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January 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 Orders 1065DP-7 through -10
Old Charlotte Landfill/Vanguard Center
Charlotte, Mecklenburg County, North Carolina
Site Identification Number: NONCD0001065

Dear Mr. Kwiatkowski:

CDM Smith Inc. is pleased to submit this Work Plan and schedule for Task Orders 1065DP-7 through -10 dated January 26, 2016. Per the task orders, the following activities will be completed by CDM Smith:

- Landfill gas probes GP-1 through -12 will be screened monthly for four consecutive months. Measurements of carbon dioxide, hydrogen sulfide methane, oxygen, and volatile organic compounds will be collected from each probe; and
- A report summarizing the results will be provided following each screening event.

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 blue ink that reads "Mathew F. Colone".

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



Section 1

Task Orders 1065DP-7 through -10: Background

1.1 General

CDM Smith Inc. (CDM Smith) is pleased to submit this Work Plan for Task Orders 1065DP-7 through -10 dated January 26, 2016. Per the task orders, the following will be completed by CDM Smith at the Old Charlotte Landfill/Vanguard Center (Site) located in Charlotte, Mecklenburg County, North Carolina:

- Landfill gas (LFG) probes GP-1 through -12 will be screened monthly for four consecutive months. Measurements of carbon dioxide, hydrogen sulfide methane, oxygen, and volatile organic compounds (VOCs) will be collected from each probe; and
- A report summarizing the results will be provided following each screening event.

All field activities will be performed in accordance with CDM Smith's Standard Operating Procedures and Quality Assurance (SOPQA) manual that was approved by the Department of Environmental Quality's Division of Waste Management - Superfund Section - Inactive Hazardous Sites Branch - Pre-Regulatory Landfill Unit (Unit). The Work Plan details and schedule are provided in Section 2 and Section 3 summarizes the reporting.

1.2 Personnel

CDM Smith personnel engaged in intrusive field activities at the Site will comply with the Occupational Safety and Health Administration's required health and safety training for hazardous waste sites.

1.3 Daily Recordkeeping

Records will be kept in a dedicated logbook to track the progress of each screening event. 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 and Site visitors;
- Equipment calibration results;
- All field parameters collected; and
- Observations that may affect work scope or schedule.

Section 2

Task Orders 1065DP-7 through -10: 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 owners prior to initiating each LFG screening event. Field activities and a schedule are summarized below.

2.1 Landfill Gas Probe Screening

LFG probes GP-1 through -12 as shown on **Figure 1** will be screened for carbon dioxide, hydrogen sulfide methane, and oxygen using a Landtec GEM 2000 Plus (GEM). Total VOCs will also be measured using a photoionization detector (PID). Barometric pressure, ambient temperature, and humidity will be recorded every hour during screening activities. A hygrometer will be used to measure humidity and ambient temperature and the GEM will be used to measure barometric pressure. The LFG probes will be screened monthly for four consecutive months. Each screening event will be scheduled one month from the date of the previous event.

The LFG screening will be completed by connecting Teflon[®]-lined tubing to the LFG probe stopcock and GEM quick-connect. The GEM and PID will be field calibrated prior to initiating each LFG screening event in accordance with the manufacturer's instructions. Based on previous screening results, 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, during, and after each screening event along with the types of calibration gas and expiration dates will be recorded.

At least two measurements will be collected anywhere there is equal to or greater than a 2% change in the measurement. None of the screening events will occur on rainy days or extremely windy days (i.e. sustained winds greater than 10 miles per hour). Anything that may affect the screening results (i.e. water traps, increasing barometric pressure, significant change in temperature or weather conditions, etc.) will be recorded.

2.2 Schedule

CDM Smith will schedule the first LFG screening event within 2-weeks of receiving the Notice to Proceed and will confirm the date with the Unit PM. Dates for the subsequent screening events will be provided to the Unit PM within one week of performing the screening. A proposed schedule and personnel involved is provided below in **Table 1**.

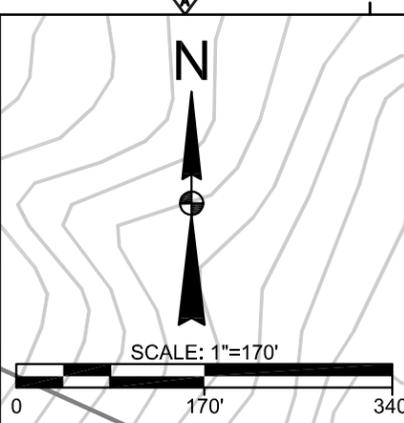
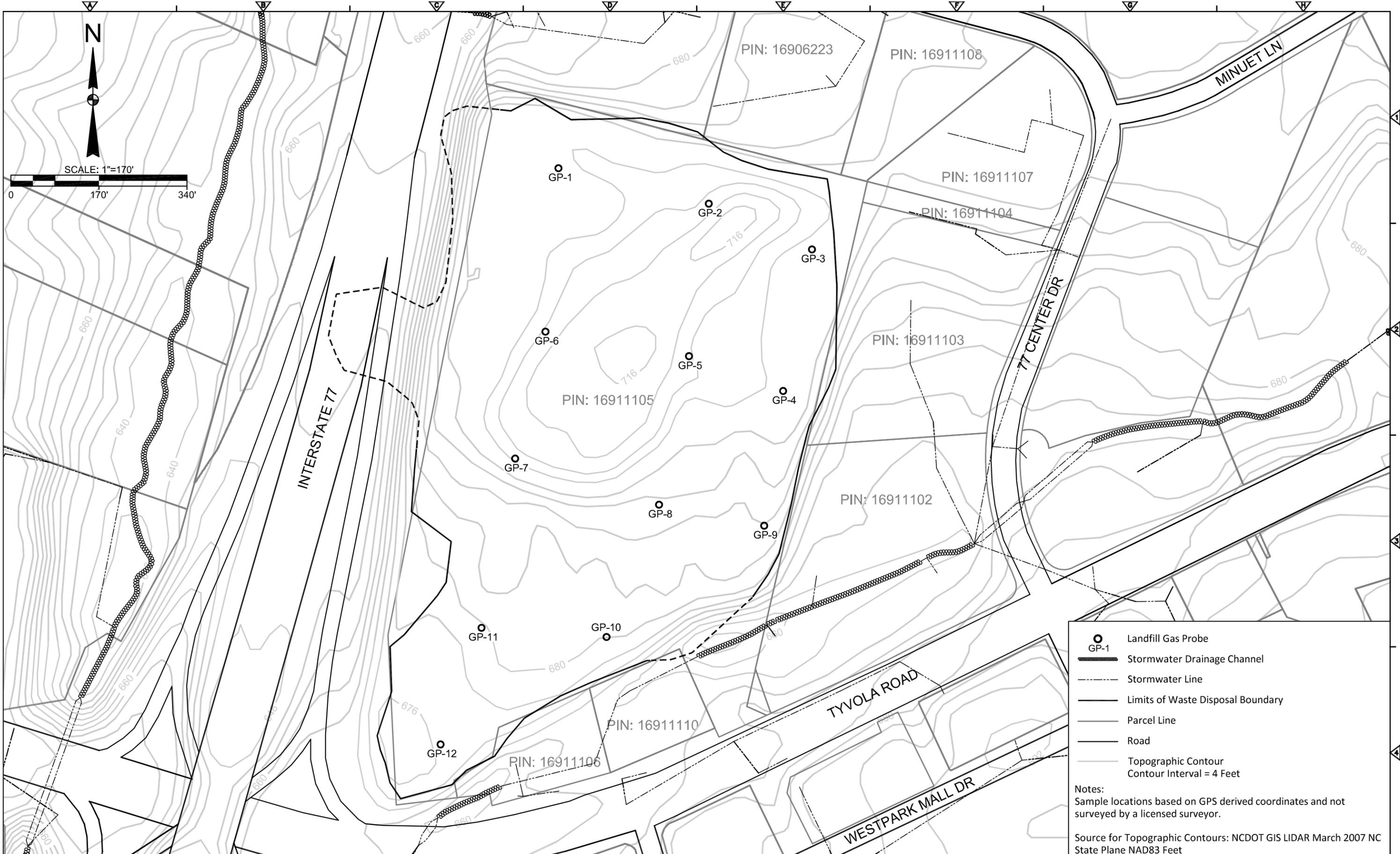
Table 1 – Proposed Field Activities Schedule

Task	Schedule	Project	Staff	Personnel	
				Technician	Subcontractor(s)
LFG Screening (Month 1/Task Order 1065DP-7)	Day 1 – Complete screening LFG probes GP-1 through -12.	0	1	1	No
LFG Screening (Month 2/Task Order 1065DP-8)	Day 1 – Complete screening LFG probes GP-1 through -12.	0	1	1	No
LFG Screening (Month 3/Task Order 1065DP-9)	Day 1 – Complete screening LFG probes GP-1 through -12.	0	1	1	No
LFG Screening (Month 4/Task Order 1065DP-10)	Day 1 – Complete screening LFG probes GP-1 through -12.	0	1	1	No

Section 3

Task Orders 1065DP-7 through -10: Report Compilation

A draft summary report for each screening event will be prepared within 5 days of completing each event. Each draft summary report will include a discussion of the screening activities and results, Work Plan and SOPQA manual variances, tabulated measurements, Site map, a copy of the field notes, and certification form. The screening results from each event will be compared to the Inactive Hazardous Sites Branch's Residential Vapor Intrusion Screening Levels. A final copy of each 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.



- GP-1 Landfill Gas Probe
- Stormwater Drainage Channel
- Stormwater Line
- Limits of Waste Disposal Boundary
- Parcel Line
- Road
- Topographic Contour
Contour Interval = 4 Feet

Notes:
 Sample locations based on GPS derived coordinates and not surveyed by a licensed surveyor.
 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: **M. COLONE**
 DATE: **JANUARY 2016**

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CHARLOTTE, MECKLENBURG COUNTY, NORTH CAROLINA
OLD CHARLOTTE LANDFILL/VANGUARD CENTER
 (NONCD0001065)

SAMPLING LOCATIONS

PROJECT NO. 127844-100000
 FILE NAME: FIGURE 1.DWG
 FIGURE
1