input type="checkbox"/> Tall storage greater than 2 pallets stacked. <input checked="" type="checkbox"/> Material & equipment laydown areas <input checked="" type="checkbox"/> Debris removal	<input checked="" type="checkbox"/> Mechanical lifting equipment used to reduce manual material handling: ( <input type="checkbox"/> Forklift/Lull <input checked="" type="checkbox"/> Heavy Equipment <input type="checkbox"/> chainfall <input type="checkbox"/> _____) <input checked="" type="checkbox"/> Manual lifting more than 50 lbs by a single person will be avoided. <input checked="" type="checkbox"/> Good manual lifting techniques will be reviewed prior to site work. <input type="checkbox"/> Incompatible chemicals will be separated by 20' <input type="checkbox"/> Secondary containment will be provided for the following chemicals: _____ <input checked="" type="checkbox"/> Safety equipment will be located near chemical storage. <input type="checkbox"/> Spill Kit <input type="checkbox"/> Emergency Shower <input type="checkbox"/> Eyewash <input type="checkbox"/> Drench Hose <input type="checkbox"/> Splash PPE <input type="checkbox"/> Flammable gases and oxygen will be separated by 20'. <input type="checkbox"/> All compressed gas cylinders will be transported vertically and secured upright. <input type="checkbox"/> Equipment and materials will not be stored on site <input checked="" type="checkbox"/> Debris will be moved daily and placed in designated areas.
<b>Material Handling &amp; Housekeeping Comments:</b>	
<b>TRAFFIC &amp; SIDEWALK OBSTRUCTION (EHS 517)</b>	
<input type="checkbox"/> Vehicle accidents <input checked="" type="checkbox"/> Pedestrians struck by vehicles or heavy equipment <input type="checkbox"/> Pedestrians falls	<input checked="" type="checkbox"/> DOT signal devices will be used to re-route vehicles around excavations or busy site entrances/exits that affect road traffic. <input type="checkbox"/> Flaggers will be used and have DOT Flagger Training <input type="checkbox"/> Pedestrian traffic will be safely routed around or over excavations.

HAZARD	HAZARD CONTROLS (check all that apply and comment as required)		
<input type="checkbox"/> Pedestrian struck-by falling objects	<input type="checkbox"/> Pedestrian traffic will be safely routed around or under overhead work. <b>Traffic &amp; Sidewalk Comments:</b> Cones around roll-off and access along shoulder of McCauley Street.		
<b>HAZARDOUS WASTE SITE WORK (EHS 108, 112, 301)</b>			
<input type="checkbox"/> exposure to hazardous vapors or dust, contact with contaminated materials, fire, and explosion.  Contaminants of Concern and hazardous chemicals include: <input type="checkbox"/> volatile organic compounds (describe: _____) <input type="checkbox"/> semivolatile organic cmpnds (describe: _____) <input checked="" type="checkbox"/> metal dusts (describe: arsenic, cobalt in soil _____) <input type="checkbox"/> PCBs <input type="checkbox"/> caustic (NaOH) <input type="checkbox"/> Acid (H <sub>2</sub> SO <sub>4</sub> , HCl) <input type="checkbox"/> Other hazardous waste site hazards are covered elsewhere in the HASP)	<input checked="" type="checkbox"/> Site workers with a potential for contact with contaminated materials will have OSHA 40-hour training, current 8-hour refresher, and medical exam. <input type="checkbox"/> No intrusive work activities or areas are anticipated with current scope of work. Intrusive work activities include: _____  The perimeter of intrusive work areas are identified by: _____ Decontamination of personnel or equipment is <u>not</u> anticipated with the current scope of work. <input checked="" type="checkbox"/> Decontamination of personnel and small tools will be conducted as follows: <ul style="list-style-type: none"> <li>• Remove particulate matter and surface film with tap water;</li> <li>• Manual scrub with non-phosphate soap solution (Alconox);</li> <li>• Tap water rinse;</li> <li>• 10% nitric acid rinse (if sampling for metals/cyanide); Distilled/De-ionized water rinse;</li> <li>• Pesticide grade hexane rinse (if sampling for PCBs); and,</li> <li>• Air dry.</li> </ul> <input checked="" type="checkbox"/> Decontamination of heavy equipment will be conducted as follows: _____ steam cleaned _____ <input checked="" type="checkbox"/> Heavy equipment leaving the site will be inspected by _____ Rachel Donahue _____ <input checked="" type="checkbox"/> Work area monitoring is not anticipated with the current scope of work. <input type="checkbox"/> Work Area Air Monitoring as follows for (dust, VOCs, etc) <b>OR</b> see attached. _____ Level C Tyvek, boot covers, nitrile gloves, half or full face respirator with _____ cartridges changed daily _____ Level B Same as above except supplied air respirator _____ STOP work, contact EHS Department <input checked="" type="checkbox"/> Community Air Monitoring is not anticipated with the current scope of work. <input type="checkbox"/> Community Air Monitoring is required per the attached document. <b>Comments/Other:</b>		
<b>EMERGENCY RESPONSE (911 Service is Available <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No)</b>			
<b>Emergency Medical Treatment - Hospital Name:</b> UNC Hospital Hospital Address: 101 Manning Dr. Chapel Hill, NC		<b>Number:</b>	(919) 966-4721
<b>Non-Emergency Med. Treatment - Clinic Name:</b> UNC Urgent Care  Occupational Clinic Address: 6103 Farrington Rd., Suite 101 Chapel Hill, NC 27517		<b>Number:</b>	(919) 957-6610
<b>Fire Department Name:</b> Chapel Hill Fire Department		<b>Number:</b>	911
<b>Spill Response:</b>		<b>Number:</b>	
<b>Client Representative Name::</b> Larry Daw		<b>Office Number:</b> <b>Cell Number:</b>	(919) 962-6666 (919) 883-7019
<b>Geosyntec Project Manager Name:</b> Eric Nesbit		<b>Office Number:</b> <b>Cell Number:</b>	(919) 424-1823 (919) 796-4137
<b>Geosyntec Corporate H&amp;S Name:</b> Dale Prokopchak		<b>Office Number:</b> <b>Cell Number:</b>	(804) 332-6376 (804) 349-8067
<b>Emergency Response Comments:</b>			
<b>Date:</b> 3/20/2015			
<b>Project Name:</b> UNC Cogeneration Facility			
<b>THA Title:</b> Soil Removal			
<b>Subcontractor Name:</b> CCI			
<b>Geosyntec Representative (reviewed by):</b>			
<b>Subcontractor Foreman/Supervisor Signature (authorize):</b>			
<b>Crew Signatures (acknowledge):</b>			

**PRE-WORK THA**

HAZARD	HAZARD CONTROLS (check all that apply and comment as required)	
Print Name	Signature	
<b>PLEASE RETURN A COPY OF THIS SIGNED PAGE TO GEOSYNTEC PROJECT MGR., SUPERINTENDENT UPON REVIEW AND ACKNOWLEDGMENT BY THE CREW MEMBERS. ALL NEW CREW MEMBERS SHALL BE ORIENTATED THE SAME AND A SUBMITTAL OF A NEW SIGN IN SHEET SHALL BE COMPLETED.</b>		