

TASK ORDER 2023-02
ENGINEERING SCOPE OF SERVICES
for
ROWAN COUNTY LANDFILL PHASE V WELL ABANDON

This Task Order pertains to an Agreement by and between Rowan County, North Carolina, (“OWNER”), and HDR Engineering, Inc. of the Carolinas (“ENGINEER”), signed January 21, 2021, (“the Agreement”). Engineer shall perform services on the project described below as provided herein and in the Agreement. This Task Order shall not be binding until it has been properly signed by both parties. Upon execution, this Task Order shall supplement the Agreement as it pertains to the project described below.

TASK ORDER NUMBER: 2023 - 02

PROJECT NAME: PHASE V DESIGN HYDROGEOLOGIC INVESTIGATION

PART 1.0 PROJECT DESCRIPTION:

Rowan County (County) is currently permitted to operate the Rowan County Landfill located on Campbell Road in Woodleaf, North Carolina under North Carolina Department of Environment and Natural Resources (NCDENR) Permit Number 80-03. In August 2022, HDR, on behalf of the County, submitted a Site Hydrogeologic Characterization Report (Report) to NCDEQ for the Proposed Phase V Expansion. As summarized in the Report, HDR evaluated groundwater elevation within the proposed Phase V area through installation and monitoring of temporary and permanent piezometers and monitoring wells. Prior to construction of the Phase V area, some piezometers and monitoring wells need to be abandoned or raised, based on site grading plans. In addition, new landfill gas monitoring wells are required prior to operation of the Phase V area.

PART 2.0 SCOPE OF SERVICES TO BE PERFORMED BY ENGINEER ON THE PROJECT:

This scope includes abandonment of 11 piezometers and 4 landfill gas wells, as well as installation of 4 new landfill gas monitoring wells, as described below.

TASK SERIES 1 – WELL ABANDONMENT

Task Series 1 includes the abandonment of 11 piezometers and 4 landfill gas wells in the vicinity of the Phase V expansion area of the Rowan County Landfill.

Narrative: HDR proposes to procure a subcontract driller and provide a field geologist, under the direction of a North Carolina Licensed Geologist, to abandon 11 piezometers (PZ5-1 through PZ5-11), 4 landfill gas wells (MMW-2, MMW-5, MMW-6, and MMW-8), and one groundwater monitoring well (MW-26) in accordance with 15A NCAC 02C .0113 and 15A NCAC 13B .1623. The 11 piezometers were installed within the planned Phase V area to evaluate groundwater elevation for use in the Site Hydrogeologic Characterization Report for the Proposed Phase V Expansion, which was submitted to NCDEQ in August 2022. The landfill gas wells were reportedly replaced by Golder Associates MC, Inc. (Golder) with more appropriate locations

and are no longer monitored for compliance. The monitoring well is located within the footprint of the Phase V area.

Activities: This work includes both field data collection activities and preparation of supporting documentation to be submitted to NCDEQ.

- Prepare a work plan for the abandonment of wells and piezometers for NCDEQ approval.
- Solicit prices from licensed drillers for implementing the work plan.
- Oversee drilling operations to abandon the following monitoring points, including removal of above-grade well completions (concrete pads, protective casings, bollards), as necessary:
 - 11 piezometers with a total estimated footage of 330 feet;
 - 4 landfill gas wells with a total estimated footage of 130 feet;
 - 1 groundwater monitoring well with a total depth of 39 feet.
- Review and submit well abandonment forms (GW-30) to NCDEQ in accordance with 15A NCAC 02C .0114.

TASK SERIES 2 – LANDFILL GAS WELL INSTALLATION

Task Series 2 includes installation of 4 new landfill gas wells along the western border of the Phase V expansion area of the Rowan County Landfill.

Narrative: In accordance with the Landfill Gas Monitoring Plan prepared by Golder Associates NC, Inc. (Golder), dated August 2022, HDR proposes to install 4 new landfill gas monitoring wells (MMW-9 through MMW-12) west of the existing Phase IV and planned Phase V landfill areas.

The estimated depth to groundwater on the tables above for each location was estimated using the groundwater surface contours provided on Figure 1 (Golder, May 2022). The future LFG wells (proposed MMW-9 through MMW-12) will be installed to a depth equivalent to the water level encountered during drilling; static water levels are not anticipated to fluctuate much in the area of the proposed wells due to close proximity to surface water features. Groundwater is anticipated to be the limiting factor over bedrock for determining depths of the new monitoring wells.

Activities: This work includes both field data collection activities and preparation of supporting documentation to be submitted to NCDEQ.

- Construct 2-inch polyvinyl-chloride (PVC) landfill gas wells with 0.010-inch slotted screen from the bottom of the well up to 5 feet below ground surface. Use coarse clean sand to fill the annular space to approximately 2 feet above the screen. Place an approximately 2-foot-thick bentonite seal above the sand. Fill the remaining annular space with a cement mixture. Complete each well at the surface with a 2-foot by 2-foot by 0.5-foot concrete well apron and a locking protective casing. The top of the PVC riser will be equipped a well cap with a stopcock valve or quick connect coupling.
- Survey locations and top of well casing elevations of the new wells by a professional land surveyor licensed in NC.

- Submit a Well Installation Report (including well construction records) to NCDEQ subsequent to installation of the new wells.

TASK SERIES 3 – MONITORING WELL ELEVATION ADJUSTMENT

Task Series 3 includes raising of 6 existing compliance groundwater monitoring wells to match planned grades of the Phase V expansion area of the Rowan County Landfill.

Narrative: Based on current design plans, HDR understands that grading for the perimeter road around the proposed Phase V expansion area will necessitate raising the top of casing elevations of monitoring wells MW-27, MW-27A, MW-31, MW-32, MW-32A, and MW-33.

Activities: This work includes both fieldwork and preparation of supporting documentation to be submitted to NCDEQ.

- Raise the top of well casing elevations between 4 and 12 feet per well, depending on proposed finished grade.
- Subsequent to grading, re-mobilize to the site to complete each well with either the same steel protective well casing that was removed, or a new steel casing if damaged during raising, and a new 2-foot by 2-foot concrete well pad.
- Submit revised well construction records to NCDEQ documenting the work.

Deliverables: Well Installation and Rehabilitation Report including the following:

- Narrative text summarizing work.
- Well construction and abandonment forms.
- Updated Landfill Gas and Groundwater Monitoring Maps for the MSW unit.

Clarifications:

1. Rates for well raising assume two mobilizations: one to raise the PVC well prior to grading, and one to complete the well following grading.
2. For Task 1, the estimated fee is based on abandonment of:
 - a. 11 piezometers with a total estimated footage of 330 feet;
 - b. 4 landfill gas wells with a total estimated footage of 130 feet;
 - c. 1 groundwater monitoring well with a total depth of 39 feet.
 If footage varies, or if steel casings can be reused, the fee for this task will be adjusted accordingly.
3. For Task 2, the estimate is based on total well footage of 97 feet, as proposed by Golder. If footage varies, the fee for this task will be adjusted accordingly.
4. For Task 3, the estimated fee is based on a total raised footage of 50 feet, replacement of six protective steel casings, and pouring of six new concrete well pads. If footage varies, or if steel casings can be reused, the fee for this task will be adjusted accordingly.
5. Rowan County will provide access and clearing required during drilling activities. HDR will coordinate these needs with landfill staff.

Schedule:

HDR will execute a subcontract with the driller within 2 weeks of executed Notice to Proceed and notify the County of the driller's schedule for mobilization. We anticipate that the drilling program proposed

herein will take approximately 5-7 days to complete. HDR anticipates providing a draft Well Installation and Rehabilitation Report within 30 days of conclusion of fieldwork.

Fee Estimate:

HDR will perform the work described below on a not to exceed amount shown below.

<u>Description of Work</u>	<u>Estimated Fee</u>
Task Series 1 – Well Abandonment	\$ 6,700
Task Series 2 – Landfill Gas Well Installation	\$12,100
Task Series 3 – Monitoring Well Elevation Adjustment	\$ 9,500
TOTAL	\$ 28,300

This Task Order is executed this _____ day of _____, 2023.

ROWAN COUNTY, NORTH CAROLINA
“OWNER”

HDR ENGINEERING, INC. OF THE CAROLINAS
“ENGINEER”

DATE: _____

DATE: 1/6/2023

BY: _____

BY: 

NAME: _____

NAME: Jonathon Henderson, PE

TITLE: _____

TITLE: Area Manager

ADDRESS: _____

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Charlotte, NC 28202