August 20, 2014 0739604214.600

Mr. Simon Lobdell, P.E.
City of Durham
Water Management Department
1600 Mist Lake Drive
Durham, North Carolina 27704

RE: ABANDONMENT OF GROUNDWATER MONITORING WELL OW-3
CLOSED CITY OF DURHAM LANDFILL
DURHAM, NORTH CAROLINA

Dear Simon:

Golder Associates NC, Inc. (Golder) is submitting this summary of the abandonment of groundwater monitoring well OW-3. The well was discovered during a site inspection of the storm debris site by representatives from the North Carolina Department of Environment and Natural Resources (NC DENR) and the City of Durham (City) in March 2014. NC DENR advised the City to abandon the well in an email correspondence dated March 24, 2014. The City obtained Golder to abandon the well.

Golder contracted Parratt-Wolff Inc., a NC licensed well driller, to abandon the monitoring well. Golder oversaw the well abandonment on July 2, 2014. As required, the well abandonment was performed in accordance with Title 15A North Carolina Administrative Code (NCAC) 02C .0113(d)(2).

Before OW-3 was abandoned, the Golder representative measured the depth to groundwater (12.12 feet below top of casing) and the depth to the bottom of the well (23.20 feet below top of casing). Afterward, the drilling contractor removed the well apron and protective casing. Then the polyvinyl chloride (PVC) riser was cut off below ground surface. Eight gallons of a Portland cement/bentonite slurry was injected into the PVC riser until completely filled. Finally, the remaining depression was backfilled with soil to ground surface. Photographs of the abandonment and the well abandonment form for OW-3 are included as attachments.

Please keep this report in the facility records to document the abandonment of OW-3. A copy of this report will be forwarded to the NC DENR. If you have any questions, please contact the undersigned at 336-852-4903.

Sincerely,
GOLDER ASSOCIATES NC, INC.

David "Dusty" Y. Reedy II, P.G.
Senior Hydrogeologist

Rachel P. Kirkman, P.G.
Associate and Senior Consultant

Attachments: Figure 1: Well Abandonment Photos of OW-3
Well Abandonment Form

g:\projects\city of durham\well repairs and abandonments\2014 well abandonment\durham_well_repair_report.docx

Golder Associates NC, Inc.
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Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

Condition of OW-3 upon discovery in March 2014

Well OW-3 after clearing debris and removal of concrete well apron

Location of well OW-3 after abandonment

CLIENT	CITY OF DURHAM
PROJECT	CITY OF DURHAM LANDFILL
CONSULTANT	Golder Associates
YYYY-MM-DD	2014-07-16
PREPARED	DYR
DESIGN	DYR
REVIEW	RPK
APPROVED	RPK
TITLE	**WELL ABANDONMENT PHOTOS OF OW-3**
PROJECT No.	**0739604214**
Phase	**600**
Rev	**0**
FIGURE	**1**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A
25 mm

WELL ABANDONMENT RECORD

This form can be used for single or multiple wells

1. Well Contractor Information:

Joshua Ellingworth

Well Contractor Name (or well owner personally abandoning well on his/her property)

3544-A

NC Well Contractor Certification Number

Parratt-Wolff, Inc.

Company Name

2. Well Construction Permit #: _____

List all applicable well permits (i.e. County, State, Variance, Injection, etc.) if known

3. Well use (check well use):

Water Supply Well:	
☐Agricultural	☐Municipal/Public
☐Geothermal (Heating/Cooling Supply)	☐Residential Water Supply (single)
☐Industrial/Commercial	☐Residential Water Supply (shared)
☐Irrigation	
Non-Water Supply Well:	
☑Monitoring	☐Recovery
Injection Well:	
☐Aquifer Recharge	☐Groundwater Remediation
☐Aquifer Storage and Recovery	☐Salinity Barrier
☐Aquifer Test	☐Stormwater Drainage
☐Experimental Technology	☐Subsidence Control
☐Geothermal (Closed Loop)	☐Tracer
☐Geothermal (Heating/Cooling Return)	☐Other (explain under 7g)

4. Date well(s) abandoned: 7/2/14

5a. Well location:

City of Durham Landfill

Facility/Owner Name

Facility ID# (if applicable)

2115 East Club Blvd, Durham, NC 27704

Physical Address, City, and Zip

Durham

County

Parcel Identification No. (PIN)

5b. Latitude and longitude in degrees/minutes/seconds or decimal degrees:
(if well field, one lat/long is sufficient)

36.027519 N 78.860107 W

CONSTRUCTION DETAILS OF WELL(S) BEING ABANDONED

Attach well construction record(s) if available. For multiple injection or non-water supply wells ONLY with the same construction abandonment, you can submit one form.

6a. Well ID#: OW-3

6b. Total well depth: 23.0 **(ft.)**

6c. Borehole diameter: 2.0 **(in.)**

6d. Water level below ground surface: 12.0 **(ft.)**

6e. Outer casing length (if known): _____ **(ft.)**

6f. Inner casing/tubing length (if known): _____ **(ft.)**

6g. Screen length (if known): _____ **(ft.)**

For Internal Use ONLY:

WELL ABANDONMENT DETAILS

7a. Number of wells being abandoned: 1

For multiple injection or non-water supply wells ONLY with the same construction/abandonment, you can submit one form.

7b. Approximate volume of water remaining in well(s): _____ **(gal.)**

FOR WATER SUPPLY WELLS ONLY:

7c. Type of disinfectant used: _____

7d. Amount of disinfectant used: _____

7e. Sealing materials used (check all that apply):

☐ Neat Cement Grout	☐ Bentonite Chips or Pellets
☐ Sand Cement Grout	☐ Dry Clay
☐ Concrete Grout	☐ Drill Cuttings
☐ Specialty Grout	☐ Gravel
☐ Bentonite Slurry	☑ Other (explain under 7g)

7f. For each material selected above, provide amount of materials used:

2-1/2 bags

7g. Provide a brief description of the abandonment procedure:

5% Bentonite/Cement grout

Tremie grouted casing in place

8. Certification:

Signature of Certified Well Contractor or Well Owner

Date: 8/4/14

By signing this form, I hereby certify that the well(s) was (were) abandoned in accordance with 15A NCAC 02C .0100 or 2C .0200 Well Construction Standards and that a copy of this record has been provided to the well owner.

9. Site diagram or additional well details:
You may use the back of this page to provide additional well site details or well abandonment details. You may also attach additional pages if necessary.

SUBMITTAL INSTRUCTIONS

10a. For All Wells: Submit this form within 30 days of completion of well abandonment to the following:

Division of Water Resources, Information Processing Unit,
1617 Mail Service Center, Raleigh, NC 27699-1617

10b. For Injection Wells: In addition to sending the form to the address in 10a above, also submit one copy of this form within 30 days of completion of well abandonment to the following:

Division of Water Resources, Underground Injection Control Program,
1636 Mail Service Center, Raleigh, NC 27699-1636

10c. For Water Supply & Injection Wells: In addition to sending the form to the address(es) above, also submit one copy of this form within 30 days of completion of well abandonment to the county health department of the county where abandoned.