



5400 Glenwood Avenue, Suite 400
Raleigh, North Carolina 27612
tel: 919 325-3500
fax: 919 781-5730

July 29, 2016

Mr. David Kwiatkowski
North Carolina Department of
Environmental Quality
Pre-Regulatory Landfill Unit
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Subject: Work Plan for Task Order 673DP-1&2
Bud Holding Company
10 & 12 Sharps Airpark Court
Greensboro, Guilford County, North Carolina
Site Identification Number: NONCD0000673

Dear Mr. Kwiatkowski:

CDM Smith Inc. is pleased to submit this Work Plan and schedule for Task Order 673DP-1&2 dated July 21, 2016. Per Task Order 673DP-1&2, the following activities will be completed by CDM Smith:

- Seventeen soil borings will be advanced for cover soil and waste characterization purposes. Cover soil samples will only be collected from locations where waste is present. Soil mixed with waste and native soil beneath waste will also be collected from boring locations where waste is encountered;
- Landfill gas (LFG) probes GP-1 through -5 will be installed to a depth of 11 feet below ground surface (bgs);
- LFG probes GP-1 through -5 will be screened for volatile organic compounds (VOCs), methane, oxygen, carbon dioxide, barometric pressure, hydrogen sulfide, temperature, and humidity. Water levels will also be measured at each LFG probe;
- Seven temporary Type II groundwater monitoring wells (TW-1 through -7) will be installed;
- At least 24 hours after installation and development groundwater samples will be collected from the temporary monitoring wells;
- Following sampling, the temporary monitoring wells will be properly abandoned;
- One surface water and sediment sample will be collected from SW/SED-1, SW/SED-2, and SW/SED-3 along the East Fork Deep River;
- Additional soil borings will be advanced to delineate the waste boundary based upon the findings of the cover soil and waste characterization borings;





Bud Holding Company
Task Order 673DP-1&2
Site Identification Number: NCD980844732

- Five background soil samples may be collected from boring locations BG-1 through -3 based on findings during the cover soil, waste characterization evaluation, and temporary monitoring well installation; and
- All borings, including the LFG probes and temporary monitoring wells, will be located using a Global Positioning System (GPS) unit.

A report summarizing the tasks identified above will be completed in accordance with the task order. We look forward to working with you on this project and others. If you have any questions or comments, please do not hesitate to contact me by phone at (919) 325-3569 or by email to colonemf@cdmsmith.com.

Sincerely,

A handwritten signature in black ink that reads "Mathew F. Colone".

Mathew F. Colone, P.G.
CDM Smith Inc.

cc: Daniel Forbes, CDM Smith
Aaron Weispfenning, CDM Smith

Section 1

Task Order 673DP-1 - Background

1.1 General

CDM Smith Inc. (CDM Smith) is pleased to submit this Work Plan for Task Order 673DP-1 dated July 21, 2016. Per Task Order 673DP-1, the following will be completed by CDM Smith for the Bud Holding Company (site) located in Greensboro, Guilford County, North Carolina:

- Seventeen soil borings will be advanced for cover soil and waste characterization purposes. Cover soil samples will only be collected from locations where waste is present. Soil mixed with waste and native soil beneath waste will also be collected from boring locations where waste is encountered;
- Landfill gas (LFG) probes GP-1 through -5 will be installed to a depth of 11 feet below ground surface (bgs);
- LFG probes GP-1 through -5 will be screened for volatile organic compounds (VOCs), methane, oxygen, carbon dioxide, barometric pressure, hydrogen sulfide, temperature, and humidity. Water levels will also be measured at each LFG probe;
- Seven temporary Type II groundwater monitoring wells (TW-1 through -7) will be installed;
- At least 24 hours after installation and development groundwater samples will be collected from the temporary monitoring wells;
- Following sampling, the temporary monitoring wells will be properly abandoned;
- One surface water and sediment sample will be collected from SW/SED-1, SW/SED-2, and SW/SED-3 along the East Fork Deep River;
- Additional soil borings will be advanced to delineate the waste boundary based upon the findings of the cover soil and waste characterization borings;
- Five background soil samples may be collected from boring locations BG-1 through -3 based on findings during the cover soil, waste characterization evaluation, and temporary monitoring well installation; and
- All borings, including the LFG probes and temporary monitoring wells, will be located using a Global Positioning System (GPS) unit.

A report summarizing the tasks identified above will be completed in accordance with Task Order 673DP-2. All field activities will be performed in accordance with the Work Plan and CDM Smith's Standard Operating Procedures and Quality Assurance (SOPQA) manual that was approved by the North Carolina Department of Environmental Quality's Division of Waste Management - Superfund Section - Inactive Hazardous Sites Branch (IHSB) - Pre-Regulatory Landfill Unit (Unit). Work Plan details and a schedule are provided in Section 2 and Section 3 summarizes the reporting.

1.2 Personnel

CDM Smith and subcontractor personnel engaged in intrusive field activities at the site will comply with Occupational Safety and Health Administration required health and safety training for hazardous waste

sites. CDM Smith personnel will monitor landfill gas (i.e. methane, oxygen, carbon dioxide, hydrogen sulfide, and VOCs) during drilling activities using a QRAE Plus PGM-2000 and a MiniRae 3000 photoionization detector (PID) as part of CDM Smith's site-specific Health and Safety Plan. Drilling and laboratory services will be performed by licensed or certified North Carolina subcontractors. Appendix B of the *Guidelines for Addressing Pre-Regulatory Landfills and Dumps (November 2015)* was provided to the laboratory to ensure that all analyses are performed within the Unit's guidelines.

1.3 Recordkeeping and Progress Updates

Records will be kept in a site dedicated logbook to track the progress of field activities. CDM Smith's Project Task Manager and the Unit's Project Manager (PM) will be notified if field conditions or findings require a deviation from the Work Plan. If there are delays due to weather or other unforeseen events, the Unit's PM will be contacted and a written request for extension will be submitted.

CDM Smith will provide a daily email to the Unit's PM summarizing field activities. Conditions or findings that may cause cost overruns will be communicated immediately to the Unit's PM and work will cease until approval is granted. Unit approved cost overruns will be followed by written correspondence from CDM Smith within 24-hours of verbal approval. The daily field notes and updates along with other means may be used by CDM Smith for invoicing, subcontractor invoice verification, cost overrun justification and billing to the Unit. As such, the logbook will include among other things:

- Travel time between the site and the CDM Smith office located in Raleigh, North Carolina;
- Date and time spent on-site along with a summary of work performed each day;
- General weather conditions;
- Site visitors;
- Equipment calibration results;
- Boring logs;
- All field parameters collected; and
- Observations that may affect the scope of work or schedule.

Section 2

Task Order 673DP-1 - Work Plan

Work performed by CDM Smith during this project will be under the direction of a North Carolina licensed Geologist or Professional Engineer. This Work Plan was prepared under the assumption that the Unit will coordinate access with the property owner(s) prior to initiating field activities. Field activities and a schedule are summarized below.

2.1 Cover Soil Assessment and Waste Characterization

Seventeen soil borings (SB-1 through -17), as shown on **Figure 1**, will be advanced to verify the presence or absence of waste, to determine the cover soil and waste thickness, and for characterization purposes. Each boring will be advanced to 10 feet bgs or to the waste and native soil interface, if waste is present. The borings will be advanced using hollow-stem auger (HSA) drilling techniques. Split-spoon samples will be collected continuously using Standard Penetration Testing (SPT) to the waste and native soil interface at boring locations where waste is present. Auger cuttings will be used to characterize the waste for instances when split-spoon recovery is poor. The lithology of the cover soils and soils mixed with waste will be characterized using the Unified Soil Classification System (USCS). A PID will be used to screen all samples.

Cover soil samples will be collected from 6 inches bgs at each boring location where waste is present and cover soil is greater than or equal to 6 inches. Where cover soil is greater than or equal to 2 feet, soil samples will be collected at 18 inches bgs, in addition to the 6 inch sample interval. Soil mixed with waste samples will be collected for laboratory analysis from the top of waste, mid-boring based on PID readings and visual observation, and from the bottom of waste. One additional soil sample will be collected from the native soil located approximately 1 to 2 feet beneath waste. Soil samples will not be collected from the sample interval above the bottom of waste if that sample interval is less than 2 feet from the bottom of waste. For instances where split-spoon recovery is poor, soil and waste samples will be collected from the auger cuttings.

Cover soil samples will be analyzed for VOCs by U.S. Environmental Protection Agency (EPA) Method 8260B, 1,4-dioxane by EPA Method 8260B selective ion monitoring, semi-VOCs by EPA Method 8270D, total metals (i.e. antimony, arsenic, beryllium, cadmium, chromium, copper, iron, lead, manganese, nickel, selenium, silver, thallium, and zinc) by EPA Method 6020B, mercury by EPA Method 7471B, ammonia by Standard Method 4500, and nitrate and sulfate by EPA Method 300. Waste characterization samples will be analyzed from seven locations using the same analyses as the cover soils. CDM Smith will coordinate with the Unit PM on selecting boring locations to analyze the waste characterization samples. Additionally, cover soil and waste characterization samples will be analyzed for hexavalent chromium by EPA Method 7196A

2.2 Landfill Gas Probe Installation and Screening

LFG probes GP-1 through GP-5 will be installed in the same locations as SB-5, SB-6, SB-7, SB-14, and SB-13 as shown on Figure 1. The LFG probes will be installed to a depth of 11 ft and constructed with five

feet of 1-inch diameter Schedule 40 polyvinyl chloride (PVC) riser flush-threaded to six feet of 0.01-inch machine slotted PVC screen. The probes will be installed with a #2 sand filter extending 1 foot above the screen. A 2-foot thick hydrated bentonite seal will be installed above the sand filter. The remainder of the borehole annulus will be completed with a Portland cement and bentonite grout mixture to land surface. The probes will be completed with a locking expansion plug and an identification placard. If the LFG probes cannot be constructed to of 11 feet with 5 feet of screen, field personnel or the CDM Smith project manager will contact the Unit PM for determination of alternative construction or use of flux chamber for screening at that location.

LFG probes GP-1 through GP-5 will be screened for methane, hydrogen sulfide, oxygen, carbon dioxide, and VOCs using a Landtec GEM 2000 Plus (GEM) and a PID. Water levels will also be measured in each LFG probe using an electronic water level indicator with an accuracy of 0.01 feet. The LFG probes will be screened at least 24 hours after installation.

Barometric pressure, ambient temperature, and humidity will be recorded at the beginning, hourly, and at the conclusion of screening activities. A hygrometer will be used to measure humidity and ambient temperature and the GEM will be used to measure barometric pressure. The GEM and PID will be field calibrated prior to initiating the screening in accordance with the manufacturer's instructions. The GEM will be calibrated using 35 percent carbon dioxide gas and 50 percent methane gas. A summary of the field calibration procedures and bump tests to verify calibration and instrument accuracy before, hourly, and after the screening along with types of calibration gas and expiration dates will be recorded.

2.3 Groundwater Evaluation

Temporary Type II groundwater monitoring wells TW-1 through -7 will be installed using HSA drilling techniques. Monitoring well locations are provided on Figure 1.

Each temporary monitoring well will be installed to an estimated depth of 30 to 40 feet bgs. Split-spoon soil samples will be collected every 5 feet from ground surface to the target depth using SPT to characterize the subsurface lithology. All soil samples will be classified using the USCS. Partially weathered rock (PWR) encountered during drilling activities will be characterized as the depth at which the penetration resistance is greater than 50 blows per 6 inches. This definition is used to facilitate consistent identification of the PWR zone.

Each temporary monitoring well will be constructed using 2-inch diameter Schedule 40 PVC riser flush-threaded to 10 feet of 0.01-inch mill slotted Schedule 40 PVC screen. A filter pack consisting of Number 2 Standard sand will be installed 2 feet above the screen. A bentonite annular seal will be installed 2 feet above the filter pack and hydrated with potable water, if necessary. Following installation, each well will be developed to remove suspended solids from the water column until development water is visually clear.

Following installation and development, the wells will be allowed to equilibrate for at least 24 hours, after which, groundwater samples will be collected from each well and analyzed for the same parameters as the cover soil and waste characterization samples, with the exception of hexavalent chromium. Tentatively Identified Compounds (TICs) for the 10 largest peaks identified by the 8260B and 8270D analyses will also be reported. Groundwater samples will be collected from the wells using low-

flow sampling techniques in accordance with CDM Smith's SOPQA manual. Prior to groundwater sampling activities, water levels will be measured at each well using an electronic water level indicator with an accuracy of 0.01 feet. Per the SOPQA manual, water quality parameters pH, conductivity, and temperature will be monitored during purging using a multi-parameter water quality meter. An additional water quality meter will be used to measure turbidity. Each water quality meter will be calibrated in accordance with the manufacturer's instructions prior to initiating sampling activities. Following stabilization of the purge parameters, groundwater samples will be collected. If turbidity is above 10 Nephelometric Turbidity Units (NTUs) at the time of sample collection, groundwater will be temporarily containerized and allowed to settle prior to decanting into the sample bottle for the metals analyses.

Following sampling of all temporary monitoring wells, each well will be abandoned by first pulling all PVC well materials and then filling the remaining annular space with grout (neat cement) to land surface.

2.4 Surface Water/Sediment Sampling

Surface water and sediment samples will be collected from three locations (SW/SED-1 through SW/SED-3) along East Fork Deep River as shown on Figure 1. Samples will be collected in a downstream-to-upstream order starting with sample location SW/SED-3. Sediment samples will be collected from the same locations as the surface water samples.

Each surface water sample location will be measured for pH, conductivity, temperature, and turbidity using a multi-parameter water quality meter and a turbidity meter. Each water quality meter will be calibrated in accordance with the manufacturer's instructions prior to initiating surface water sampling activities.

The surface water and sediment samples will be analyzed for the same parameters as samples collected during the cover soil assessment and waste characterization. Additionally, all sediment samples collected will be analyzed for hexavalent chromium by EPA Method 7196A. TICs for the 10 largest peaks identified by the 8260B and 8270D analyses will be reported for all surface water samples. Surface water samples analyzed for metals will be collected in a separate container and allowed to settle prior to decanting into the sample container if turbidity measurements are above 10 NTUs.

2.5 Waste Boundary Delineation

Based upon field observations made during advancement of soil borings SB-1 through -17, additional soil borings may be required to further delineate the waste disposal boundary. CDM Smith assumes an additional two days will be required to sufficiently delineate the waste boundary. However, discussions about additional borings and placement will be conducted with the Unit PM before any work is performed.

2.6 Background Soil Sampling

Based upon field observations made during advancement of soil borings SB-1 through -17, there may be areas at the site to collect background soil samples. CDM Smith assumes that three background soil borings (BG-1 through BG-3) will be advanced to a total depth of 15 feet bgs. Each boring will be

advanced using HSA drilling techniques and will be continuously logged to characterize lithology. Split-spoon samples will be screened with a PID and collected continuously using SPT to the target depth. However, discussions about performing background soil sampling will be conducted with the Unit PM before any work is performed. Soil samples will be collected at 6 inches, 18 inches, 5 feet, 10 feet, and 15 feet bgs. Each background soil sample will be analyzed for total metals (i.e. antimony, arsenic, beryllium, cadmium, chromium, copper, iron, lead, manganese, nickel, selenium, silver, thallium, and zinc) by EPA Method 6020B, mercury by EPA Method 7471B, ammonia by Standard Method 4500, nitrate and sulfate by EPA Method 300, and hexavalent chromium by EPA Method 7196A.

2.7 Laboratory and Sampling Quality Control/Quality Assurance

Duplicate samples will be collected daily from each media during sampling activities for laboratory quality control. The duplicate samples will be analyzed for the same parameters as the primary samples. The following duplicate samples and estimated volume will be collected during each task:

- Two cover soil samples;
- Two waste characterization samples;
- One surface water and sediment sample;
- One groundwater sample from the temporary monitoring wells; and
- One background sample.

An equipment rinsate blank will be collected from the stainless steel scoop and bowl used to collect sediment samples to verify that decontamination of the sampling equipment is achieved. Distilled water will be used to collect the rinsate blank and the samples will be analyzed for the same parameters as the surface water and waste characterization samples. Trip blanks will also be analyzed for VOCs only.

Upon collection, all samples will be labeled and placed in a chilled cooler. Standard chain-of-custody procedures will be followed to document the handling of the samples. Sample coolers will be shipped via overnight shipping to the lab on a daily basis. Laboratory analyses will be on a turnaround of 5 business days. Following receipt of the analytical report from the laboratory, CDM Smith will perform a completeness check. Once all data is verified and the report is satisfactory, CDM Smith will forward the data to the Unit PM along with a completeness letter stating that the data is useable.

2.8 Survey

Utilities will be screened by North Carolina One Call prior to any work on site. Borings for the cover soil and waste characterization, temporary groundwater monitoring wells, and background samples will be hand augered to approximately 2 and 3 feet bgs respectively, to verify the absence of utilities. Cover soil samples will be collected from an offset boring completed adjacent to the hand augered location.

All borings and surface water and sediment sample locations will be surveyed for northing and easting using a handheld GPS unit. The GPS coordinates will be reported in decimal degrees to the seventh order using the North American Datum of 1983 with accuracy in the thousandths of a meter following differential correction. Latitude and longitude coordinates will also be reported for each survey location using the World Geodetic System 1984 format. A wooden stake or pin flag with the boring code and date of completion will be installed in the center of each boring upon completion, with the exception of

the LFG probes and temporary groundwater monitoring wells, to mark the location so that it can be located at a later date.

2.9 Site Restoration

Clearing activities will be kept to a minimum to reduce restoration efforts. Prior to drilling, photographs of each boring location will be taken to document pre-existing conditions. Ruts generated during drilling or clearing activities will be graded to the surrounding land elevation and grassed areas that are damaged will be reseeded with a hay cover. Photographs will be taken of all disturbed and restored areas.

2.10 Investigative-Derived Waste

Investigative-derived waste (IDW) generated during drilling activities will consist of soil, rock, waste, and water generated from decontamination activities. IDW from the waste characterization borings will be deemed non-hazardous unless it appears to be impacted through either visual or olfactory observations or PID measurements are low. Cover soil cuttings and waste will be used to complete backfilling the waste characterization borings. Cover soil will be stockpiled separately from the waste cuttings to ensure the cover soil remains free of waste. Hydrated bentonite chips will be used for backfill in instances where there are not enough soil or waste cuttings to complete backfilling flush with the adjacent land elevation. Cover soil cuttings from the installation of the LFG probes and temporary groundwater monitoring wells will be spread on the ground surface within the waste disposal area. Waste cuttings from the LFG probes and temporary groundwater monitoring wells will be placed in 55 gallon Department of Transportation approved drums. All groundwater monitoring well development and purge water will be discharged directly to the ground, adjacent and downgradient to the well.

One composite sample set will be collected from the IDW drums to determine waste disposal characteristics. The composite soil sample will be analyzed using the Toxicity Characteristic Leaching Procedure for VOCs, semi-VOCs, metals, herbicides, pesticides, polychlorinated biphenyls, ignitability, and corrosivity. For the purpose of this Work Plan, it is assumed that all drummed IDW will be non-hazardous and will be disposed of at a permitted facility.

Decontamination activities will be completed within the waste disposal area at a location designated by CDM Smith. HSAs and tooling will be decontaminated between each waste characterization boring using high-pressured potable water. Split-spoon samplers will be decontaminated between each sample interval using potable water and a detergent. Sediment sampling equipment will be decontaminated between each location using a brush and potable water. Spent personal protective equipment and sampling supplies will be assumed to be non-hazardous and disposed of in dumpster at the CDM Smith office located in Raleigh, North Carolina.

2.11 Schedule

CDM Smith will schedule the drilling and sampling activities within 2-weeks of receiving Notice to Proceed from the Unit. The schedule may be adjusted to allow time for the Unit to negotiate access with the property owner(s) and will be based on subcontractor availability. CDM Smith will confirm the dates for investigative activities with the Unit PM prior to mobilizing.

CDM Smith anticipates completing all investigative and sampling activities in eight days. A proposed schedule and personnel involved with each task is provided below in **Table 1**.

Table 1 – Proposed Task Schedule

| Task | Schedule | Personnel On-site | | | |
|--|--|-------------------|-------|------------|------------------|
| | | Project | Staff | Technician | Subcontractor(s) |
| Surface Water and Sediment Sampling | Day 1 - Complete surface water and sediment sampling. | 0 | 1 | 1 | Yes |
| Temporary Well Installation | Day 1 - Begin temporary well installation and development. | 0 | 1 | 1 | Yes |
| Temporary Well Installation | Day 2 - Continue temporary well installation and development. | 0 | 1 | 1 | Yes |
| Temporary Well Installation, Cover soil Sampling, Waste Characterization, and LFG Probe Installation | Day 3 - Finish temporary well installation and development. Begin cover soil sampling, waste characterization, and LFG probe installation. | 0 | 1 | 1 | Yes |
| Cover Soil Sampling, Waste Characterization, and LFG Probe Installation | Day 4 - Continue cover soil sampling, waste characterization sampling, and LFG probe installation Complete temporary well sampling. | 0 | 1 | 1 | Yes |
| Cover Soil sampling, Waste Characterization, and LFG Probe Installation | Day 5 - Complete cover soil sampling, waste characterization sampling, and LFG probe installation. | 0 | 1 | 1 | Yes |
| Waste Boundary Delineation | Day 6 –Begin waste boundary delineation. | 0 | 1 | 1 | Yes |
| Waste Boundary Delineation and Background Sampling | Day 7 – Complete waste boundary delineation. Complete background sampling (if required). | 0 | 1 | 1 | Yes |
| Temporary Well Abandonment, LFG Screening, and Site Demobilization. | Day 8 – Abandon temporary monitoring wells. Site restoration and demobilization. | 0 | 1 | 1 | Yes |

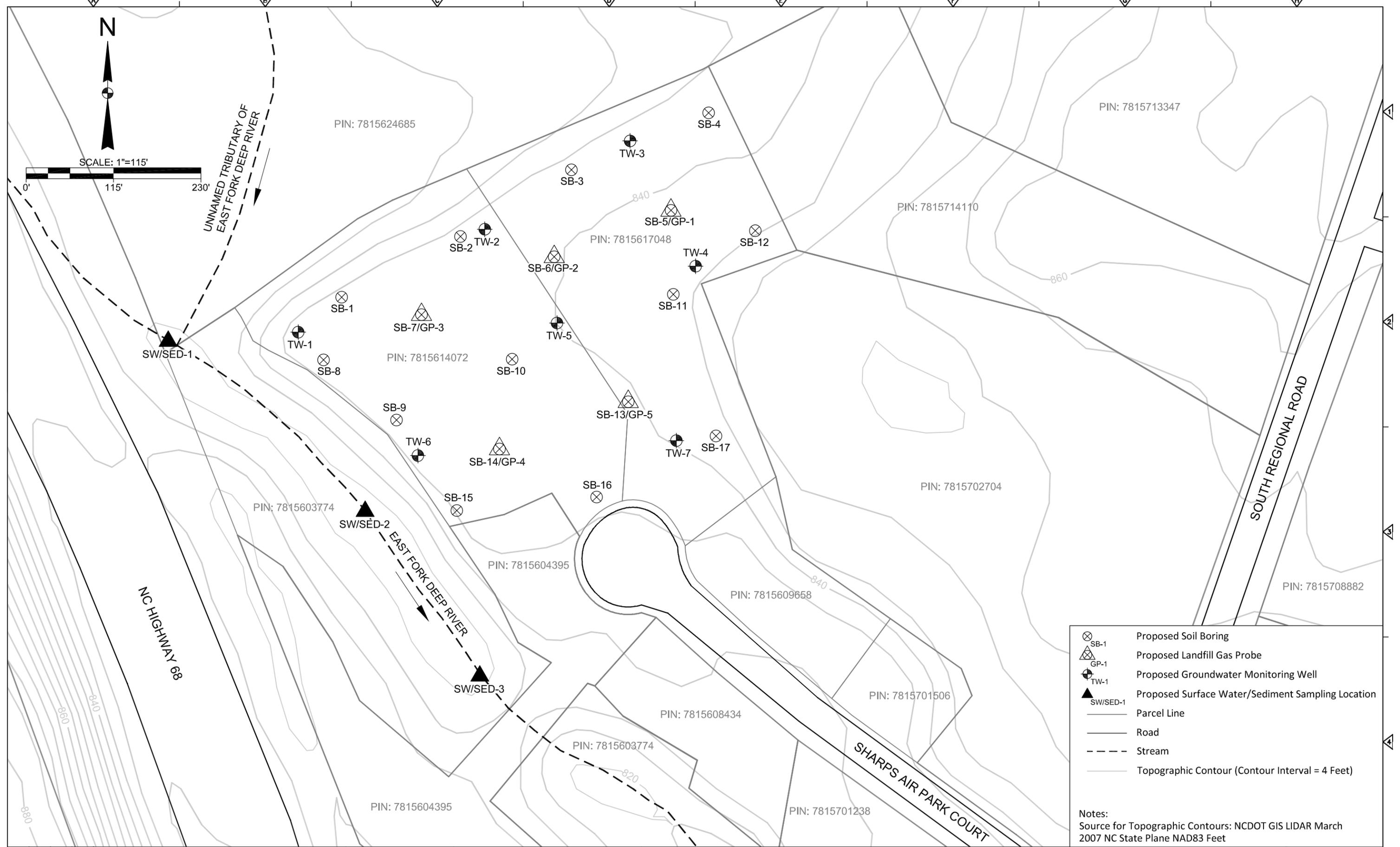
Section 3

Task Order 673DP-2 - Report Compilation

A draft report will be prepared following the Unit's approval of the preliminary field notes, figures, tables, and validated laboratory analytical data. The draft summary report will be titled *Remedial Investigation – Waste Delineation and Media Sampling* and will include a discussion of sampling activities, Work Plan or SOPQA variances, tabulated analytical and GPS coordinates for borings, wells and approximate waste boundary, LFG and temporary well construction tables, LFG probe screening results, site map with boring locations, borelogs and well construction records for the temporary monitoring wells, analytical results map, a copy of the field notes, laboratory analytical data reports, and certification form.

The surface water sampling results will be compared to the 15A NCAC 02B Surface Water Quality Standards and the groundwater sampling results will be compared to the 15A NCAC 02L .0202 Groundwater Quality Standards and EPA National Primary and Secondary Drinking Water Regulations (i.e. maximum contaminant levels). Soil sampling results will be compared to the IHSB Preliminary Soil Remediation Goals (April 2016 version or the most recent update). LFG probe screening results will be compared to the IHSB Residential Vapor Intrusion Screening Levels (March 2016 version or the most recent update).

The draft report will be submitted electronically to the Unit for approval within 14 days of the Unit's approval of the preliminary data. A final copy of the report will be submitted electronically once any comments from the Unit on the draft report have been addressed, assumed to be within 3 days of receiving comments.



| | |
|--|---|
| | Proposed Soil Boring |
| | Proposed Landfill Gas Probe |
| | Proposed Groundwater Monitoring Well |
| | Proposed Surface Water/Sediment Sampling Location |
| | Parcel Line |
| | Road |
| | Stream |
| | Topographic Contour (Contour Interval = 4 Feet) |

Notes:
 Source for Topographic Contours: NCDOT GIS LIDAR March 2007 NC State Plane NAD83 Feet

| REV. NO. | DATE | DRWN | CHKD | REMARKS |
|----------|------|------|------|---------|
| | | | | |
| | | | | |
| | | | | |

DESIGNED BY: A. WEISPFENNING
 DRAWN BY: A. WEISPFENNING
 SHEET CHK'D BY: D. FORBES
 CROSS CHK'D BY: M. COLONE
 APPROVED BY: D. FORBES
 DATE: JULY 2016

CDM Smith
 CDM Smith Inc.
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612 | Tel: (919) 787-6620
 NC F-1255

GREENSBORO, GUILFORD COUNTY, NORTH CAROLINA
BUD HOLDING COMPANY
 (NONCD0000673)

PROPOSED SAMPLING LOCATIONS

PROJECT NO. 127844-10000
 FILE NAME: FIGURE 1.DWG
 FIGURE
1