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November 27, 2019

Transmitted via email
john.sayer@dnr.ga.gov

Mr. John Sayer
Georgia Department of Natural Resources
Environmental Protection Division
Solid Waste Management Program
4244 International Parkway, Suite 104
Atlanta, Georgia 30354

RE: Periodic Monitoring Report – Fourth Quarter 2019
Forsyth County-Hightower Road Landfill
Solid Waste Permit Nos.: 058-006D(SL), 058-009D(SL), & 058-010D(SL)
Forsyth County

Dear Mr. Sayer:

Atlantic Coast Consulting, Inc. (ACC) is providing Georgia Department of Natural Resources, Environmental Protection Division (EPD) this Methane Monitoring Report for the closed Hightower Road Solid Waste Landfill. Perimeter monitoring was conducted November 26, 2019 with procedures in accordance with the facility's approved methane monitoring plan. Attached is the SWM-19 form and recent potentiometric map. The monitoring well methane concentrations were reported as being less than 5 percent methane by volume during this monitoring event and the methane concentration in the facility structure was less than 1.25 percent methane by volume. The County is currently in the process of getting the Responsible Official (RO) changed in GEOS. This report data will be uploaded to GEOS and submitted once the RO is approved. A copy of this report will be placed in the Operating Record. Please contact me if you have any questions regarding this report.

Thank you,

ATLANTIC COAST CONSULTING, INC.

Charles Adams, P.G.
Project Manager

Attachments

cc: Garrin Coleman, Samuel Buckles with attachments via email.
EPD Mountain District, Cartersville cover letter only via Regular mail.
Operating Record

SWM-19 FORM
AND
POTENTIOMETRIC MAP



Periodic Methane Monitoring Report

Fourth Quarter 2019

Quarter or Month / Year

Facility Name:	<u>Hightower Road Landfill</u>	Date(s) of Monitoring:	<u>11/26/2019</u>
Facility Permit #'s:	<u>058-006D(SL), 058-009D(SL)</u>	Monitoring Conducted by:	<u>D. Hamilton</u>
Permit #'s (cont):	<u>058-010D(SL)</u>	Equipment Field Calibrated by:	<u>D. Hamilton</u>
County (Location):	<u>Forsyth</u>	Date of Field Calibration:	<u>11/26/2019</u>
Monitoring Equipment:	<u>GEM5000</u>	Manufacturer Calibration/Service Date:	<u>4/16/2019</u>

1. All reports must include a scaled and dated potentiometric surface map, (this applies only to those facilities required to perform groundwater monitoring) that shows ALL monitoring points, accompanied by a table listing the as-built depths and corresponding elevations of the bottoms of the methane monitoring wells and/or barhole punches. The potentiometric surface maps must be updated on an annual basis, and signed & sealed by a qualified groundwater scientist. Those facilities that do not conduct groundwater monitoring should, at a minimum, include a site map that shows ALL monitoring locations.

2. All reports must specify whether each monitoring location is a structure, permanent well, barhole punch, or vent (e.g. MM-1=scalehouse, MM-1=well, MM-1=BHP (barhole punch), MM-1=vent, or GWC-1=groundwater well).

3. **Monitoring Results**
 a. **Permanent Approved COMPLIANCE Monitoring Locations**

<u>Monitoring Point Identification</u>	<u>Monitoring Results</u>	<u>Monitoring Point Identification</u>	<u>Monitoring Results</u>
MM-1R Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>20.2%</u> Time Sampled: <u>12:02</u>	MM-6 Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>19.8%</u> Time Sampled: <u>12:39</u>
MM-2 Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>20.9%</u> Time Sampled: <u>12:33</u>	MM-7 Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>21.1%</u> Time Sampled: <u>12:46</u>
MM-3 Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>19.3%</u> Time Sampled: <u>12:09</u>	MM-8 Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>19.1%</u> Time Sampled: <u>12:54</u>
MM-4 Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>19.7%</u> Time Sampled: <u>12:14</u>	MM-9 Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>20.2%</u> Time Sampled: <u>13:03</u>
MM-5 Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>18.1%</u> Time Sampled: <u>12:25</u>	MM-10 Well	% Methane By Volume: <u>0.0%</u> % Oxygen: <u>16.3%</u> Time Sampled: <u>13:10</u>

a. Permanent Approved COMPLIANCE Monitoring Locations (continued)

<u>Monitoring Point Identification</u>	<u>Monitoring Results</u>	<u>Monitoring Point Identification</u>	<u>Monitoring Results</u>
MM-11 Well	% Methane By Volume: 0.3% % Oxygen: 4.2% Time Sampled: 13:16	MM-14 Well	% Methane By Volume: 0.0% % Oxygen: 20.7% Time Sampled: 13:29
MM-13 Well	% Methane By Volume: 0.0% % Oxygen: 19.0% Time Sampled: 13:24	MM-15 Well	% Methane By Volume: 0.0% % Oxygen: 21.3% Time Sampled: 13:38

b. Facility Structures (All on-site structures must be monitored, listed, and shown on map.)

<u>Facility Structure</u>	<u>Monitoring Results</u>	<u>Facility Structure</u>	<u>Monitoring Results</u>
Tool Shed	% LEL: 0.0% % Methane by Volume: 0.0% % Oxygen: 21.0% Time Sampled: 12:20	N/A	% LEL: _____ % Methane by Volume: _____ % Oxygen: _____ Time Sampled: _____

c. Miscellaneous Monitoring Locations (vents, trenches not part of compliance monitoring)

<u>Monitoring Point Identification</u>	<u>Monitoring Results</u>	<u>Monitoring Point Identification</u>	<u>Monitoring Results</u>
N/A	% Methane By Volume: _____ % Oxygen: _____ Time Sampled: _____	N/A	% Methane By Volume: _____ % Oxygen: _____ Time Sampled: _____

d. Adjacent Off-Site Structures (off-site structures at facilities with known release)

<u>Off-Site Structure</u>	<u>Monitoring Results</u>	<u>Off-Site Structure</u>	<u>Monitoring Results</u>
N/A	% LEL: _____ % Methane by Volume: _____ % Oxygen: _____ Time Sampled: _____	N/A	% LEL: _____ % Methane by Volume: _____ % Oxygen: _____ Time Sampled: _____

4. Climatic/Physical Conditions at Site

Samples must be collected under normal/average conditions of temperature, pressure, and climate for the season. Barhole punch sampling should not be performed during or immediately after rain events, or when soils are saturated or frozen. **All sampling at compliance monitoring locations must be performed after 12:00 pm, and completed by 6:00 pm.** Barometric information can be obtained from many locations.

(i.e. <http://weather.noaa.gov>)

- a. Soil Conditions: Normal
- b. Weather Conditions: Partly Cloudy
- c. Temperature: 64° Fahrenheit
- d. Barometric Conditions: Rising _____ Falling _____ Steady X Reading: 28.89
- e. Relative Humidity 10-90%? Yes X No _____ Range: 50-56%
- f. Condition/Access: Sampling points are properly identified, secured, and maintained?
Yes X No _____

If no, please list deficiencies observed:

g. If stressed vegetation due to the presence of methane gas is noted, describe the extent and location in the space provided below.

Vegetation is not stressed.

5. **Description of Sampling Techniques:** Provide a clear and concise description for each type of sampling (well, barhole punch, structure, etc.) performed during the monitoring event. Wells are **NOT** to be vented; peak readings should be reported. Any exceptions should be noted here.

Wells were not vented prior to taking the sample and are equipped with quick-connect sample ports.
The instrument was allowed to pump the sample for 3 minutes until the oxygen reading stabilized and the peak reading was recorded.

6. **Additional Comments**

CERTIFICATION

I CERTIFY that all required information on this form is complete and accurate, and

I further CERTIFY that methane sampling was conducted by myself or my authorized representative in accordance with all applicable rules and current EPD guidance. Concentrations of methane detected during this sampling/monitoring event ___ do / X do not exceed 25 percent of the lower explosive limit (LEL) for methane in facility structures (excluding the gas recovery system components), and gas concentrations ___ do / X do not exceed the LEL for methane at the approved compliance monitoring locations.

(IF THIS STATEMENT IS NOT SIGNED OR THE FORM IS ALTERED, THE DIVISION WILL NOT ACCEPT THE RESULTS FROM THE SUBJECT FACILITY.)



(Signature)

Professional Geologist P.G. 1632

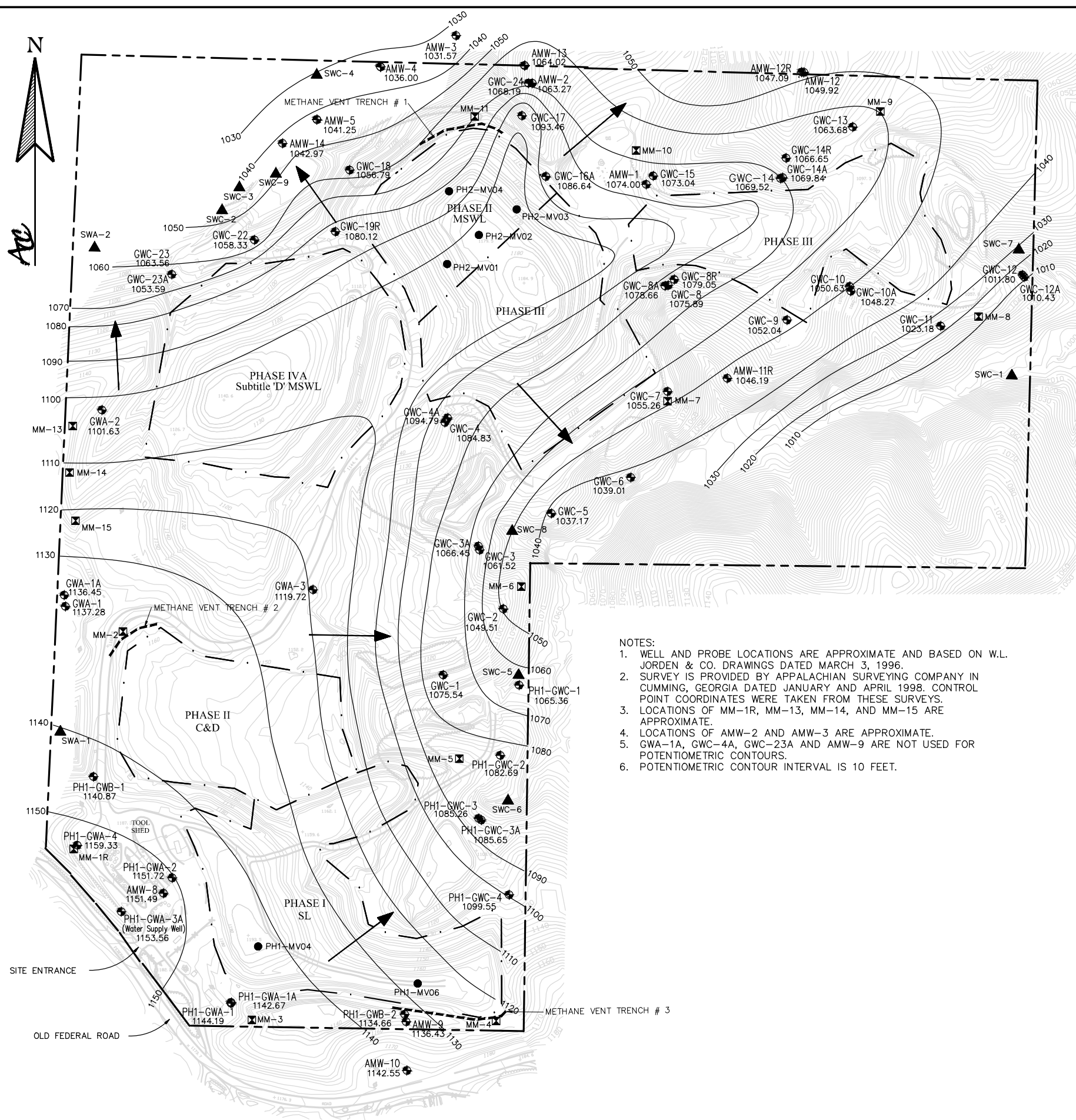
(Title)

11/27/2019

(Date)

Charles B. Adams, 1150 Northmeadow Parkway, Suite 100, Roswell GA 30076, 770-594-5998

(Typed Name, Address, and Telephone Number)



- NOTES:**
1. WELL AND PROBE LOCATIONS ARE APPROXIMATE AND BASED ON W.L. JORDEN & CO. DRAWINGS DATED MARCH 3, 1996.
 2. SURVEY IS PROVIDED BY APPALACHIAN SURVEYING COMPANY IN CUMMING, GEORGIA DATED JANUARY AND APRIL 1998. CONTROL POINT COORDINATES WERE TAKEN FROM THESE SURVEYS.
 3. LOCATIONS OF MM-1R, MM-13, MM-14, AND MM-15 ARE APPROXIMATE.
 4. LOCATIONS OF AMW-2 AND AMW-3 ARE APPROXIMATE.
 5. GWA-1A, GWC-4A, GWC-23A AND AMW-9 ARE NOT USED FOR POTENTIOMETRIC CONTOURS.
 6. POTENTIOMETRIC CONTOUR INTERVAL IS 10 FEET.

**Summary of Groundwater Elevation Data
Forsyth County - Hightower Road MSWLF
June 2019 Sampling Event**

Monitoring Well ID	Total Well Depth (ft BTOC)	TOC Elevation (ft MSL)	Depth to Water Level (ft BTOC)	Groundwater Elevation (ft MSL)
PHASE I WELLS				
PH1-GWA-1	48.66	1176.37	32.18	1144.19
PH1-GWA-1A	108.00	1176.35	33.68	1142.67
PH1-GWA-2	53.60	1183.40	31.68	1151.72
PH1-GWA-3A	205.00	1187.16	33.60	1153.56
PH1-GWA-4	57.00	1191.14	31.81	1159.33
PH1-GWB-1	53.80	1179.10	38.23	1140.87
PH1-GWB-2	42.22	1155.04	20.38	1134.66
PH1-GWC-1	23.79	1074.66	9.30	1065.36
PH1-GWC-2	127.61	1103.93	21.24	1082.69
PH1-GWC-3	23.42	1056.96	11.70	1045.26
PH1-GWC-3A	55.42	1096.28	10.63	1085.65
PH1-GWC-4	33.71	1124.26	24.71	1099.55
GWC-1	38.80	1102.25	26.71	1075.54
AMW-8	50.40	1186.23	34.74	1151.49
AMW-9	41.69	1162.64	26.21	1136.43
AMW-10	56.81	1180.73	38.18	1142.55
PHASE II - IV WELLS				
GWA-1	62.85	1187.70	50.42	1137.28
GWA-1A	141.00	1187.49	51.04	1136.45
GWA-2	52.18	1137.30	35.67	1101.63
GWA-3	48.86	1154.53	34.81	1119.72
GWC-2	55.61	1103.64	54.13	1049.51
GWC-3	39.71	1092.39	30.87	1061.52
GWC-3A	68.95	1094.67	28.22	1066.45
GWC-4	49.81	1132.82	47.99	1084.83
GWC-4A	89.23	1132.39	37.60	1094.79
GWC-5	49.91	1084.55	47.38	1037.17
GWA-6	34.52	1064.01	25.00	1039.01
GWC-7	54.21	1093.44	38.18	1055.26
GWC-8	27.53	1095.63	19.74	1075.89
GWC-8A	46.71	1095.44	16.78	1078.66
GWC-8R	94.67	1098.40	19.35	1079.05
GWC-9	60.50	1093.58	41.54	1052.04
GWC-10	37.51	1068.56	17.93	1050.63

**Summary of Groundwater Elevation Data
Forsyth County - Hightower Rd MSWLF
June 2019 Sampling Event**

Monitoring Well ID	Total Well Depth (ft BTOC)	TOC Elevation (ft MSL)	Depth to Water Level (ft BTOC)	Groundwater Elevation (ft MSL)
PHASE II - IV WELLS				
GWC-10A	54.30	1066.45	18.18	1048.27
GWC-11	46.80	1054.08	30.90	1023.18
GWC-12	40.06	1038.06	26.26	1011.80
GWC-13A	48.44	1038.09	27.66	1010.43
GWC-13	44.95	1090.82	27.14	1063.68
GWC-14	28.37	1089.49	19.87	1069.62
GWC-14A	64.75	1089.32	19.48	1069.84
GWC-14R	93.61	1078.60	11.95	1066.65
GWC-15	62.84	1125.68	52.64	1073.04
GWC-16A	51.05	1136.49	49.85	1086.64
GWC-17	21.59	1107.78	14.32	1093.46
GWC-18	52.70	1094.87	38.08	1056.79
GWC-19R	39.87	1105.79	25.67	1080.12
GWC-22	35.05	1079.01	20.68	1058.33
GWC-23	32.22	1079.06	15.50	1063.56
GWC-23A	61.67	1079.10	25.51	1053.59
GWC-24	44.09	1102.32	34.13	1068.19
AMW-1	180.70	1130.04	56.04	1074.00
AMW-2	150.00	1101.96	38.69	1063.27
AMW-3	28.50	1041.09	9.52	1031.57
AMW-4	180.00	1040.09	4.09	1036.00
AMW-5	23.06	1049.32	8.07	1041.25
AMW-11R	58.10	1053.63	7.44	1046.19
AMW-12	19.56	1056.85	6.93	1049.92
AMW-12R	46.43	1056.34	9.25	1047.09
AMW-13	36.18	1093.09	29.07	1064.02
AMW-14	21.70	1052.73	9.76	1042.97

Notes: Depths to water measured on June 10, 2019.
Acronyms: ft BTOC = feet below top of casing
ft MSL = feet Mean Sea Level

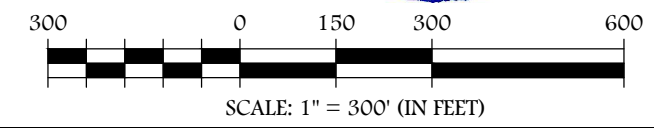
LEGEND

- APPROXIMATE PHASE BOUNDARY
- 1140 TOPOGRAPHIC CONTOUR
- - - PROPERTY LINE
- ~~~~~ TREELINE
- == ROAD
- GWA-1 1130.03 GROUNDWATER MONITORING WELL ELEVATION IN FEET MEAN SEA LEVEL
- ▲ SWA-4 SURFACE WATER SAMPLE LOCATIONS
- ⊠ MM-1R METHANE MONITORING POINT
- PH1-MV04 EXTRACTION POINT WITH ACTIVE FLARE
- 1080 GROUNDWATER POTENTIOMETRIC CONTOUR (ELEVATION IN FEET MEAN SEA LEVEL)
- GROUNDWATER FLOW DIRECTION
- - - METHANE VENT TRENCH

**Summary of Methane Well Details
Hightower Road Landfill
Forsyth County, GA**

Well ID	Total Depth (ft BGS)	Screen Interval (ft BGS)
MM-1R	30.0	10-30
MM-2	20.0	10-20
MM-3	20.0	10-20
MM-4	20.0	10-20
MM-5	20.0	10-20
MM-6	20.0	10-20
MM-7	20.0	10-20
MM-8	10.0	5-10
MM-9	20.0	10-20
MM-10	35.0	25-35
MM-11	20.0	10-20
MM-13	31.5	20.4-30.4
MM-14	35.8	24.7-34.7
MM-15	41.5	30.4-40.4

Note: ft BGS = feet below ground surface



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PROJECT:
FORSYTH COUNTY HIGHTOWER ROAD LANDFILL

FORSYTH COUNTY, GA

FORSYTH COUNTY



FORSYTH COUNTY GOVERNMENT
110 E. MAIN STREET, SUITE 210
CUMMING, GA 30040
770-781-2101

Drawn by: RW Checked by: CA

PROJECT NUMBER:
G020-113
July 2019

**POTENTIOMETRIC SURFACE MAP
JUNE 2019**

FIGURE **1**