



August 13, 2014

Mr. Ervin Lane
Compliance Hydrogeologist
NCDENR/Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646



RE: Well Abandonment and Installation Report
Replacement of GW-11 with GW-11R
East Carolina Regional Landfill
Solid Waste Permit No. 08-03
Bertie County, North Carolina

Dear Mr. Lane,

Republic Services of North Carolina, LLC is submitting this Well Abandonment and Installation Report for the East Carolina Regional Landfill, Permit No. 08-03, as required by the North Carolina Division of Waste Management, Solid Waste Section. During the January 2014 semi-annual sampling event, monitoring well GW-11 was found to have been damaged. After attempting to repair it, it was determined that the well needed to be replaced.

On July 21, 2014, Joyce Engineering and Geologic Exploration mobilized to the site to abandon GW-11 and install GW-11R. GW-11R was located approximately 5 feet south of GW-11, and was screened over a similar interval. However, GW-11R was installed approximately 10 feet deeper than GW-11 because GW-11 often had insufficient water column for sampling. The well abandonment and well construction logs for MW-11 and GW-11R, respectively, are attached.

The new well, GW-11R, was developed and a new dedicated bladder pump was installed on July 24, 2014. GW-11R was sampled as part of the second semi-annual sampling event and the results will be included in the upcoming monitoring report.

1220 Commerce St SW, Box 1
Conover, NC 28613
Phone 828.464.2414 • Fax 828.464.2433
Toll Free 866.473.7778
www.republicservices.com

WELL ABANDONMENT RECORD

This form can be used for single or multiple wells

1. Well Contractor Information:

KENNY SARGENT

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

A - 4226

NC Well Contractor Certification Number

GEOLOGIC EXPLORATION, INC

Company Name

2. Well Construction Permit #:

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

3. Well use (check well use):

Water Supply Well:

- | | |
|--|--|
| <input type="checkbox"/> Agricultural | <input type="checkbox"/> Municipal/Public |
| <input type="checkbox"/> Geothermal (Heating/Cooling Supply) | <input type="checkbox"/> Residential Water Supply (single) |
| <input type="checkbox"/> Industrial/Commercial | <input type="checkbox"/> Residential Water Supply (shared) |
| <input type="checkbox"/> Irrigation | |

Non-Water Supply Well:

- | | |
|--|-----------------------------------|
| <input checked="" type="checkbox"/> Monitoring | <input type="checkbox"/> Recovery |
|--|-----------------------------------|

Injection Well:

- | | |
|--|---|
| <input type="checkbox"/> Aquifer Recharge | <input type="checkbox"/> Groundwater Remediation |
| <input type="checkbox"/> Aquifer Storage and Recovery | <input type="checkbox"/> Salinity Barrier |
| <input type="checkbox"/> Aquifer Test | <input type="checkbox"/> Stormwater Drainage |
| <input type="checkbox"/> Experimental Technology | <input type="checkbox"/> Subsidence Control |
| <input type="checkbox"/> Geothermal (Closed Loop) | <input type="checkbox"/> Tracer |
| <input type="checkbox"/> Geothermal (Heating/Cooling Return) | <input type="checkbox"/> Other (explain under 7g) |

4. Date well(s) abandoned: 07/21/14

5a. Well location:

EAST CAROLINA LANDFILL

Facility/Owner Name

Facility ID# (if applicable)

1922 REPUBLICAN ROAD AULANDER 27805

Physical Address, City, and Zip

BERTIE

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° 07' 06.50" N 77° 04' 03.48" 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#: GW-11

6b. Total well depth: 30.0 (ft.)

6c. Borehole diameter: 2.0 (in.)

6d. Water level below ground surface: 26.0 (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): 0.75 (gal.)

FOR WATER SUPPLY WELLS ONLY:

7c. Type of disinfectant used: _____

7d. Amount of disinfectant used: _____

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

- | | |
|---|---|
| <input checked="" type="checkbox"/> Neat Cement Grout | <input type="checkbox"/> Bentonite Chips or Pellets |
| <input type="checkbox"/> Sand Cement Grout | <input type="checkbox"/> Dry Clay |
| <input type="checkbox"/> Concrete Grout | <input type="checkbox"/> Drill Cuttings |
| <input type="checkbox"/> Specialty Grout | <input type="checkbox"/> Gravel |
| <input type="checkbox"/> Bentonite Slurry | <input type="checkbox"/> Other (explain under 7g) |

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

5.0 GALLONS

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

WELL ABANDONED VIA TREMIE PIPE WITH
PORTLAND BENTONITE SLURRY

8. Certification:



Signature of Certified Well Contractor or Well Owner

08/04/14

Date

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 Quality, 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 Quality, 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.

WELL CONSTRUCTION RECORD

This form can be used for single or multiple wells

1. Well Contractor Information:

KENNY SARGENT

Well Contractor Name

A - 4226

NC Well Contractor Certification Number

GEOLOGIC EXPLORATION, INC

Company Name

2. Well Construction Permit #:

List all applicable well construction permits (i.e. County, State, Variance, etc.)

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 #21 Remarks)

4. Date Well(s) Completed: 07/21/14 Well ID# GW-11R

5a. Well Location:

EAST CAROLINA LANDFILL

Facility/Owner Name

Facility ID# (if applicable)

1922 REPUBLICAN ROAD AULANDER 27805

Physical Address, City, and Zip

BERTIE

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° 07' 06.49" N 77° 04' 03.48" W

6. Is (are) the well(s): Permanent or Temporary

7. Is this a repair to an existing well: Yes or No

If this is a repair, fill out known well construction information and explain the nature of the repair under #21 remarks section or on the back of this form.

8. Number of wells constructed: 1

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

9. Total well depth below land surface: 40.0 (ft.)

For multiple wells list all depths if different (example- 3@200' and 2@100')

10. Static water level below top of casing: 22.0 (ft.)

If water level is above casing, use "+"

11. Borehole diameter: 8.0 (in.)

12. Well construction method: AUGER

(i.e. auger, rotary, cable, direct push, etc.)

FOR WATER SUPPLY WELLS ONLY:

13a. Yield (gpm) _____ Method of test: _____

13b. Disinfection type: _____ Amount: _____

For Internal Use ONLY:

14. WATER ZONES		
FROM	TO	DESCRIPTION
ft.	ft.	
ft.	ft.	

15. OUTER CASING (for multi-cased wells) OR LINER (if applicable)					
FROM	TO	DIAMETER	THICKNESS	MATERIAL	
ft.	ft.	in.			

16. INNER CASING OR TUBING (geothermal closed-loop)					
FROM	TO	DIAMETER	THICKNESS	MATERIAL	
0.0 ft.	20.0 ft.	2.0 in.	SCH 40	PVC	
ft.	ft.	in.			

17. SCREEN					
FROM	TO	DIAMETER	SLOT SIZE	THICKNESS	MATERIAL
20.0 ft.	40.0 ft.	2.0 in.	.010	SCH 40	PVC
ft.	ft.	in.			

18. GROUT			
FROM	TO	MATERIAL	EMPLACEMENT METHOD & AMOUNT
0.0 ft.	15.0 ft.	PORTLAND BENTONITE	SLURRY
ft.	ft.		
ft.	ft.		

19. SAND/GRAVEL PACK (if applicable)			
FROM	TO	MATERIAL	EMPLACEMENT METHOD
18.0 ft.	40.0 ft.	20-40	FINE SILICA SAND
ft.	ft.		

20. DRILLING LOG (attach additional sheets if necessary)		
FROM	TO	DESCRIPTION (color, hardness, soil/rock type, grain size, etc.)
0.0 ft.	12.0 ft.	BROWN CLAY
12.0 ft.	14.0 ft.	BROWN/GRAY SANDY CLAY
14.0 ft.	18.0 ft.	BROWN/GRAY CLAY
18.0 ft.	20.0 ft.	GRAY CLAY
20.0 ft.	27.0 ft.	BROWN CLAY
27.0 ft.	40.0 ft.	BROWN SANDY CLAY
ft.	ft.	

21. REMARKS	
BENTONITE SEAL FROM 15.0 TO 18.0 FEET	

22. Certification:

Signature of Certified Well Contractor: *Kenny Sargent* Date: 08/04/14

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

23. Site diagram or additional well details:

You may use the back of this page to provide additional well site details or well construction details. You may also attach additional pages if necessary.

SUBMITTAL INSTRUCTIONS

24a. For All Wells: Submit this form within 30 days of completion of well construction to the following:

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

24b. For Injection Wells: In addition to sending the form to the address in 24a above, also submit a copy of this form within 30 days of completion of well construction to the following:

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

24c. 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 construction to the county health department of the county where constructed.

**JOYCE ENGINEERING
GREENSBORO, NC**

LOG OF BORING GW-11 R

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Republic Services of NC, LLC
East Carolina Landfill
Bertie County, NC

Date Started : 7-21-2014
Date Completed : 7-21-2014
Hole Diameter : 7 1/2 inch
Drilling Method : Auger
Sampling Method :

Drilling Company : Geologic Exploration
Northing Coord. :
Easting Coord. :
Survey By :
Logged By : H.Kemppinen

JOYCE Project No.894.1403.12 Task 01

Depth in Feet	Surf. Elev. 48	Blow Count	% Rec.	USCS	DESCRIPTION	Well: GW-11 R TOC Elev. : 51	Well Construction Information
0	48				Cover soil and grass		<p>WELL CONSTRUCTION</p> <p>Date Compl. : Hole Diameter(s) : 7 1/2 -inch Drilling Method(s) : auger Company Rep. : Drilling Method(s) : Company Rep. :</p> <p>WELL CASING</p> <p>Material : Schedule 40 PVC Diameter : 2-inch Joints : Threaded Approx. Csg. Stickup : 3 ft</p> <p>WELL SCREEN</p> <p>Material : Schedule 40 PVC Diameter : 2-inch Joints : Threaded Opening : 0.01 inch</p> <p>FILTER SAND</p> <p>Type : #2 Sand</p> <p>WELL SCREEN SEAL</p> <p>Type :</p> <p>ANNULUS SEAL</p> <p>Type : Bentonite pellets</p> <p>GEO-RING</p> <p>Type :</p> <p>Site soils are fine sand, silt and clay mixtures. Medium to stiff cohesive soil.</p> <p>A weak zone at 17 to 23 feet of fine sand and silt, slightly cohesive layer that may produce water.</p> <p>Auger cuttings became wet last few feet at 37 feet and below. Fine silty sand (ML) material. Well may be difficult to develop due to fines contents.</p>
					1 to 6 feet yellow brown fine sand and silt, moist, cohesive elastic silt and clay mixture (ML), plastic, medium stiffness.	Riser Pipe (+3 to 20)	
					At 6 feet changing to yellow brown, stiff and elastic silt and clay (MH) with trace of fine sand (<5%).	Neat Cement	
10	38				At 17 feet changing to fine sand (SM), yellow brown with yellow gray mottling, moist, slightly cohesive, weak structure.	Seal (16 to 18)	
					At 23 feet changing to light gray sandy silt (SC), moist, cohesive, plastic and stiff.		
					At 26 feet changing to yellow brown sandy silt with clay (CL), moist, plastic but not as stiff as above,	Filter Sand (18 to 40)	
20	28				At 31 feet auger cuttings same as above but as clayey balls.	Screen (20 to 40)	
					At 37-38 feet auger cuttings changing to wet yellow silty sand (fine sand and silt mixture) (ML).		
30	18						
40							

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**JOYCE ENGINEERING
GREENSBORO, NC**

LOG OF BORING GW-11 Abandonment

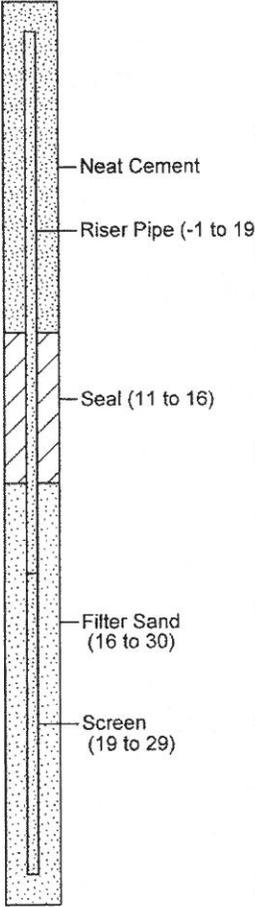
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Republic Services of NC, LLC
East Carolina Landfill
Bertie County, NC

JOYCE Project No.894.1403.12 Task 01

Date Started : 7-21-2014
Date Completed : 7-21-2014
Hole Diameter :
Drilling Method :
Sampling Method :

Drilling Company : Geologic Exploration
Northing Coord. :
Easting Coord. :
Survey By :
Logged By : H.Kemppinen

Depth in Feet	Surf. Elev. 48	Blow Count	% Rec.	USCS	DESCRIPTION	Well: GW-11 Abandoned TOC Elev. : N/A	Well Construction Information
0	48				cover Well riser cut off 1 foot below surface. Well screen and riser pipe filled with cement grout to abandon the well.		<p>ORIGINAL WELL CONSTRUCTION</p> <p>Date Compl. : 4/13/1997 (BLE) Hole Diameter(s) : 8 1/4 -inch Drilling Method(s) : auger Company : Metro Drilling, Inc. Company Rep. : C. Gordon</p> <p>WELL CASING</p> <p>Material : Schedule 40 PVC Diameter : 2-inch Joints : Approx. Csg. Stickup :</p> <p>WELL SCREEN</p> <p>Material : Schedule 40 PVC Diameter : 2-inch Joints : Opening : 0.01 inch</p> <p>GRAVEL PACK</p> <p>Type : Backfill</p> <p>WELL SCREEN SEAL</p> <p>Type : FX-50 Sand</p> <p>ANNULUS SEAL</p> <p>Type : Bentonite</p> <p>GEO-RING</p> <p>Type :</p>
10	38						
20	28						
30	18						
40							

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