SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 919-967-1450 | 601 WEST ROSEMARY STREET, SUITE 220 CHAPEL HILL, NC 27516-2356 | Facsimile 919-929-9421

May 9, 2017

Via Email and U.S. Mail

Ms. Amy Axon, Hydrogeologist
N.C. Department of Environment and Natural Resources
Division of Waste Management
1646 Mail Service Center
Raleigh, NC 27699-1646
amy.axon@ncdenr.gov

Re: Chapel Hill Police Station Coal Ash Dump Site (ID # NONCD0001486) – Additional Comments on Phase II Remedial Investigation Report

Dear Ms. Axon:

On behalf of Friends of Bolin Creek, the Southern Environmental Law Center submits the following comments to the N.C. Department of Environmental Quality (DEQ) regarding the January 26, 2017 Phase II Remedial Investigation Report (the "Report") submitted by the Town of Chapel Hill for its Police Station property coal ash dump site (the "Site"). These comments supplement our initial comments, dated March 13, 2017. The Town's environmental consultant, Hart & Hickman ("H&H"), has submitted responses to Friends of Bolin Creek's initial comments on the Report (our initial comments and H&H's responses are attached for reference). However, those responses do not alleviate the concerns we raised in our initial comments.

1. The Coal Ash Extends Into the Floodplain

The coal ash at the Site extends into the floodplain of Bolin Creek. A map showing the approximate location of the coal ash deposit in relation to the 100-year floodplain of Bolin Creek is attached to this letter as Attachment 1. Coal ash and toxic pollutants from the site that are located within the floodplain are likely to be washed downstream when the creek floods.

In addition, elevated flood waters could cause erosion at the base of the 40-foot high coal ash cliff area near the public greenway, further decreasing its structural stability. This situation presents an additional long-term risk to the public and natural resources of Bolin Creek, and is yet another reason why the coal ash cannot be left in place. Instead, it must be removed to safe, dry, lined storage away from public waters.

The federal Resource Conservation and Recovery Act requires that "[f]acilities or practices in floodplains shall not restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste, so as to pose a hazard to

human life, wildlife, or land or water resources." 40 C.F.R. § 257.3-1(a). "Base flood" means a 100-year flood and "floodplain" means "the lowland and relatively flat areas adjoining inland and coastal waters . . . which are inundated by the base flood." *Id.* § 257.3-1(b)(1)-(2). Facilities failing to satisfy this requirement of the Act are considered open dumps and practices failing to satisfy it are considered open dumping. *Id.* § 257.1(a)(1)-(2). Thus, both federal law and comment sense dictate that the coal ash be removed from the vicinity of the floodplain.

2. **The Report Confirms Significant Groundwater Contamination But Ignores Hexavalent Chromium**

The groundwater sampling data collected for the Report confirm the findings of significant coal ash contamination of groundwater shown by the groundwater monitoring results collected since 2013.

In particular, the most recent sampling data confirm that the coal ash dump is causing elevanted levels of coal ash pollutants including:

- Manganese, with concentrations of 172 times the standard. Manganese is known to be toxic to the nervous system. Manganese concentrations greater than the standard of 50 ug/L render water unusable by discoloring the water, giving it a metallic taste, and causing black staining. Exposure to high levels can affect the nervous system; very high levels may impair brain development in children.

  Surface water samples from Bolin Creek at the site reveal manganese concentrations three times higher than the upstream background samples, demonstrating that the coal ash dump is contaminating the creek without a permit.

- Thallium, with concentrations of over 26 times the standard. Thallium is a toxic pollutant, 40 C.F.R. § 401.15, and exposure to high levels of thallium can result in harmful health effects, including developmental effects and harm to the reproductive system.

- Vanadium, with concentrations more than 3,000 times the standard. According to the U.S. Agency for Toxic Substances and Disease Registry, vanadium can cause nausea, diarrhea, and stomach cramps. And the International Agency for Research on Cancer has determined that vanadium is possibly carcinogenic to humans.

- Cobalt, with concentrations 32 times the standard. The International Agency for Research on Cancer has determined that cobalt is possibly carcinogenic to humans.

- Strontium, with concentrations of more than 12 times the background sample level. Exposure to high levels of strontium during infancy and childhood can affect bone growth and cause dental changes. Infants and young children who ingest too much strontium can develop a condition called strontium rickets. Strontium rickets is a disease in which bones are thicker and shorter than normal and may be deformed.

- Selenium, with concentrations over 2.5 times the standard. Selenium is an essential element, but it is also a toxic pollutant, 40 C.F.R. § 401.15, and excess exposure can cause a chemical-specific condition known as selenosis, with symptoms that include hair and nail loss.

- Chromium, with concentrations of 3 times the standard, as discussed in more detail below.

Despite repeated requests, Chapel Hill and DEQ have failed to sample the groundwater for hexavalent chromium, a dangerous mutagenic carcinogen. Chapel Hill did sample for this substance in 2014 and found disturbingly high hexavalent chromium levels in the groundwater that were 3 times the state's total chromium standard and ***428 times*** the state's health screening level for hexavalent chromium. There is no valid reason to avoid sampling for hexavalent chromium as part of this remedial investigation. We urge the newly-appointed leadership at DEQ to demonstrate their commitment to sound science by requiring hexavalent chromium groundwater samples to be collected so the agency and the public can understand the extent of the contamination at this site and to ensure that remedial decisions about the site can be made with the benefit of full information. If DEQ is unwilling to do so, Chapel Hill should take responsibility and direct its consultant to add hexavalent chromium to its groundwater sampling for all monitoring wells going forward.

The Report does include recent sample results for total chromium, and a concentration of 29 ug/L was detected in new monitoring well MW-6. The Report tries to discount this result, claiming that "chromium has not been detected in other wells above the 2L Groundwater Standard." This is plainly wrong. First, in this same sampling event, total chromium of 31 ug/L was sampled in MW-1, which is upgradient of MW-6 (*see* Report, Fig. 6). Second, levels of total chromium higher than the 29 ug/L result have been detected in numerous other wells in prior sampling events. *See* Report, Table 4. Third, the presence of a very high manganese concentration in the same MW-6 sample (2,500 ug/L) is consistent with coal ash impacts to this well. Thus, Chapel Hill and its consultant have not provided any reason to believe the MW-6 result for chromium is not valid. Further chromium sampling should also include hexavalent chromium, as explained above.

3. The Available Data Indicate that Coal Ash Extends Into the Groundwater

In order to determine the long-term risk of continued contamination, DEQ and the public need a clear picture of whether the coal ash is in contact with, or even submerged in, the groundwater. H&H's analysis in the Report fails to provide that. Since the available data do indicate that the coal ash is submerged in the groundwater, this is a serious concern that needs to be addressed.

As we pointed out in our initial comments, the Report claims that the ash is separated from the groundwater (*see* Report Fig. 5), but this claim appears to be contradicted by earlier data gathered at the site. Specifically, the well drilling log for MW-1 indicates that a thicker layer of ash extends below the water table. Chapel Hill's response to these concerns states that "[t]he 2013 Well Construction Record is prepared by a driller and is not a geologist's or

engineer's boring log." However, monitoring well MW-1 was constructed under the oversight of the Town's original consultant, Falcon Engineering, as part of its 2014 Environmental Site Assessment. Falcon personnel were present at the time that the well was being drilled, as indicated by their collection of sample S-1 from a depth of 15 feet below ground surface. The Well Construction Record was included in the Falcon Engineering report of site activities. Falcon Engineering personnel evidently considered the Well Construction Record to accurately describe site conditions.

If there was a valid reason to suspect that the depth interval and thickness of the subsurface ash recorded for MW-1 could be incorrect, it should also have been assumed that the logs of each of the other monitoring wells installed by Falcon Engineering are inaccurate. Well Construction Records were the only logs provided in Falcon Engineering Reports for wells constructed under these investigations. If H&H actually believes that the stratigraphy of ash, fill, and natural geologic materials at each of the Falcon Engineering monitoring wells is not accurate, that should have been identified as a data need in the Phase II Remedial Investigation Work Plan and soil borings should have been conducted adjacent to the existing wells to fill that need.

The data that H&H does use in the Report actually confirm the highly variable nature of the depth and thickness of ash at the site. In its response to our initial comments, H&H states that "[t]he depth to and thickness of the CCPs at the site, including boring MW-1, was estimated from Table 5 of the March 25, 2014 Falcon Engineering Environmental Site Characterization Report . . . and borings advanced by H&H as part of the Phase II RI." Thus, H&H acknowledges the presence of 25 feet of ash located from 5 to 30 feet below the surface in GP-2, as recorded in Table 5, yet appears to be claiming that the 31 feet of ash documented in the Well Construction Record of MW-1 must be inaccurate because it supposedly is not "consistent" with the Falcon data in Table 5. This conclusion does not seem warranted by the available data, which show that the coal ash varies significantly in thickness.

In addition, MW-1 represents a deeper sample (40 feet) than any of the borings recorded in Table 5. The MW-1 boring log (included with our initial comments, attached) identifies "black ash" extending down to the bottom of the well, which means that this boring may not have located the bottom of the ash and the ash could extend even deeper.

In sum, without additional subsurface data from the site, H&H's conclusion that the ash is separated from the groundwater is not justified.

4. Remedial Alternatives

We understand that Chapel Hill will be preparing an evaluation of remedial alternatives. DEQ should require Chapel Hill to evaluate multiple ash removal scenarios, including both a complete source removal scenario that would remove all of the coal ash and a partial removal scenario that would remove the thickest portion of the ash around the 40-foot high coal ash cliff area, which is a clear safety hazard and a long-term risk to the public and the environment. The ash removal scenarios should specify available locations for safe, dry, lined disposal of the ash in a properly designed and permitted industrial solid waste landfill, or reuse as lined structural fill.

Meanwhile, any remedial scenarios that do not remove all of the ash should describe both the measures that would attempt to contain pollution from the remaining ash and also the restrictions that would need to be imposed on authorized uses of the property as a result of leaving the source of contamination in place.

Cost estimates for all remedial alternatives should include not only the cost of implementing the measure, but also its effect on the economic value of the property. Any measure that leaves the coal ash in place is likely to result in restrictions on the use of the property and significantly decrease its value.

Thank you for your consideration of these comments.

Sincerely,

Nicholas S. Torrey
Staff Attorney

cc (via email):
Mayor Pam Hemminger
Chapel Hill Town Council
Lance Norris, Public Works Director

Attachment 1

Flood Plain Map

Coal Ash Site
Chapel Hill, NC

1% Annual Chance Floodplain (Base Flood*)
**Also referred to as a "100-year flood"*
Stream
Coal Ash Approximate Boundary

Bolin Creek

N
0 100 200 400
Feet

Map Created By: Miller Cochran
(mcochran@selcnc.org)
Last Updated: 4/10/2017
Data Sources: USGS, FEMA
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
NOTE: Map is not to survey grade;

Southern Environmental Law Center

Attachment 2

Initial Comments and H&H Response

Date: March 13, 2017
From: Nick Torrey, Southern Environmental Law Center
To: Chapel Hill Town Council
Re: Contaminated Coal Ash Site at Chapel Hill Police Station Property

On behalf of Friends of Bolin Creek, the Southern Environmental Law Center submits the following comments and documents regarding the Town's Phase II Remedial Investigation Report ("the report"). The report confirms several disturbing facts about the coal ash dump site directly above the public greenway and Bolin Creek:

- **There is a coal ash cliff over 40 feet high that is eroding coal ash and toxic pollutants down to the public greenway.** All of this ash must be removed for the long-term health and safety of the public and the Bolin Creek ecosystem.

- **The coal ash pollution is contaminating soil along the greenway, groundwater, and Bolin Creek:**

    - **Soil**: the soil along the greenway contains elevated levels of coal ash pollutants. In the last round of sampling, arsenic of over five times the residential health-based soil level was found on the south side of the greenway, contrary to the statement on page 34 of the report that there were no impacts in this location.

    - **Groundwater**: high levels of many coal ash pollutants have been found in the groundwater at the site for years, and this study confirms the groundwater contamination remains significant. The groundwater at the site flows into Bolin Creek.

    - **Bolin Creek**: the coal ash site is contaminating Bolin Creek. Manganese levels are two to three times higher downstream from the site than upstream. In addition, elevated levels of manganese, cobalt, and barium were found in the downstream sediments of the creek.

- **There is also a serious discrepancy in the report.** The report claims the coal ash is separated from the groundwater. For example, figure 5 of the report shows a thin layer of ash at monitoring well MW-1 that is some 20 feet above the groundwater. However, the original well drilling log for MW-1 shows that the coal ash extends down ten feet *below* the water table, and that the layer of coal ash is 31 feet thick. *See* 2013 Well Construction Record, attached. This directly contradicts what is shown in the current report (fig. 5 is attached for reference). The Town must determine the true depth of the coal ash relative to the groundwater in order to understand the risks from ongoing pollution in this location.

NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources- Division of Water Quality

WELL CONTRACTOR CERTIFICATION # 2986-A

1. WELL CONTRACTOR:

Landa M. Shaver
Well Contractor (Individual) Name

American Environmental Drilling, Inc.
Well Contractor Company Name

324 Fields Drive, Suite C
Street Address

Aberdeen NC 28315
City or Town State Zip Code

(910)- 944-3140
Area code- Phone number

2. WELL INFORMATION:

WELL CONSTRUCTION PERMIT # MW #1

OTHER ASSOCIATED PERMIT #(if applicable)

SITE WELL ID #(if applicable)

3. WELL USE (Check Applicable Box) Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation ☐ Other ☐ (list use)

DATE DRILLED 4/29/2013

4. WELL LOCATION:

828 Martin Luther King Blvd. 27599
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

CITY: Chapel Hill COUNTY Orange

TOPOGRAPHIC / LAND SETTING: (check appropriate box)

☐Slope ☐Valley ☒Flat ☐Ridge ☐Other

LATITUDE 35° 55' 602 " DMS **OR** 3X.XXXXXXXXX DD

LONGITUDE 79° 03' 194 " DMS **OR** 7X.XXXXXXXXX DD

Latitude/longitude source: ☒GPS ☐ Topographic map *(location of well must be shown on a USGS topo map and attached to this form if not using GPS)*

5. FACILITY- is the name of the business where the well is located.

Chapel Hill Police Dept.
Facility Name Facility ID #(if applicable)

828 Martin Luther King Blvd
Street Address

Chapel Hill NC 27599
City or Town State Zip Code

Contact Name

Mailing Address

City or Town State Zip Code

( )
Area code - Phone number

6. WELL DETAILS:

a. TOTAL DEPTH: 40

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: _____ FT.
(Use "+" if Above Top of Casing)

d. **TOP OF CASING IS** -.06 FT. Above Land Surface*
*Top of casing terminated at/or below land surface may require a variance in accordance with 15A NCAC 2C .0118.

e. **YIELD** (gpm) N/A **METHOD OF TEST** N/A

f. **DISINFECTION**: **Type** N/A Amount N/A

g. **WATER ZONES** (depth):

Top 30 Bottom 40 Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____
Top _____ Bottom _____ Top _____ Bottom _____

7. CASING:

	Depth		Diameter	Thickness/ Weight	Material
Top -.06	Bottom 30'	Ft.	2"	SCH40	PVC
Top	Bottom	Ft.			
Top	Bottom	Ft.			

8. GROUT:

	Depth		Material	Method
Top 26'	Bottom 28'	Ft.	Bentonite	Tremie
Top -.06	Bottom 26'	Ft.	Portland	Tremie
Top	Bottom	Ft.		

9. SCREEN:

	Depth		Diameter	Slot Size	Material
Top 30'	Bottom 40'	Ft.	2" in.	.010 in.	PVC
Top	Bottom	Ft.	in.	in.	
Top	Bottom	Ft.	in.	in.	

10. SAND/GRAVEL PACK:

	Depth		Size	Material
Top 28'	Bottom 40'	Ft.	#3	Sand
Top	Bottom	Ft.		
Top	Bottom	Ft.		

11. DRILLING LOG:

Top	Bottom	Formation Description
0'	5'	Top Soil
5'	9'	Fill
9'	40'	Black Ash

12. REMARKS

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH 15A NCAC 2C, WELL CONSTRUCTION STANDARDS. AND THAT A COPY OF THIS RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

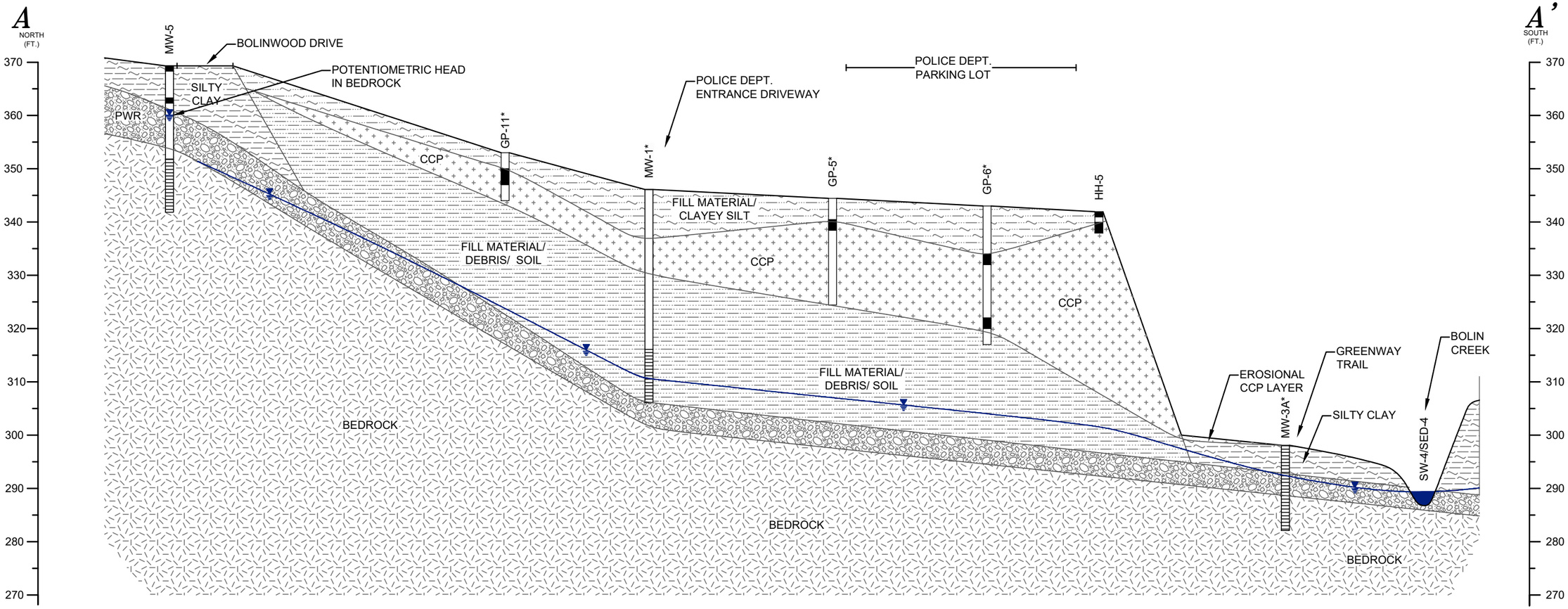
SIGNATURE OF CERTIFIED WELL CONTRACTOR

4/30/2013
DATE

Landa M. Shaver
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit within 30 days of completion to the Division of Water Quality - Information Processing, 1617 Mail Service Center- Raleigh, NC 27699-1617 Phone No. (919) 807-6300

Form GW-1b
Rev. 2/09



LEGEND

GP-5 — SOIL BORING DEPICTING SAMPLE INTERVAL

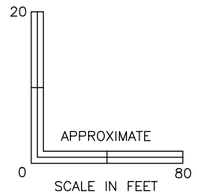
MW-5 — MONITORING WELL DEPICTING SCREEN INTERVAL

SHALLOW GROUNDWATER

- SILTY CLAY
- FILL MATERIAL/ CLAYEY SILT
- COAL COMBUSTION PRODUCTS (CCPs)
- FILL MATERIAL/ DEBRIS/ SOIL
- PARTIALLY WEATHERED ROCK (PWR)
- BEDROCK

NOTES:

1. REFER TO FIGURE 4 OF THIS REPORT FOR CROSS-SECTION TRANSECT.
2. MW-5 BRACKETS BEDROCK FRACTURE.
3. * INDICATES BORING/ MONITORING WELL INSTALLED BY FALCON ENGINEERING, INC.



VERTICAL EXAGGERATION = 4X

TITLE: CROSS-SECTION A-A'

PROJECT: TOWN OF CHAPEL HILL
POLICE DEPARTMENT PROPERTY
CHAPEL HILL, NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
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: 1-12-17 | REVISION NO. 0

JOB NO. TCH-002 | FIGURE NO. 5

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

April 6, 2017

Southern Environmental Law Center
601 West Rosemary St
Ste. 220
Chapel Hill, NC 27516

Attn: Mr. Nick Torrey

Re: Response to SELC Comments
Phase II Remedial Investigation Report
Police Department Property
828 Martin Luther King, Jr. Blvd.
Chapel Hill, NC
H&H Job No. TCH-002

Dear Mr. Torrey:

At the request of the Town of Chapel Hill, we have prepared this letter to address comments dated March 13, 2017, from the Southern Environmental Law Center (SELC) on the Phase II Remedial Investigation (RI) Report prepared by Hart & Hickman, PC (H&H) for the Town of Chapel Hill Police Department site. For ease of reference, the SELC comments are provided below followed by our response.

Comment 1:
There is a coal ash cliff over 40 feet high that is eroding coal ash and toxic pollutants down to the public greenway. All of this ash must be removed for the long-term health and safety of the public and the Bolin Creek ecosystem.

Response:
The results of the Phase I and II RI have adequately defined the nature and extent of potential impacts associated with the previous placement of coal combustion products (CCPs) at the site for structural fill. The next step in the process will be the preparation of a Remedial Action Plan (RAP). The RAP will include an evaluation of several remedial alternatives and the selected alternative will be protective of the long-term health and safety of the public and the Bolin Creek ecosystem.

Comment 2:
The coal ash pollution is contaminating soil along the greenway, groundwater, and Bolin Creek:

- Soil: the soil along the greenway contains elevated levels of coal ash pollutants. In the last round of sampling, arsenic of over five times the residential health based soil level was found on the south side of the greenway, contrary to the statement on page 34 of the report that there were no impacts in this location.

Response:
In the sampling conducted on the south side of the Bolin Creek trail as part of the Phase II RI, arsenic was detected at 3.6 mg/kg which is consistent with the arsenic concentrations detected in the site background samples which ranged from 1.4 mg/kg to 2.3 mg/kg. In addition, regional background levels for arsenic reported in the literature are in the range of 1 to 18 mg/kg. The DEQ residential soil screening level is 0.68 mg/kg which is less than the site and regional background levels. In most areas of North Carolina, arsenic is detected in soil samples above the residential soil screening level because it is a common naturally occurring metal. For this reason, DEQ does not require remediation of soil to below background levels. In addition, DEQ screening levels are used to screen soil data to determine if additional assessment needs to be performed and are not typically used as "cleanup" levels or an indicator by themselves of a health concern. As noted in the Phase II Remedial Investigation Report, a health risk evaluation performed by DEQ, which was based upon data collected on both the north and south sides of the Bolin Creek Trail, indicated that the risk of adverse health effects to park visitors and construction workers is below the US EPA and DEQ acceptable levels.

- **Groundwater**: high levels of many coal ash pollutants have been found in the groundwater at the site for years, and this study confirms the groundwater contamination remains significant. The groundwater at the site flows into Bolin Creek.

Response:
The data collected as part of the Phase II RI does confirm that there are groundwater impacts associated with the CCPs and that groundwater flows toward Bolin Creek. However, concentrations of compounds decrease rapidly downgradient and geochemical conditions at the site are such that they generally limit the mobility of metals in groundwater. The furthest downgradient well MW-4A did not contain compound concentrations above background or the North Carolina groundwater standards as part of the Phase II RI.

- **Bolin Creek**: the coal ash site is contaminating Bolin Creek. Manganese levels are two to three times higher downstream from the site than upstream. In addition, elevated levels of manganese, cobalt, and barium were found in the downstream sediments of the creek.

Response:
The results of the Phase II RI indicated that manganese concentrations in Bolin Creek near the site (24 µg/l to 34 µg/l) were slightly higher than those detected in the background sample (up to 11 µg/l). However, the detected concentrations were less than the EPA Region 4 surface water screening value of 93 µg/l (there is no North Carolina surface water standard for manganese). With regard to sediment, the concentrations of metals detected in sediment samples near the site (including manganese, cobalt, and barium) were consistent with the site background sediment samples and/or site background soil samples. As such, we concluded that there is not a significant impact to surface water or sediment in Bolin Creek from the CCPs.

Comment 3:
There is also a serious discrepancy in the report. The report claims the coal ash is separated from the groundwater. For example, figure 5 of the report shows a thin layer of ash at monitoring well MW-1 that is some 20 feet above the groundwater. However, the original well drilling log for MW-1 shows that the coal ash extends down ten feet *below* the water table, and that the layer of coal ash is 31 feet thick. *See* 2013 Well Construction Record, attached. This directly contradicts what is shown in the current report (fig. 5 is attached for reference). The Town must determine the true depth of the coal ash relative to the groundwater in order to understand the risks from ongoing pollution in this location.

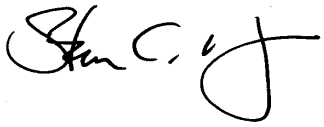
Response:
The 2013 Well Construction Record is prepared by a driller and is not a geologist's or engineer's boring log. Although the driller's Well Construction Record is generally considered accurate with regard to well construction details (which is the purpose of the record), the log of the soil and rock materials encountered is generally not considered accurate for use in environmental investigations, particularly where the work is overseen by a geologist or engineer, as is the case with the Phase I and II RI activities. The depth to and thickness of the CCPs at the site, including boring MW-1, was estimated from Table 5 of the March 25, 2014 Falcon Engineering Environmental Site Characterization Report, which is attached to this letter, and borings advanced by H&H as part of the Phase II RI. The closest boring to MW-1 is GP-1 which contained CCPs at depths of 9-12 ft (3 ft thick) (see Table 5). Other borings in the vicinity of MW-1 include GP-2, GP-3, and GP-5 which contained CCPs at depths ranging from 5-30 ft, 10-16 ft, and 4-8 ft, respectively (see Table 5). As indicated in Table 5 attached, the thickness of CCPs in the borings which encountered CCPs in the elevated portions of the site ranged from 3 to 25 ft with an

approximate average of 8 ft. Therefore, the depth and thickness of CCPs reported in the driller's Well Construction Record for MW-1 is not consistent with the data provided by Falcon Engineering's geologists and engineers, which we consider to be more reliable and accurate. Depth to water in MW-1 is approximately 35 ft below ground surface and the deepest that CCPs were reported by Falcon Engineering is 30 ft, with most CCPs present at depths less than 16 ft below ground surface. Therefore, as noted in our Phase II RI Report, we conclude that CCPs are not present below the water table.

We appreciate your interest in this project.

Very truly yours,

Hart & Hickman, PC



Steven C. Hart, PG
Principal Hydrogeologist

cc: Lance Norris – Town of Chapel Hill
Wendy Simmons – Town of Chapel Hill
Amy Axon- NC DEQ

TABLE 5 | SUMMARY OF GEOPROBE COLLECTED DATA

Geoprobe Location ID	Final Boring Depth (ft bgs)	Depths Ash Present (ft bgs)	Soil Sampling Depth (ft bgs)	Notes
GP-1	14	9 - 12	8 - 12	Refusal at 14 ft bgs into weathered rock
GP-2	35	5 - 30	26 - 28	Refusal at 35 ft bgs
GP-3	17	10 - 16	10 - 12	Refusal at 17 ft bgs due to possible landfill debris
GP-4	20	3 - 16	10 - 12	Into native soils at 17 ft bgs
GP-5-A	8	4 - 8	No Samples	Refusal from wood debris at 8 ft bgs
GP-5	12	4 - 8	Sampled 4 - 6	Refusal at 12 ft bgs
GP-6	26	11 - 23	9 - 11	Into native soils at 24 ft bgs
GP-7	20	3 - 14	10 - 12	Into native soils at 16 ft bgs
GP-8	17	5 - 15	11 - 15	Into native soils at 16 ft bgs
GP-9	8	-	No Samples	Into native soils at 4 ft bgs / No ash observed
GP-10	8	-	No Samples	Into native soils at 1 ft bgs / No ash observed
GP-11	9	3 - 9	4 - 6	Refusal at 9 ft bgs
GP-12	12	2 - 10	2 - 4	Into native soils at 11 ft bgs