



June 26, 2014

Mr. Zi-Qiang Chen, PhD, Environmental Engineer
North Carolina Department of Environment and Natural Resources
Division of Waste Management, Pre-Regulatory Landfill Unit
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Reference: **TASK ORDERS 7961DP-5 AND 7961DP-6**
Remedial Investigation – Sampling and Analysis of Groundwater
Henderson Co. Landfill
Hendersonville, Henderson County, NC
ID # NCD980557961
State Contract # N13001S
ESP Project No. E6-BN12.602.002

Dear Mr. Zi-Qiang:

ESP Associates, P.A. (ESP) is pleased to provide the attached cost proposals for Task Orders 7961DP-5 and 7961DP-6 for the Remedial Investigation (RI) – Sampling and Analysis of Groundwater activities at the Henderson Co. Landfill (State ID # NCD980557961). This proposal was developed in accordance with the scope of work requested by the NCDENR Pre-Regulatory Landfill Unit via a letter dated June 13, 2014, with two exceptions. During discussions with NCDENR regarding the basis for temporary monitoring well locations, one additional temporary monitoring well (TW-1) was added in the approximate location of GP-1, a location where methane gas was previously detected. In addition, since methane was detected in the subsurface within the waste disposal area boundary, dissolved methane has been added to the groundwater analytical parameter list. All sampling activities will be performed in accordance with ESP's *Standard Operating Procedures and Quality Assurance Manual*, including field instrument calibration, well development/purging, and sampling equipment decontamination.

ESP will take photographs of the site (general site area and at each drilling/sampling location) before and after the field effort to document 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 NCDENR. Site restoration is not included in the cost proposal. Photographs will also be taken of any noteworthy observations during the field effort for possible inclusion in the report.

Driller bids for the proposed field effort are attached to the cost proposals. A detail of proposed laboratory analysis is also attached to the cost proposals.

Task Order 7961DP-5 – Sampling and Analysis of Groundwater

Subtask A: Work Plan and Cost Proposal Preparation

This letter represents ESP's work plan for temporary monitoring well installation at the Henderson Co. Landfill and associated groundwater sampling. Preparation of this work plan involved the following activities:

- Discussions with NCDENR to clarify the scope of work.
- Review of the *Water Quality Monitoring Reports for the First and Second Semi-Annual 2013 Sampling Events for the Closed Henderson County Landfill* (dated July 2013 and December 2013, respectively) to gain an understanding of: 1) the existing Henderson County groundwater monitoring wells to be sampled (i.e., locations, wells depths, water level, screened stratigraphic zone, and turbidity levels); and 2) the anticipated temporary monitoring well depths and stratigraphic zone to be screened (i.e., shallow, unconfined aquifer versus fractured bedrock aquifer).
- Development of the work plan text.
- Development of a proposed temporary monitoring well locations map (see Figure 1).
- Preparation of request for proposals to secure driller bids.
- Review of driller bids.
- Obtaining laboratory pricing and detection limits.
- Development of a proposed field schedule (see Figure 2).
- Preparation of the associated cost proposals.

Eddie Rogers will be ESP's staff geologist and Nora Zirps will be ESP's project engineer. Quality control oversight will be provided by ESP's senior geologist, Chris Ward. In addition to the staff geologist, a technician will also be on-site during the groundwater sampling activities. The technician will also assist in marking and documentation of well locations/elevations, well development/purging, collection and shipping of laboratory samples, and performing equipment decontamination. Drilling services will be provided by a driller licensed in the State of North Carolina. Sample analytical services will be provided by a North Carolina certified laboratory.

Subtask B: Installation of Seven Temporary Monitoring Wells and Sampling and Analysis of Groundwater

Seven soil borings will be advanced for the installation of seven temporary monitoring wells (designated as TW-1, TW-2, TW-4, TW-5, TW-10, TW-12, and TW-13) at the locations identified on Figure 1, using a track-mounted drill rig equipped with 4.25-inch inside diameter

(ID) hollow-stem augers (HSAs). Continuous soil samples will be collected in advance of the HSAs using either a 4-foot or 5-foot long Macro-Core® sampler equipped with acetate liners. Retrieved soil samples will be field screened for volatile organic compounds (VOCs) with a photoionization detector (PID). Soil samples will be logged and classified to identify soil types according to the Unified Soil Classification System.

Drilling will continue to approximately 10 feet (ft) below the depth at which the first water-bearing zone is encountered, and a temporary monitoring well will be installed. Temporary monitoring wells will be constructed using 2-inch ID Schedule 40 polyvinyl chloride (PVC) riser with a 10-foot section (where possible) of 0.010-slot PVC screen, in accordance with the most current 15A NCAC 2C well construction standards. Filter pack sand will be placed to approximately 2 ft above the top of the well screen, and bentonite pellets will be placed from the top of the filter pack to near ground surface and hydrated.

Figure 1 presents the proposed locations of the seven planned temporary monitoring wells (TW-1, TW-2, TW-4, TW-5, TW-10, TW-12, and TW-13) which are co-located with locations where contaminants of concern were previously identified in soil, sediment, or subsurface landfill gas samples. The temporary monitoring wells, with the possible exception of TW-10, are located within the waste disposal area boundary based on the previously-conducted delineation study. During installation of the subsurface landfill gas probes, drilling through the waste material at the Henderson Co. Landfill was difficult and time consuming. The proposed field schedule (Figure 2) was developed based on this past experience.

Based on the information regarding the existing Henderson County groundwater monitoring wells gleaned from the *Water Quality Monitoring Reports for the First and Second Semi-Annual 2013 Sampling Events for the Closed Henderson County Landfill*, it is anticipated that the temporary monitoring wells will be screened in the shallow, unconfined aquifer. The depth of the temporary monitoring wells will be dependent upon depth to the first water-bearing zone and will vary due to the topographic relief at the site. Temporary monitoring well depths are expected to be deeper in the eastern portion of the waste disposal area at TW-4, and becoming shallower moving west toward TW-10 where groundwater was observed near the ground surface during the waste boundary delineation soil boring study. For budgetary purposes, ESP has estimated the average temporary monitoring well depth to be 50 ft below ground surface (bgs).

Following completion of the temporary monitoring well installations, top of casing (TOC) and ground surface elevations will be obtained at each temporary monitoring well location using a global positioning system (GPS) unit. The temporary monitoring well location coordinates will also be recorded (using a GPS unit) in State Plane Coordinate System using the North American Datum of 1983 (NAD83) and the World Geodetic System of 1984 (WGS84) to sub-meter accuracy using differential corrections in decimal degrees to the fifth order.

Temporary monitoring wells will be developed no sooner than 24 hours after installation is completed. The temporary monitoring wells will be developed using a Monsoon pump and dedicated Teflon® tubing. During development, stabilization parameters including pH, temperature, conductivity and turbidity will be recorded. Well development will continue until

at least three well volumes have been removed and pH, temperature, and conductivity have stabilized and turbidity has decreased to below 10 nephelometric turbidity units (NTUs).

Within 12 hours of well development, ESP will collect representative groundwater samples from the temporary monitoring wells using dedicated disposable Teflon bailers. The bailers will be gently lowered into the water column to minimize disruption of sediment in the wells which could result in increased turbidity. Groundwater quality measurements (pH, temperature, conductivity and turbidity) will be recorded at the time the groundwater samples are collected.

As per the scope of work and Appendix B of the NCDENR *Guidelines for Addressing Pre-Regulatory Landfills and Dumps*, the collected groundwater samples will be analyzed for the following parameters:

- Target compound list (TCL) VOCs by SW-846 Method 8260B plus the ten largest tentatively identified compounds (TICs) with 80% or greater probability of match.
- 1,4-Dioxane by SW-846 Method 8260SIM.
- Dissolved methane by U.S. Environmental Protection Agency (USEPA) Method RSK 175.
- TCL semivolatile organic compounds (SVOCs) by SW-846 Method 8270D-LL plus the ten largest TICs with 80% or greater probability of match.
- Target analyte list (TAL) metals by SW-846 Method 3030/6020A (i.e., antimony, arsenic, beryllium, cadmium, chromium, copper, iron, lead, manganese, nickel, selenium, silver, thallium, and zinc).
- Mercury by SW-846 Method 7470A.
- Ammonia by EPA Method 350.1.
- Sulfate and nitrate by SW-846 Method 300.0.

The following field quality control (QC) samples will be collected:

- One set of volatile trip blanks (TCL VOCs, 1,4-dioxane, and dissolved methane) in each cooler containing aqueous volatile samples.
- One duplicate groundwater sample to be analyzed for parameters listed above.

A groundwater sampling equipment rinsate blank will not be collected since groundwater samples will be collected using dedicated disposable Teflon bailers and transferred directly into laboratory-provided containers.

On the final day of the field effort and prior to abandonment of the temporary monitoring wells, static water level measurements will be collected from each of the seven temporary monitoring wells, as well as the four Henderson County groundwater monitoring wells identified under Subtask C, using an electronic water level meter and referencing the well's TOC. The results of this static water level survey will be used to produce a groundwater surface contour map.

Following collection of the groundwater samples and completion of the static water level survey, and within seven (7) days of their installation, the temporary monitoring wells will be abandoned by the driller by cutting the riser at ground level and tremie grouting the well with a cement/bentonite grout.

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

- Copies of the field logbook, boring logs, temporary monitoring well schematics, groundwater sampling logs, field equipment calibration forms, and electronic boring log records.
- Photographs.
- A table of GPS coordinates for the temporary monitoring well locations.
- Laboratory analytical reports for groundwater samples and associated field QC samples.
- A temporary monitoring well locations map based on the GPS coordinates.
- A table of well construction and gauging data including installation date, total well depth, screen interval from ground surface, depth to groundwater from TOC and ground surface, TOC and ground surface elevations based on elevations obtained from the GPS unit, and groundwater elevations.
- A table of groundwater analytical results listing only compounds detected in one or more samples, and indicating detections above 15A NCAC 2L - groundwater standards.
- A groundwater surface contour map (using groundwater elevation data from the temporary monitoring wells and the four existing Henderson County groundwater monitoring wells sampled under Subtask C).
- A groundwater sample concentration map showing detections above 15A NCAC 2L - groundwater standards.

Subtask C: Sampling and Analysis of Groundwater from Henderson County Groundwater Monitoring Wells

Groundwater samples will be collected from the following four existing Henderson County groundwater monitoring wells: MW-1, MW-9, MW-12, and MW-13. Well locations are depicted on Figure 1. These wells are 2-inch diameter wells which are screened in the shallow, unconfined aquifer.

The groundwater sampling logs provided in the *Water Quality Monitoring Reports for the First and Second Semi-Annual 2013 Sampling Events for the Closed Henderson County Landfill* indicate high turbidity levels (ranging from 47 to over 1,000 NTUs) at the time of sampling. The existing groundwater monitoring wells were previously purged and sampled using bailers. Since additional purging beyond what was previously conducted is warranted to reduce turbidity levels in the existing wells, a purging and sampling procedure similar to that used to develop and sample the temporary monitoring wells will be used.

The existing groundwater monitoring wells will be purged using a Monsoon pump and dedicated Teflon tubing. During purging, stabilization parameters including pH, temperature, conductivity and turbidity will be recorded. Well purging will continue until at least three well volumes (an up to five well volumes) have been removed and pH, temperature, and conductivity have stabilized and turbidity has decreased to below 10 NTUs (if possible). Following purging, ESP will collect representative groundwater samples from the existing groundwater monitoring wells using dedicated disposable Teflon bailers. The bailers will be gently lowered into the water column to minimize disruption of sediment in the wells which could result in increased turbidity. If turbidity is not near or below 10 NTU at the time of sampling, then the metals sample will be decanted to the extent practicable. If a sample is decanted, the turbidity after decanting will be recorded.

TOC and ground surface elevations will be obtained at each of the four Henderson County groundwater monitoring well locations using a GPS unit. The groundwater monitoring well location coordinates will also be recorded (using a GPS unit) in State Plane Coordinate System using the NAD83 and WGS84 to sub-meter accuracy using differential corrections in decimal degrees to the fifth order.

As per the scope of work and Appendix B of the NCDENR *Guidelines for Addressing Pre-Regulatory Landfills and Dumps*, the collected groundwater samples will be analyzed for the parameters listed under Subtask B.

The following field QC samples will be collected:

- One set of volatile trip blanks (TCL VOCs, 1,4-dioxane, and dissolved methane) in each cooler containing aqueous volatile samples.
- One duplicate groundwater sample to be analyzed for parameters listed under Subtask B.

A groundwater sampling equipment rinsate blank will not be collected since groundwater samples will be collected using dedicated disposable Teflon bailers and transferred directly into laboratory-provided containers.

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

- Copies of the field logbook, groundwater sampling logs, and field equipment calibration forms.
- Photographs.
- A table of GPS coordinates for the locations of the four existing Henderson County groundwater monitoring wells sampled.
- Laboratory analytical reports for groundwater samples and associated field QC samples.
- A groundwater monitoring well locations map based on the GPS coordinates.

- A table of well gauging data including total well depth, depth to groundwater from TOC and ground surface, TOC and ground surface elevations based on elevations obtained from the GPS unit, and groundwater elevations.
- A table of groundwater analytical results listing only compounds detected in one or more samples, and indicating detections above 15A NCAC 2L - groundwater standards.
- A groundwater sample concentration map showing detections above 15A NCAC 2L - groundwater standards.

Subtask D: Investigative Derived Waste (IDW)

Soil cuttings free of waste material will be placed on the surface of the waste disposal area in a location that is not covered with grass. Well development/purge water and decontamination water (from Monsoon pump decontamination) will be discharged on the ground adjacent to each well location. Used personal protective equipment, plastic sheeting, disposable sampling equipment (e.g., acetate liners, Teflon tubing, and Teflon bailers), and other sampling materials will be disposed offsite at an appropriate location (e.g., a municipal landfill). Waste cuttings from installation of the temporary monitoring wells will be drummed, and the NCDENR project manager will be contacted for direction. The driller's bid for Subtask B includes the cost of 55-gallon drums (and wooden pallets) for containerization of the waste cuttings.

If waste cuttings exhibit properties of potentially contaminated material based on PID readings and visual observation, the cost proposal includes the cost of one waste characterization sample (TCLP plus characteristics). While the sample is being analyzed, the drums will be staged on wooden pallets within a secured self-standing temporary chain-link fence (to be located per NCDENR's direction).

If the laboratory results indicate the waste is hazardous, the costs for off-site disposal or additional laboratory analysis are not included in the cost estimate. However, if the waste analysis indicates the waste is nonhazardous, the cost of a return trip to spread the waste cuttings on the waste disposal area or other area as directed by the NCDENR project manager is included in the cost estimate. During this subsequent trip, the waste drums and fencing will be removed from the site.

Subtask E: Project Management and Coordination

The following activities are included in this subtask:

- Determination of proposed temporary monitoring well location coordinates based on Figure 1 and pre-loading of the GPS unit with the proposed sampling location names and coordinates.
- Contacting the North Carolina One-Call Center (811) to mark utilities.
- Development of site-specific boring logs, temporary well construction forms, and groundwater sampling logs.
- Procurement and coordination of subcontractors: laboratory, and driller.

- Procuring the necessary equipment, materials, and supplies.
- Providing project management and technical support to the field sampling team.
- Providing project management and communication with NCDENR.
- Invoicing.

Task Order 7961DP-6 – Report Compilation

ESP will compile the Remedial Investigation Report– Sampling and Analysis of Groundwater, for electronic submittal in pdf format, as follows:

- Objective of the temporary monitoring well installation and groundwater sampling phase.
- Temporary monitoring well installation and groundwater sampling summaries to include dates, temporary monitoring well installation procedures, lithology, temporary monitoring well abandonment procedures, and groundwater sampling procedures.
- Groundwater hydraulic conditions.
- Groundwater sample exceedances of 15A NCAC 2L - groundwater standards (i.e., contaminants of concern).
- QC sample assessment.
- Tables (as defined above under Task Order 7961DP-5).
- Figures (as defined above under Task Order 7961DP-5).
- Appendices (as appropriate):
 - Field equipment calibration forms.
 - Groundwater sampling logs.
 - GPS coordinates.
 - Photographs.
 - Boring logs.
 - Temporary monitoring well schematics.
 - Field notes.
 - Laboratory analytical reports.

If this work plan and 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 Nora Zirps at (336) 232-5213.

Sincerely,
ESP Associates, P.A.



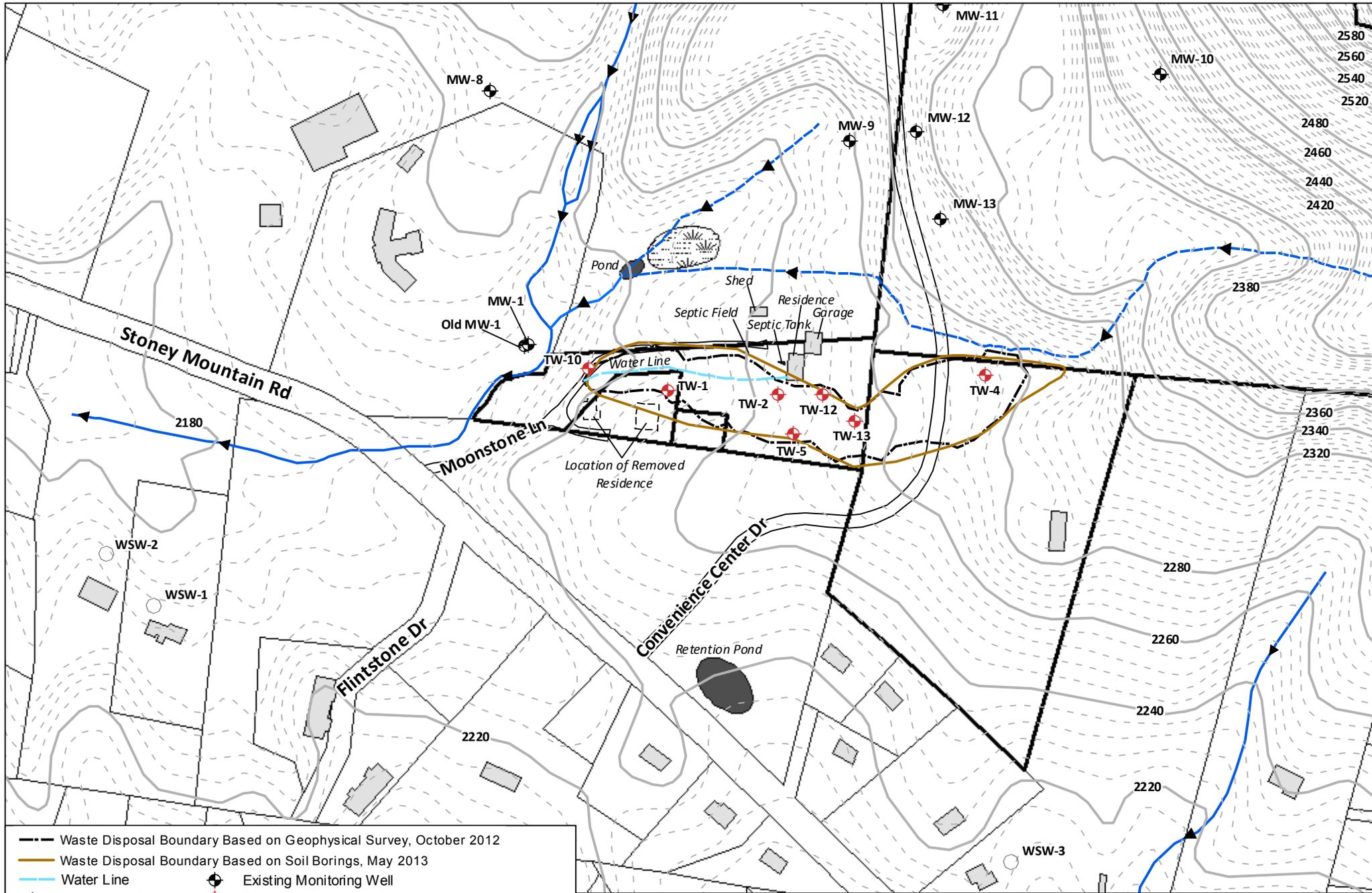
Nora A. Zirps, PE
Senior Project Engineer



Christopher J. Ward, PG
Program Manager

Attachments:

- Figure 1 - Temporary Monitoring Well Locations Map
- Figure 2 - Schedule of Field Services
- Cost Proposals - Task Orders 7961DP-5 and 7961DP-6
- Driller Proposals
- Laboratory Analysis Detail



	Waste Disposal Boundary Based on Geophysical Survey, October 2012
	Waste Disposal Boundary Based on Soil Borings, May 2013
	Water Line
	Intermittent Stream
	Perennial Stream
	Building Footprints
	Ponds
	Swamp
	Contour at 20ft
	Contour at 4ft
	Tax Parcels
	Existing Monitoring Well
	Proposed Temporary Monitoring Well
	Property Lines
	Water Supply Well

DATE: 6/18/14
 SCALE: 0 45 90 180 Feet
 *Source: Parcel and topographic information provided by NC Department of Public Safety (NCDPS).

PROJECT NO. BN12.602.002	SHEET TITLE Figure 1 <i>Proposed Temporary Well Locations Map</i>
SCALE As Shown	
DRAWN BY GW	PROJECT HENDERSON CO. LANDFILL NCD980557961 Hendersonville, Henderson County, NC
CHECKED BY NZ	

ESP Associates, P.A.
 P.O. Box 7030
 Charlotte, NC 28241
 phone 803.802.2440
www.espassociates.com

Figure 2
Schedule of Field Services
Henderson Co. Landfill - ID # NCD980557961
Task Order No. 7961DP-5

Field Schedule	Subtask	ESP On-site Staff		Others On-site
		Staff Level	Technician Level	
Week 1 - Day 1	B - Mobilize to site and locate and flag planned temporary monitoring well locations and obtain GPS coordinates. C - Begin collecting groundwater samples from Henderson County wells. Ship samples to the laboratory.	1	1	
Week 1 - Day 2	C - Complete collecting groundwater samples from Henderson County wells. Ship samples to the laboratory.	1	1	
Week 2 - Day 3	B - Mobilize drill rig. Advance soil borings into water zone and install temporary wells.	1	0	Drillers
Week 2 - Day 4	B - Advance soil borings into water zone and install temporary monitoring wells. Start development and sampling of temporary monitoring wells. Ship samples to laboratory.	1	1	Drillers
Week 2 - Day 5	B - Advance soil borings into water zone and install temporary monitoring wells. Develop and sample temporary monitoring wells. Ship samples to laboratory.	1	1	Drillers
Week 2 - Day 6	B - Advance soil borings into water zone and install temporary monitoring wells. Demobilize drill rig. Develop and sample temporary monitoring wells. Ship samples to laboratory.	1	1	Drillers
Week 2 - Day 7	B - Collect location and elevation data for the temporary monitoring wells and the four Henderson County groundwater monitoring wells with GPS unit. Complete development and sampling of temporary monitoring wells. Ship groundwater samples to laboratory.	1	1	
Week 3 - Day 8	B - Conduct water level survey of the temporary monitoring wells and the four Henderson County groundwater monitoring wells. Driller mobilizes to site and abandons temporary monitoring wells.	1	0	Drillers

Subtask A - Work Plan and Cost Proposal Preparation

Senior	\$116 /hr x	4 hrs =	\$464.00
Project	\$100 /hr x	22 hrs =	\$2,200.00
Staff	\$85 /hr x	1 hr =	\$85.00
Draftsperson/CAD	\$65 /hr x	2 hrs =	\$130.00
Word Processor/Clerical	\$49 /hr x	2 hrs =	\$98.00
Total - Subtask A			\$2,977.00

Subtask B - Installation of Seven Temporary Monitoring Wells and Sampling and Analysis of Groundwater

Labor

Staff (Field and prep.)	\$85 /hr x	80 hrs =	\$6,800.00
Staff (Office)	\$85 /hr x	40 hrs =	\$3,400.00
Technician (Field and prep.)	\$70 /hr x	52 hrs =	\$3,640.00
Draftsperson/CAD	\$65 /hr x	16 hrs =	\$1,040.00
Word Processor/Clerical	\$49 /hr x	10 hrs =	\$490.00

Equipment

Water Level Meter	\$30 /day	6 days =	\$180.00
pH/Conductivity/Temperature Meter	\$30 /day	5 days =	\$150.00
Turbidity Meter	\$30 /day	5 days =	\$150.00
Monsoon Pump with Controller	\$360.29 /week	1 week =	\$360.29
PID	\$125 /day	5 days =	\$625.00
GPS Unit	\$128.40 /day	4 days =	\$513.60

Expendables and Reimbursables

Mileage	\$0.555 /mile	972 miles =	\$539.46
Per Diem (1 pers, 4 nights + 1 pers, 3 nights)	\$130 /night	7 nights =	910.00
Field Expendables	\$30 /day	6 days =	\$180.00
Drilling (see attached bids)	\$12,308 /unit	1 unit =	\$12,308.00
Laboratory (see attached detail)	\$4,152 /unit	1 unit =	\$4,152.00
Teflon Tubing	\$3.20 /foot	350 feet =	\$1,120.00
Teflon Disposable Bailer	\$16 /unit	7 unit =	\$112.00

Subtotal - Subtask B **\$36,670.35**

Subtask C - Sampling and Analysis of Groundwater from Henderson County Groundwater Monitoring Wells

Labor

Staff (Field and prep.)	\$85 /hr x	32 hrs =	\$2,720.00
Staff (Office)	\$85 /hr x	24 hrs =	\$2,040.00
Technician (Field and prep.)	\$70 /hr x	32 hrs =	\$2,240.00
Draftsperson/CAD	\$65 /hr x	8 hrs =	\$520.00
Word Processor/Clerical	\$49 /hr x	6 hrs =	\$294.00

Equipment

Water Level Meter	\$30 /day	2 days =	\$60.00
pH/Conductivity/Temperature Meter	\$30 /day	2 days =	\$60.00
Turbidity Meter	\$30 /day	2 days =	\$60.00
Monsoon Pump with Controller	\$139.43 /day	2 days =	\$278.86
GPS Unit	\$128.40 /day	2 days =	\$256.80

Expendables and Reimbursables

Mileage	\$0.555 /mile	284 miles =	\$157.62
Per Diem (2 people, 1 night)	\$130 /night	2 nights =	260.00
Field Expendables	\$30 /day	2 days =	\$60.00
Laboratory (see attached detail)	\$2,595 /unit	1 unit =	\$2,595.00
Teflon Tubing	\$3.20 /foot	225 feet =	\$720.00
Teflon Disposable Bailer	\$16 /unit	4 unit =	\$64.00

Subtotal - Subtask C **\$12,386.28**

Subtask D - Investigative Derived Waste (IDW)

Labor

Staff	\$85 /hr x	10 hrs =	\$850.00
Technician	\$70 /hr x	10 hrs =	\$700.00

Expendables and Reimbursables

Mileage	\$0.555 /mile	254 miles =	\$140.97
Field Expendables	\$30 /day	1 day =	\$30.00
Laboratory (waste - see attached detail)	\$380 /unit	1 unit =	\$380.00
Chain-link Fence Enclosure	\$500 /unit	1 unit =	\$500.00

Subtotal - Subtask D \$2,600.97

Subtask E - Project Management and Coordination

Senior	\$116 /hr x	2 hrs =	\$232.00
Project	\$100 /hr x	30 hrs =	\$3,000.00
Word Processor/Clerical	\$49 /hr x	2 hrs =	\$98.00

Subtotal - Subtask E \$3,330.00

Total - Task 7961DP-5 \$57,964.60

Site ID # : NCD980557961
State Contract # : N13001S

Proposal - Task Order No. 7961DP-6 Sampling and Analysis of Groundwater
Henderson Co. Landfill

Task 7961DP-6 - Report Compilation

Senior	\$116 /hr x	3 hrs =	\$348.00
Project	\$100 /hr x	9 hrs =	\$900.00
Staff	\$85 /hr x	16 hrs =	\$1,360.00
Draftsperson/CAD	\$65 /hr x	8 hrs =	\$520.00
Word Processor/Clerical	\$49 /hr x	4 hrs =	\$196.00

Total - Task 7961DP-6 **\$3,324.00**



PRICE ESTIMATE

CLIENT:ESP Associates-Greensboro, NC
 PROJECT MANAGER:Nora Zirps
 PROJECT NAME:Henderson County Landfill-Hendersonville, NC
 DATE:6-25-14

WORK DESCRIPTION	AMOUNT	QTY	TOTAL
MOB/DEMOB: (Drilling and installation of temporary monitoring wells)			
Travel	\$ 250.00/event	1	\$ 250.00
MOB/DEMOB: (Temporary well abandonment)			
Travel	\$ 150.00/event	1	\$ 150.00
GEOPROBE: (4 days of well installation)			
Daily Rate-including all labor, steamcleaning, acetate liners, 55 gallon drum with pallet, water tank, cleanup	\$1662.00/day	4	\$ 6,648.00
GEOPROBE: (1 day of well abandonment)			
Daily Rate-including all labor, well Abandonment, cleanup	\$1200.00/day	1	\$ 1,200.00
PER DIEM: (4 days of well installation)			
Per night (3 man crew)	\$ 185.00/night	3	\$ 555.00
WELL INSTALLATION:			
2 inch pvc, temporary, 10 feet of .010 slot pvc screen, sand, bentonite from top of sand to 2' below ground surface	\$ 8.00/ft	350	\$ 2,800.00
WELL ABANDONMENT:			
Grouting-2 inch wells	\$ 1.50/ft	350	\$ 525.00
OTHER:			
55 gallon drums	\$ 45.00/each	4	\$ 180.00
TOTAL COST ESTIMATE			\$12,308.00

Drill Rig: Geoprobe 7822

Hollow Stem Augers: 4-1/4 inch ID, 8 inch OD

Water supply from our office in Statesville, NC and from the city of Hendersonville, NC

Work hours per day-9



Drilling - Direct Push - Remediation Services

9088 Northfield Drive

Fort Mill, South Carolina 29707

Phone: (803) 548-2180 / Fax: (803) 548-2181

www.saedacco.com

Proposal

ESP Associates, PA - Greensboro
7204 West Friendly Avenue, Suite G
Greensboro, NC 27410
Phone: (336) 334-7724 / Fax:
Email: nzirps@espassociates.com

RE: Henderson County Landfill
54 Moonstone Lane
Hendersonville, North Carolina 28791

ATTN: Nora Zirps

FROM: Pete Byer (pbyer@saedacco.com)

Project Date: 6/25/2014
Last Revised Date: 6/26/2014
Job Number: 20140625-0803

Description / Unit	Quantity	Rate	Extension
TRAVEL:			
Mobilization, each	2	\$550.00	\$1,100.00
Per Diem - 2-Man Crew	3	\$170.00	\$510.00
SOIL BORINGS / WELLS:			
Temporary Well/Borehole Abandonment, per ft.	350	\$6.00	\$2,100.00
Teflon Macro Core Liners - 4', each	0	\$90.00	\$0.00
2" Temporary PVC Well, per ft.	350	\$10.00	\$3,500.00
DECONTAMINATION:			
Steam Cleaner, per day	5	\$75.00	Included
GEOPROBE SERVICES:			
Geoprobe 7822DT DPT Track Rig & 2-Man Crew, per 9 hr. day	4	\$1,575.00	\$6,300.00
OTHER:			
55-Gallon Drums / Containment Labor, per drum	4	\$40.00	\$160.00
Total Estimated Cost:			\$13,670.00

Time Estimate - 5 Days

ACCEPTANCE:

Name / Title: _____

Date: _____

P.O. Number: _____

SAEDACCO:

Name / Title: _____

Date: _____

SAEDACCO is not liable for any damage to any underground property or utilities as long as the drilling is done at the location indicated by Client field representative and SAEDACCO has not been contracted to locate underground utilities and/or structures.

Monthly Invoices are due and payable on receipt in U.S. dollars. Invoices not paid within 30 days of date of invoice are subject to an interest charge of one and one-half percent (1.5%) on the outstanding balance for each month or portion thereof beyond the thirty day period.

Henderson Co. Landfill - Task Order 7961DP-5 - Laboratory Analysis Detail

Temporary Monitoring Well Groundwater Samples – 7 samples, plus 1 duplicate, and 4 trip blanks (see below)

Method	Analytes	No. of Samples	Unit Price	Total Cost
SW-846 Method 8260B	TCL VOCs + TICs	8	\$60.00	\$480.00
SW-846 Method 8260SIM	1,4-Dioxane	8	\$90.00	\$720.00
USEPA Method RSK 175	Dissolved Methane	8	\$75.00	\$600.00
SW-846 Method 8270D - LL	TCL SVOCs + TICs	8	\$145.00	\$1,160.00
SW-846 Method 3030/6020A	Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Se, Ag, Tl, Zn	8	\$85.00	\$680.00
SW-846 Method 7470A	Mercury	8	\$20.00	\$160.00
EPA Method 350.1	Ammonia	8	\$20.00	\$160.00
SW-846 Method 300.0	Nitrate and Sulfate	8	\$24.00	\$192.00

Sub Total \$ 4,152.00

Henderson County Monitoring Well Groundwater Samples – 4 samples, plus 1 duplicate, and 3 trip blanks (see below)

Method	Analytes	No. of Samples	Unit Price	Total Cost
SW-846 Method 8260B	TCL VOCs + TICs	5	\$60.00	\$300.00
SW-846 Method 8260SIM	1,4-Dioxane	5	\$90.00	\$450.00
USEPA Method RSK 175	Dissolved Methane	5	\$75.00	\$375.00
SW-846 Method 8270D - LL	TCL SVOCs + TICs	5	\$145.00	\$725.00
SW-846 Method 3030/6020A	Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Se, Ag, Tl, Zn	5	\$85.00	\$425.00
SW-846 Method 7470A	Mercury	5	\$20.00	\$100.00
EPA Method 350.1	Ammonia	5	\$20.00	\$100.00
SW-846 Method 300.0	Nitrate and Sulfate	5	\$24.00	\$120.00

Sub Total \$ 2,595.00

Trip Blanks

Method	Analytes	No. of Samples	Unit Price	Total Cost
SW-846 Method 8260B	TCL VOCs + TICs	7	no cost to client	no cost to client
SW-846 Method 8260SIM	1,4-Dioxane	7	no cost to client	no cost to client
USEPA Method RSK 175	Dissolved Methane	7	no cost to client	no cost to client

Waste Characterization

Method	Analytes	Number of Samp	Unit Price	Total Cost
SW-846 1311	TCLP Extraction	1	\$30.00	\$30.00
SW-846 1311	ZHE Extraction	1	\$30.00	\$30.00
SW-846 Method 8260B	TCLP VOC Analysis	1	\$60.00	\$60.00
SW-846 Method 8270D	TCLP SVOC Analysis	1	\$125.00	\$125.00
SW-846 Method 6010C/7470A	TCLP Metals Analysis	1	\$60.00	\$60.00
various	Ignitability, Corrosivity, Reactivity	1	\$75.00	\$75.00

Sub Total \$ 380.00