

CIVIL/SANITARY/ENVIRONMENTAL ENGINEERS

SOLID WASTE MANAGEMENT

**Municipal  
Services**

SITE PLANNING/SUBDIVISIONS


**Engineering  
Company, P.A.**

SUBSURFACE UTILITY ENGINEERING (SUE)

April 15, 2014

Mr. Brian Wootton  
Solid Waste Section (SWS)-Division of Waste Management  
North Carolina Department of Environment and Natural Resources  
217 West Jones Street  
Raleigh, NC 27603

Re: *Landfill Gas Monitoring Wells Abandonment Notification*  
Iredell County Lined MSWLF and Closed CDLF  
Permit No. 49-03  
MESCO Project No. G13159.0

Dear Mr. Wootton:

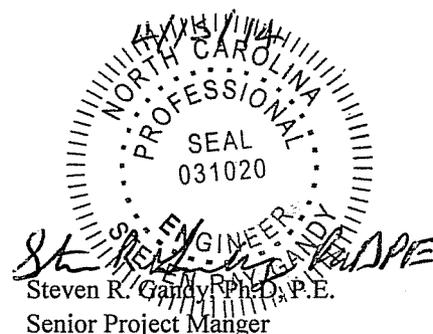
Four landfill gas (LFG) migration monitoring wells (MP-14 thru MP-17) were abandoned in accordance with North Carolina Well Standards 15A NCAC 2C.0113(d) entitled "Abandonment of Wells" on April 11, 2014. These dry shallow wells were abandoned since they are no longer to be monitored as proposed in the *Landfill Gas Monitoring Plan* Section 2.1.1 which was approved by the SWS on August 29, 2013 (DIN:19613). Currently none of the existing wells at the facility are planned to be abandoned. The well abandonment records (GW-30) with a drawing showing their locations are attached in fulfillment of 15A NCAC 02C.0114(b).

LFG migration monitoring will continue on a quarterly basis. The LFG monitoring system is planned to be expanded and monitored prior to the first established quarterly event following commencement of operations within Phase 5.

If you have any questions or need additional information, please contact us at (919) 772-5393 or by email at [jpfohl@mesco.com](mailto:jpfohl@mesco.com) or [sgandy@mesco.com](mailto:sgandy@mesco.com).

Sincerely,  
**MUNICIPAL ENGINEERING SERVICES CO., P.A.**

Jonathan Pfohl  
Environmental Specialist



Steven R. Gandy, P.E.  
Senior Project Manager

Enclosures

cc: Mr. David Lambert  
Iredell County

MP-14

# WELL ABANDONMENT RECORD

This form can be used for single or multiple wells

## 1. Well Contractor Information:

Jonathan Pfohl

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

3301-A

NC Well Contractor Certification Number

Municipal Engineering Services Company P.A.

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 Landfill Gas Migration  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: 4/11/14

## 5a. Well location:

Iredell Co Landfill

Facility/Owner Name

Facility ID# (if applicable)

3260 Twin Oaks Road, Statesville NC 28687

Physical Address, City, and Zip

Iredell

4753697097

County

Parcel Identification No. (PIN)

## 5b. Latitude and longitude in degrees/minutes/seconds or decimal degrees:

(if well field, one lat/long is sufficient)

35.76792 N 80.83166 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#: MP-14

6b. Total well depth: 3.10 (ft.)

6c. Borehole diameter: 4 (in.)

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

6e. Outer casing length (if known): \_\_\_\_\_ (ft.)

6f. Inner casing/tubing length (if known): \_\_\_\_\_ (ft.)

6g. Screen length (if known): 2.00 (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 (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)

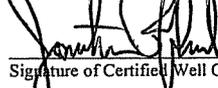
## 7f. For each material selected above, provide amount of materials used:

Neat Cement Grout 26 lbs

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

Removed 1" PVC well. Overdrilled entire depth with auger than gravity sealed cement grout slurry. LFG monitoring well located within an area expected to be cut during construction of a future landfill phase.

## 8. Certification:



Signature of Certified Well Contractor or Well Owner

4/15/14

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 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.

# WELL ABANDONMENT RECORD

This form can be used for single or multiple wells

## 1. Well Contractor Information:

Jonathan Pfohl

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

3301-A

NC Well Contractor Certification Number

Municipal Engineering Services Company P.A.

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):

<b>Water Supply Well:</b>	
<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	
<b>Non-Water Supply Well:</b>	
<input checked="" type="checkbox"/> Monitoring Landfill Gas Migration	<input type="checkbox"/> Recovery
<b>Injection Well:</b>	
<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: 4/11/14

## 5a. Well location:

Iredell Co Landfill

Facility/Owner Name

Facility ID# (if applicable)

3260 Twin Oaks Road, Statesville NC 28687

Physical Address, City, and Zip

Iredell

4753697097

County

Parcel Identification No. (PIN)

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

35.76759 N 80.83081 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#: MP-15

6b. Total well depth: 3.00 (ft.)

6c. Borehole diameter: 4 (in.)

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

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

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

6g. Screen length (if known): 2.00 (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 (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
- Sand Cement Grout
- Concrete Grout
- Specialty Grout
- Bentonite Slurry
- Bentonite Chips or Pellets
- Dry Clay
- Drill Cuttings
- Gravel
- Other (explain under 7g)

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

Neat Cement Grout 25 lbs

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

Removed 1" PVC well. Overdrilled entire depth with auger than gravity sealed cement grout slurry. LFG monitoring well located within an area expected to be cut during construction of a future landfill phase.

## 8. Certification:

Signature of Certified Well Contractor or Well Owner: [Signature] Date: 4/15/14

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.

# WELL ABANDONMENT RECORD

This form can be used for single or multiple wells

## 1. Well Contractor Information:

Jonathan Pfohl

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

3301-A

NC Well Contractor Certification Number

Municipal Engineering Services Company P.A.

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 Landfill Gas Migration  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: 4/11/14

## 5a. Well location:

Iredell Co Landfill

Facility/Owner Name

Facility ID# (if applicable)

3260 Twin Oaks Road, Statesville NC 28687

Physical Address, City, and Zip

Iredell

4753697097

County

Parcel Identification No. (PIN)

## 5b. Latitude and longitude in degrees/minutes/seconds or decimal degrees:

(if well field, one lat/long is sufficient)

35.76796 N 80.82853 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#: MP-16

6b. Total well depth: 2.90 (ft.)

6c. Borehole diameter: 4 (in.)

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

6e. Outer casing length (if known): \_\_\_\_\_ (ft.)

6f. Inner casing/tubing length (if known): \_\_\_\_\_ (ft.)

6g. Screen length (if known): 2.00 (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 (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:

Neat Cement Grout 24 lbs

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

Removed 1" PVC well. Overdrilled entire depth with auger than gravity sealed cement grout slurry. LFG monitoring well located within an area expected to be cut during construction of a future landfill phase.

## 8. Certification:

Signature of Certified Well Contractor or Well Owner

4/15/14  
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.

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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.

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

3301-A

NC Well Contractor Certification Number

Municipal Engineering Services Company P.A.

Company Name

## 2. Well Construction Permit #:

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## 3. Well use (check well use):

<b>Water Supply Well:</b>	
<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	
<b>Non-Water Supply Well:</b>	
<input checked="" type="checkbox"/> Monitoring Landfill Gas Migration	<input type="checkbox"/> Recovery
<b>Injection Well:</b>	
<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: 4/11/14

## 5a. Well location:

Iredell Co Landfill

Facility/Owner Name

Facility ID# (if applicable)

3260 Twin Oaks Road, Statesville NC 28687

Physical Address, City, and Zip

Iredell

4753697097

County

Parcel Identification No. (PIN)

## 5b. Latitude and longitude in degrees/minutes/seconds or decimal degrees:

(if well field, one lat/long is sufficient)

35.76754 N 80.82950 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#: MP-17

6b. Total well depth: 3.00 (ft.)

6c. Borehole diameter: 4 (in.)

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

6e. Outer casing length (if known): \_\_\_\_\_ (ft.)

6f. Inner casing/tubing length (if known): \_\_\_\_\_ (ft.)

6g. Screen length (if known): 2.00 (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 (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)   |

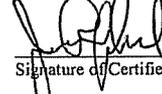
## 7f. For each material selected above, provide amount of materials used:

Neat Cement Grout 25 lbs

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

Removed 1" PVC well. Overdrilled entire depth with auger than gravity sealed cement grout slurry. LFG monitoring well located within an area expected to be cut during construction of a future landfill phase.

## 8. Certification:



Signature of Certified Well Contractor or Well Owner

4/15/14  
Date

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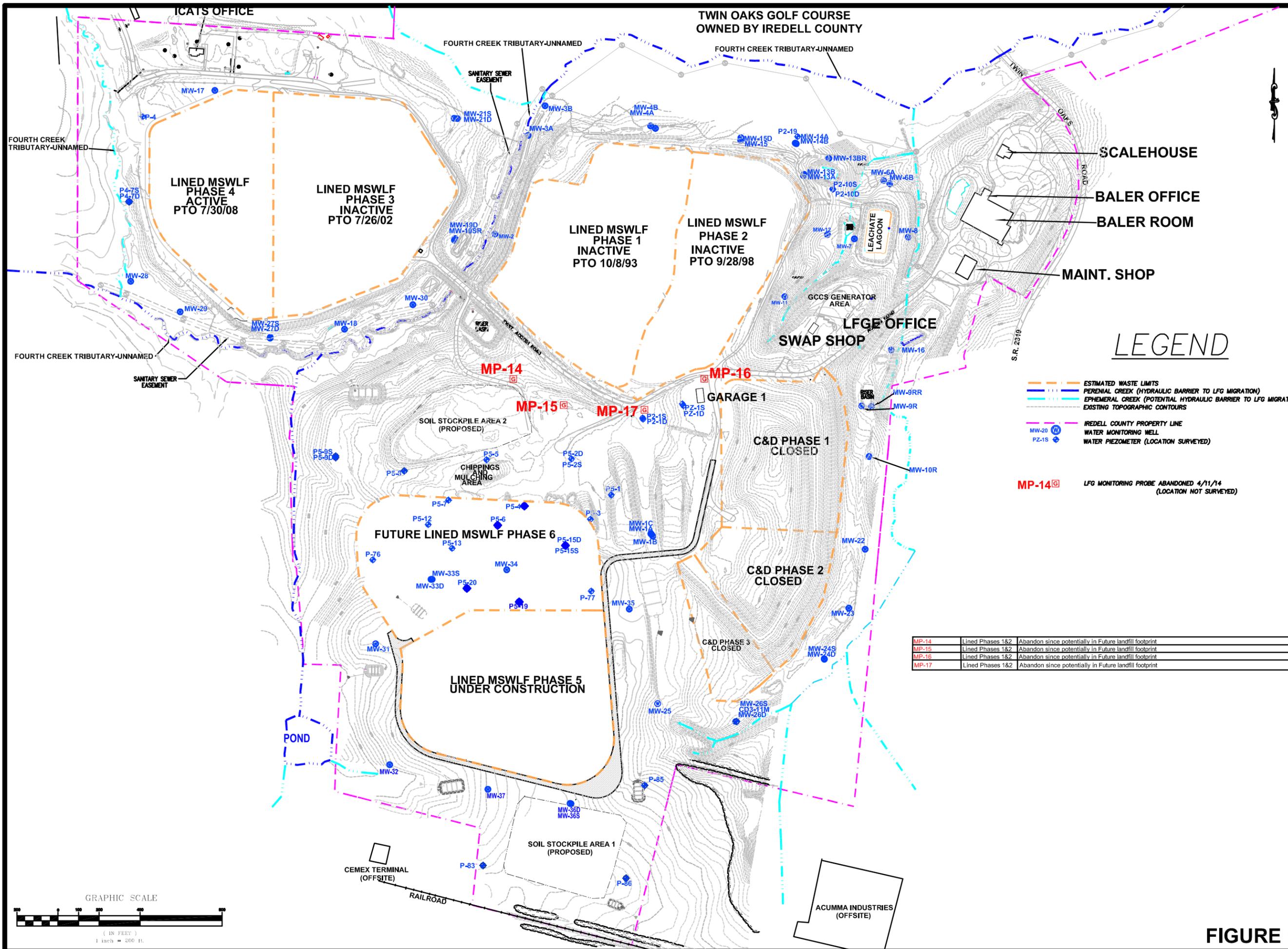
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10b. **For Injection Wells:** In addition to sending the form to the address in 10a above, also submit one copy of this form within 30 days of completion of well abandonment to the following:

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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.



**Engineering Company, P.A.**

**Municipal Services**

P.O. BOX 349 BOONE, N.C. 28607  
(828) 262-1767  
LICENSE NUMBER: C-0281

P.O. BOX 97 GARNER, N.C. 27529  
(919) 772-5383

**SUBTITLE D LINED MSWLF PHASES 1-6  
CLOSED C&D PHASES 1-3  
IREDELL COUNTY  
NORTH CAROLINA**

DATE	BY	REV.	DESCRIPTION

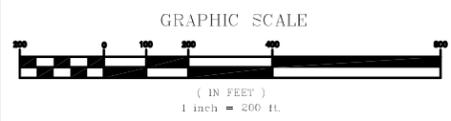
**LANDFILL GAS MONITORING PROBES  
ABANDONED ON 4/11/14**

SCALE:	SEE SCALEBAR
DATE:	4/14/14
DRWN. BY:	J. PFOHL
CHKD. BY:	S. GANDY
PROJECT NUMBER:	G13014.0
DRAWING NO.:	FIGURE 1
SHEET NO.:	1 OF 1

**LEGEND**

- ESTIMATED WASTE LIMITS
- PERENNIAL CREEK (HYDRAULIC BARRIER TO LFG MIGRATION)
- EPHEMERAL CREEK (POTENTIAL HYDRAULIC BARRIER TO LFG MIGRATION)
- EXISTING TOPOGRAPHIC CONTOURS
- IREDELL COUNTY PROPERTY LINE
- WATER MONITORING WELL
- ⊕ WATER PIEZOMETER (LOCATION SURVEYED)
- ⊕ LFG MONITORING PROBE ABANDONED 4/11/14 (LOCATION NOT SURVEYED)

<b>MP-14</b>	Lined Phases 1&2	Abandon since potentially in Future landfill footprint
<b>MP-15</b>	Lined Phases 1&2	Abandon since potentially in Future landfill footprint
<b>MP-16</b>	Lined Phases 1&2	Abandon since potentially in Future landfill footprint
<b>MP-17</b>	Lined Phases 1&2	Abandon since potentially in Future landfill footprint



**FIGURE 1**