ESP Associates, P.A.

January 11, 2016

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

Reference: **WORK PLAN AND COST PROPOSAL FOR TASK ORDERS 375DP-4 & 5**
Remedial Investigation – Contaminant Delineation Phase Activities
Stedman Landfill
2550 Page Road
Stedman, Cumberland County, North Carolina
ID # NONCD0000375
State Contract # N13001S
ESP Project No. E6-BN12.611.603

Dear Mr. Kwiatkowski:

ESP Associates, P.A. (ESP) is pleased to provide the attached cost proposals for Task Orders 375DP-4 & 5 for performing Remedial Investigation (RI) - Contaminant Delineation Phase activities at the Stedman Landfill (State ID # NONCD0000375). This proposal was developed in accordance with the scope of work requested by the North Carolina Department of Environmental Quality (NCDEQ) Pre-Regulatory Landfill Unit via a letter dated December 16, 2015. All field activities will be performed in accordance with ESP's *Standard Operating Procedures and Quality Assurance Manual* dated April 18, 2013, and referencing NCDEQ's *Guidelines for Addressing Pre-Regulatory Landfills and Dumps* dated December 2015.

Mr. Chris Ward will be ESP's project manager for these tasks while quality control (QC) oversight will be provided by ESP's senior engineer, Ms. Nora Zirps. Mr. Eddie Rogers will be ESP's staff scientist during the soil sampling and wetland delineation field effort while an ESP technician will be on-site during the survey field effort. Survey and wetland determination services will be provided by appropriately licensed and/or trained/certified subcontractors. Sample analytical services will be provided by a North Carolina certified laboratory. All ESP field personnel will be qualified to identify contaminated material and landfill waste and will comply with OSHA-required health and safety training.

ESP will take photographs of pertinent areas of the site before and after the field effort to document potential impact to the property as a result of the field effort. Photographs of locations where property is damaged during the field effort and/or not restored to its original condition will be provided to NCDEQ. Photographs will also be taken of noteworthy observations during the field effort for submittal to NCDEQ for review for possible inclusion in the report.

Survey and wetland specialist subcontractor bids for the proposed field effort are attached to this work plan. A cost detail of proposed laboratory analysis is also attached to this work plan.

Soil boring locations will be approximated using a GPS unit. Coordinates will be recorded in State Plane Coordinate System using the North American Datum of 1983 (NAD83) and the World Geodetic System of 1984 (WGS84) using differential corrections in decimal degrees to the seventh order. GPS data collected as part of this work plan is not intended to be land survey data and will not be reviewed by a licensed surveyor.

Task Order 375DP-4 – RI-Contamination Delineation Phase Activities

Subtask A: Work Plan Preparation

This letter presents ESP's work plan for conducting Remedial Investigation – Contaminant Delineation Phase activities at the Stedman Landfill. Preparation of this work plan involved the following activities:

- Development of the work plan text.
- Preparation of request for proposals to secure laboratory, survey and wetland/floodway determination bids.
- Review of subcontractor bids.
- Development of a proposed field schedule (see Figure 1).
- Preparation of the associated cost proposals.

Subtask B: Chromium VI Cover Soil Sampling

Soil from cover soil borings SB-2, SB-3, SB-4 and SB-5 as depicted on Figure 2 will be resampled to confirm total chromium concentrations previously identified and determine presence of hexavalent chromium. Each soil boring will be advanced using a decontaminated stainless-steel hand auger. Soil samples will be collected for laboratory analysis from each soil boring as follows:

- Soil borings SB-2, SB-3, SB-4 and SB-5 - soil samples will be collected for laboratory analysis from the approximate 0.5 to 1.5 foot below ground surface (ft bgs) depth interval; and
- Soil borings SB-3 and SB-5 - soil samples will be collected for laboratory analysis from the approximate 3.0 to 4.0 ft bgs depth interval.

Soil will be logged and visually classified to identify soil types in general accordance with the Unified Soil Classification System (USCS). The collected soil samples will be analyzed by the laboratory for total chromium by SW-846 Method 6020 and for hexavalent chromium by SW-846 Method 7196A.

The following field QC samples will be collected:

- One duplicate soil sample and one rinsate blank to be analyzed for total chromium by SW-846 Method 6020 and for hexavalent chromium by SW-846 Method 7196A.

The following documentation will be provided to NCDEQ at the end of the field effort:

- Copies of the field logbook, field boring logs, gINT boring log records and photographs.
- Table of GPS coordinates collected for the boring locations.
- Validated laboratory reports for soil and associated field QC samples.
- Table of soil sample analytical results indicating detections above PSRGs.
- Soil sample concentration map showing detections above PSRGs.

Subtask C: Wetlands and Floodway Determination

ESP will procure an appropriately trained/certified wetland specialist to perform the necessary activities to identify and locate potential wetlands and floodways located in the vicinity of the waste disposal area. The wetland and floodway determination mapping will extend out 200 feet from the waste disposal boundary; however, the mapping will be restricted to Tax Parcel Nos. 1408-01-1301-, 1408-01-1016-, and 0489-90-7716-. An ESP staff level scientist will be on-site during the field portion of the wetland delineation. Following identification, locating and flagging of the potential wetlands and floodways, the land surveyor noted below in Subtask D will locate flagged/marked locations. Deliverables by the wetland specialist will include a CADD file(s) and a pdf file of any applicable map(s).

Subtask D: Surveying

ESP will procure a North Carolina licensed surveyor to complete a topographic survey of the site to include site boundaries (waste disposal area and areas of contamination), topographic contours (1-foot intervals), property lines within the site boundaries, unique site features, flagged wetlands and floodways (noted above in Subtask C), and on-site structures. The survey will be conducted following completion of the above wetland and floodway determination effort. An ESP technician level scientist will be on-site during the field portion of the wetland delineation.

The area of survey will extend out approximately 100 feet from the waste disposal boundary; however, survey is to be restricted to Tax Parcel Nos. 1408-01-1301-, 1408-01-1016-, and 0489-90-7716-. The topographic survey map will also show property boundaries and utility ROWs/easements within the area being surveyed. Copies of the sealed topographic survey map will be delivered electronically in pdf format.

A Plat Notice for the site will be prepared by the surveyor for Recordation in accordance with the "Instructions for Preparing a Notice of an Inactive Hazardous Substance or Waste Disposal Site for Recordation" which is suitable for recordation in Cumberland County. The Plat Notice will be submitted electronically in pdf format. The survey cost estimate includes one round of revisions to the Plat Notice based on comments from NCDEQ.

Subtask E: Project Management, Coordination, and Support

The following activities are included in this subtask:

- Scheduling and communication with subcontractors.
- Procurement of field equipment and laboratory sample containers.
- Providing project management and technical support to the field team.
- Providing project management and communication with NCDEQ.
- Securing survey and wetlands/floodway determination effort documents.
- Invoicing and administrative tasks.

Task Order 375DP-5 – Report Compilation

ESP will compile the details of the task order activities into a report titled *Remedial Investigation – Media Sampling and Wetland/Floodway Determination*, for electronic submittal in pdf format. The report will include text, tables, and maps including a text section noting any variations to the work plan or our SOPs. The report will include maps showing locations of soil borings along with analytical results. All maps will include data referenced on a scaled drawing with a bar scale (in ft), legend, and a north arrow. Background (light grey) topographic contour lines obtained from readily available public sources will be included on maps detailing the site and site vicinity.

If the attached Cost Proposals are satisfactory, please acknowledge with a written notice to proceed. All work will be performed in accordance with State Contract # N13001S. Should you have any questions or require additional information, please do not hesitate to contact Chris Ward at (803) 835-0915.

Sincerely,
ESP Associates, P.A.

William C. Bradner
Staff Scientist

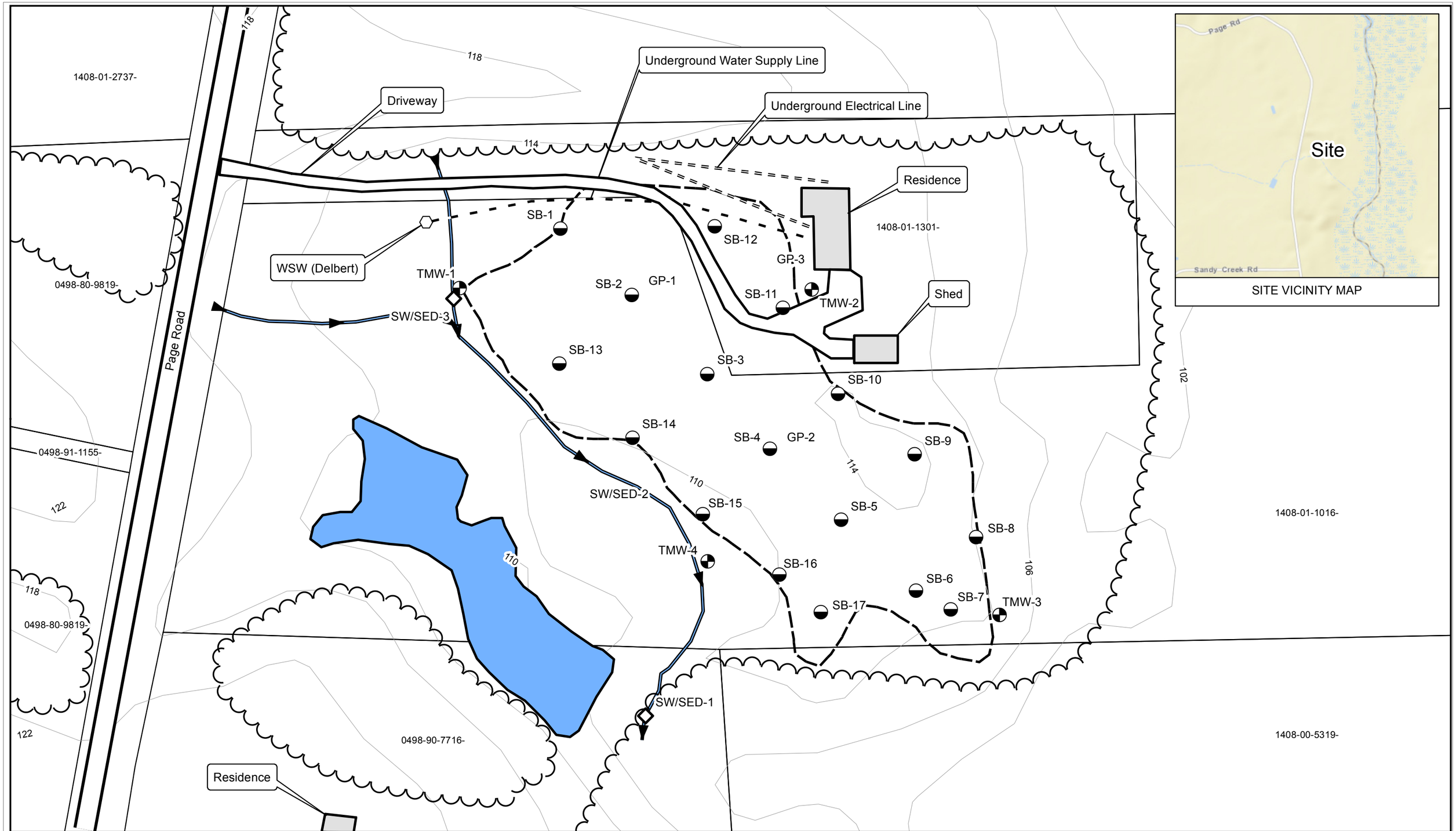
Christopher J. Ward, PG
Project Manager

WCB/CJW

Attachments:
Figure 1 – Field Schedule
Figure 2 – Media Sampling Locations Map
Cost Proposals – Task Orders 375DP-4 and 375DP-5
Laboratory Detail
Survey and Wetland Determination Bids

Figure 1
Schedule of Field Services
Stedman Landfill - ID # NONCD0000375
Task Order No. 375DP-4

Field Schedule	Subtask	ESP On-site Staff		Others On-site
		Staff Level	Technician Level	
Week 1 - Day 1	ESP to MOB to site and locate using the GPS unit and pre-load cordinates sample SB-2 through SB-5 sample locations and then collect required samples. Wetland subconsultant MOB to site to begin delineation.	1		Wetland Subconsultant
Week 1 - Day 2	Observe wetland consultant complete the field delineation. All personel DMOB from site.	1		Wetland Subconsultant
Week 2 - Day 1	Both ESP and survey subcontractor MOB to site and begin survey field activities.		1	Survey Subcontractor
Week 2 - Day 2	ESP on site while survey subcontractor performs survey.		1	Survey Subcontractor
Week 2 - Day 3	ESP on site while survey subcontractor performs survey.		1	Survey Subcontractor
Week 2 - Day 4	ESP on site while survey subcontractor performs survey.		1	Survey Subcontractor
Week 2 - Day 5	ESP on site while survey subcontractor performs survey. All site personnel DMOB from site for weekend.		1	Survey Subcontractor
Week 3 - Day 1	Both ESP and survey subcontractor MOB to site and perform survey field activities.		1	Survey Subcontractor
Week 3 - Day 2	ESP on site while survey subcontractor performs survey. Surveyor DMOB from site.		1	Survey Subcontractor
Week 3 - Day 3	ESP DMOB from site in the morning.		1	Survey Subcontractor



Legend

- Temporary Groundwater Well
- Surface Water/Sediment Sample
- Soil Boring
- Flux Chamber
- Background Boring
- Disposal Area Boundary (per delineation evaluation)
- LiDAR 4 foot Contour Elevation Interval
- Tree Line
- Water Feature
- Tax Parcel

SHEET TITLE:

Figure 2
Media Sampling Locations Map

Stedman Landfill
Stedman, North Carolina
ID# NONCD0000375

Feet
0 20 40 80 120

N

DATE: *January 11, 2016*

PROJECT NO.:	*BN12.611*
SCALE:	*As Shown*
DRAWN BY:	*WB*
CHECKED BY:	*CS*

ESP
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