DENR USE ONLY: ☐ Paper Report ☐ Electronic Data - Email CD (data loaded: Yes / No) Doc/Event #:

NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Instructions:

- **Prepare one form for each individually monitored unit.**
- **Please type or print legibly.**
- Attach a notification table with values that attain or exceed NC 2L groundwater standards or NC 2B surface water standards. The notification must include a preliminary analysis of the cause and significance of each value. (e.g. naturally occurring, off-site source, pre-existing condition, etc.).
- Attach a notification table of any groundwater or surface water values that equal or exceed the reporting limits.
- Attach a notification table of any methane gas values that attain or exceed explosive gas levels. This includes any structures on or nearby the facility (NCAC 13B .1629 (4)(a)(i).
- Send the original signed and sealed form, any tables, and Electronic Data Deliverable to: Compliance Unit, NCDENR-DWM, Solid Waste Section, 1646 Mail Service Center, Raleigh, NC 27699-1646.

Solid Waste Monitoring Data Submittal Information

Name of entity submitting data (laboratory, consultant, facility owner):

Altamont Environmental, Inc.

Contact for questions about data formatting. Include data preparer's name, telephone number and E-mail address:

Name: Stu Ryman Phone: 828-381-3350

E-mail: sryman@altamontenvironmental.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
International Paper Closed Landfill 5	Beaverdam Road Canton, North Carolina 28716	44-01	.0500	July 23, 2013

Environmental Status: (Check all that apply)

☐ Initial/Background Monitoring ☒ Detection Monitoring ☐ Assessment Monitoring ☐ Corrective Action

Type of data submitted: (Check all that apply)

☒ Groundwater monitoring data from monitoring wells
☐ Groundwater monitoring data from private water supply wells
☐ Leachate monitoring data
☒ Surface water monitoring data
☐ Methane gas monitoring data
☐ Corrective action data (specify) _____
☐ Other(specify) _____

Notification attached?

☐ No. No groundwater or surface water standards were exceeded.
☒ Yes, a notification of values exceeding a groundwater or surface water standard is attached. It includes a list of groundwater and surface water monitoring points, dates, analytical values, NC 2L groundwater standard, NC 2B surface water standard or NC Solid Waste GWPS and preliminary analysis of the cause and significance of any concentration.
☐ Yes, a notification of values exceeding an explosive methane gas limit is attached. It includes the methane monitoring points, dates, sample values and explosive methane gas limits.

Certification

To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. Furthermore, I have attached complete notification of any sampling values meeting or exceeding groundwater standards or explosive gas levels, and a preliminary analysis of the cause and significance of concentrations exceeding groundwater standards. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

Stu Ryman — Professional Geologist — (828) 281-3350

Facility Representative Name (Print) — Title — (Area Code) Telephone Number

Signature — 9.25.13 Date

Affix NC Licensed/ Professional Geologist Seal

NORTH CAROLINA LICENSED SEAL 1654 GEOLOGIST STUART A. RYMAN

231 Haywood Street, Asheville, North Carolina 28801

Facility Representative Address

#C-2185

NC PE Firm License Number (if applicable effective May 1, 2009)

Revised 6/2009

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September 25, 2013

Mr. Ervin Lane
North Carolina Department of Environment and Natural Resources
Division of Waste Management
Solid Waste Section
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Subject: Annual Groundwater and Surface Water Sampling Results—July 2013
International Paper Company—Closed Landfill 5, Permit No. 44-01
Canton, North Carolina

Dear Mr. Lane:

This letter report summarizes the groundwater and surface water sampling results from the annual sampling event for the International Paper Company closed Landfill 5 (Permit #44-01) located in Canton, North Carolina. This letter describes the methods, findings, and conclusions of the groundwater and surface water sampling event that took place on July 23, 2013.

Methods

On July 23, 2013, Altamont Environmental, Inc. (Altamont) performed the annual groundwater and surface water sampling event at the Closed International Paper Company (IP) Landfill 5. A Site Location Map is included as Figure 1.

Altamont personnel collected seven groundwater samples (including one duplicate sample) from monitoring wells MW-5B1, MW-5B2, MW-5B3, MW-5C1, MW-5C2, and MW-5C3 (Figure 2). Prior to collecting groundwater samples from the monitoring wells, the wells were opened and allowed to equilibrate and the static water level was measured and recorded for each well. The monitoring wells were then purged and sampled using low-flow techniques in accordance with the procedures described in *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*, United States Environmental Protection Agency (EPA), Groundwater Issues (April 1996). During purging: pH, specific conductivity, dissolved oxygen, oxidation-reduction potential (ORP), turbidity, and temperature were measured and recorded approximately every three minutes. Well purging continued until these parameters stabilized for three consecutive readings. The required stabilization criteria are as follows:

- pH values within +/- 0.1 pH unit
- Specific conductivity values within +/- 3 percent
- Temperature, dissolved oxygen, and turbidity values within +/- 10 percent
- ORP values within +/- 10 millivolts

Stabilized field parameter readings are shown in Table 1. At that time, a groundwater sample was collected by a technician wearing a new pair of non-reactive nitrile gloves and placed directly into laboratory-supplied sample containers.

Surface water samples, BD-UP and BD-DOWN, were collected at designated locations from Beaverdam Creek, which flows in a southwesterly direction between the Landfill 5B cell and the Landfill 5C cell (Figure 2). Surface water sample BD-UP is considered representative of surface water quality upstream of the landfill; surface water sample BD-DOWN is considered representative of surface water quality downstream from the landfill. Surface water samples were collected by a technician wearing a new pair of non-reactive nitrile gloves and placed directly into laboratory-supplied sample containers. As with groundwater sampling: temperature, pH, specific conductivity, dissolved oxygen, ORP, and turbidity were measured and recorded at each surface water sampling location prior to sample collection (Table 1). Field parameters and additional observations pertaining to surface water quality at the landfill are provided on sampling logs, which are included in Appendix A. The instrument calibration form for the monitoring event is also included in Appendix A.

In accordance with the letter included in Appendix B, dated July 18, 2003 from the North Carolina Department of Environment and Natural Resources (DENR) Solid Waste Section to IP, Altamont is reporting analytical results for the following list of analytes for this annual sampling event:

1. Cadmium
2. Iron
3. Total Dissolved Solids (TDS)
4. Chloride
5. Sulfate

The laboratory analytical results and the field parameters for the groundwater and surface water samples collected at the landfill are listed in Table 1, in the Electronic Data Deliverable (EDD) format specified by the Solid Waste Section of the Division of Waste Management (DWM) in a memorandum dated October 27, 2006. Table 2 presents all analytical results that were above the applicable Solid Waste Section Limits (SWSLs). Table 3 presents only the concentrations of analytes detected in groundwater and/or surface water samples that exceeded their respective Title 15A, North Carolina Administrative Code (NCAC), Subchapter 2L Groundwater Quality Standard (2L standards) (including Interim Maximum Allowable Concentrations [IMACs], if applicable), groundwater protection standards (GWPSs), or Title 15A, NCAC, Subchapter 2B Surface Water Quality Standard (2B standards). Table 4 presents current and historical groundwater data for pH and the five analytes mentioned above.

Groundwater and surface water samples were analyzed by Pace Analytical Services (Pace), a certified North Carolina laboratory. Acidity or basicity (pH) readings were collected by Altamont, a North Carolina certified field laboratory. Table 5 presents the current and historical surface water data for pH and the five analytes analyzed by the laboratory. The laboratory analytical report issued by Pace and chain-of-custody documentation are included in Appendix C.

One blind duplicate groundwater sample (DUP-1) was collected from monitoring well MW-5C1 and was also analyzed by Pace. The variation between the two groundwater samples collected from monitoring well MW-5C1 is minimal and is documented in Table 1.

Findings

The following information summarizes the results of the water quality monitoring event:

Groundwater:

- Groundwater samples collected from MW-5B1, MW-5B2, MW-5B3, MW-5C1, MW-5C2, and MW-5C3 exhibit a pH of less than 6.5 standard units (SU), which is the lower limit of the 2L standard range of 6.5 SU to 8.5 SU.

- Cadmium was only detected in one well (MW-5B3) and the concentration exceeded the 2L standard (0.002 milligrams per liter [mg/L]). Cadmium was last detected in MW-5B3 in July 2009. The concentration at that time was higher than the recent detection.
- Iron concentrations exceeded the 2L standard (0.3 mg/L) in samples collected from monitoring wells MW-5B1, MW-5B2, MW-5B3, and MW-5C3 at concentrations of 32.6, 22.8, 57.8, and 0.306 mg/L, respectively. Iron was also detected, but did not exceed the 2L standard in the groundwater sample collected from monitoring well MW-5C2.
- TDS concentrations were detected but did not exceed the 2L standard of 500 mg/L in groundwater samples collected from all monitoring wells MW-5B1, MW-5B2, MW-5B3, MW-5C1, MW-5C2, and MW-5C3.
- Chloride concentrations were detected but did not exceed the 2L standard of 250 mg/L in groundwater samples collected from all monitoring wells MW-5B1, MW-5B2, MW-5B3, MW-5C1, MW-5C2, and MW-5C3. The concentration detected in MW-5B2 (8.6 mg/L) showed a significant decrease since the previous event in July 2012 (107 mg/L).
- Sulfate concentrations were detected but did not exceed the 2L standard of 250 mg/L in groundwater samples collected from monitoring wells MW-5B2, MW-5B3, MW-5C1, MW-5C2, and MW-5C3. Sulfate was not detected in the groundwater sample collected from monitoring well MW-5B1.

Surface Water:

- The pH values for surface water samples BD-UP and BD-DOWN were within the acceptable range of 6.0 SU to 9.0 SU.
- Cadmium was not detected in either of the surface water samples.
- Iron concentrations were detected in both surface water samples and exceeded the 2B standard for iron (1.0 mg/L) in samples collected from both surface water sample points, BD-UP (1.16 mg/L) and BD-DOWN (1.27 mg/L).
- TDSs concentrations were detected but did not exceed the 2B standard of 500 mg/L in samples collected from either of the surface water sample points, BD-UP or BD-DOWN.
- Chloride and sulfate were both detected in the surface water samples collected from surface water sampling points BD-UP and BD-DOWN. Concentrations of these constituents did not exceed the 2B standard in either surface water sampling location.

Conclusions

A comparison of current groundwater and surface water analytical results to results recorded annually since 1991 reveals that with the exception of pH and iron, the groundwater and surface water sample results appear to show a general trend toward water quality improvement.

The pH levels that were recorded in groundwater purged from the monitoring wells were outside of the range acceptable by the 2L standard, for all of the wells. Please note that groundwater with a pH less than 6.5 in unconsolidated, surficial aquifers, is common in this region according to the North Carolina Geological Survey, *A Hydrogeochemical Atlas of North Carolina,* (July 1993). Additionally, contents of the landfill, which are assumed to be a mixture of paper mill waste and municipal waste water treatment plant waste, likely, have a pH that is higher than the upper limit of the 2L standard for pH and would not be expected to cause a reduction of pH in groundwater.

The pH levels recorded in both surface water samples collected at BD-UP and BD-DOWN were within the range acceptable by the 2B standard.

Concentrations of iron that were detected in groundwater samples collected from the monitoring wells that exceed the 2L standard appear to be decreasing over time, with the exception of concentrations detected in groundwater samples collected from monitoring well MW-5B1, MW-5B3, and MW-5C3. Please note that monitoring well MW-5B1 is upgradient of the site and is likely representative of background water quality and may indicate that iron concentrations in groundwater may be naturally higher in that area of the landfill.

Samples collected from monitoring wells MW-5B1, MW-5B2, and MW-5B3 exhibited higher turbidity values than the other wells associated with the landfill. These high turbidity values indicate that the samples contained solid particles from the formation in which the monitoring wells are screened. Naturally occurring metals tend to adsorb to the surfaces of these solid particles. The concentrations of iron detected in these groundwater samples may represent both the dissolved iron in the groundwater and the iron that was adsorbed to the solid particles in the sample, potentially resulting in false positive results.

Iron concentrations present in both surface water samples exceeded the 2B standard. The concentration of iron detected in the surface water sample downstream location (BD-DOWN) was higher than the concentration of iron detected in the sample collected upstream of the site (BD-UP). Both surface water samples contained elevated turbidity values which may represent false positive results based on the groundwater discussion above.

The next water quality sampling event for the Closed International Paper Company Landfill 5 is scheduled for July 2014.

Altamont appreciates your assistance with this project. Please feel free to contact me if you have any questions or need additional information.

Sincerely,

ALTAMONT ENVIRONMENTAL, INC.

Stuart A. Ryman, P.G.

Enclosures:
- Figure 1—Site Location Map
- Figure 2—Groundwater and Surface Water Sampling Locations
- Table 1—Analytical Data and Field Parameters
- Table 2—Solid Waste Section Limit Exceedance Notification
- Table 3—Water Quality Standard Limit Exceedance Notification
- Table 4—Historic Groundwater Quality Results
- Table 5—Historic Surface Water Quality Results
- Appendix A—Altamont Sampling Logs and Equipment Documentation and Calibration Data Sheet
- Appendix B—July 18, 2003 Letter from the North Carolina Department of Environment and Natural Resources
- Appendix C—Laboratory Analytical Report and Chain of Custody

cc: Mr. Tom Richardson, International Paper Company

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Low-Flow Sampling Log

PROJECT NAME: 1Q LFS GW Sampling
PROJECT NUMBER: 2055
LOCATION: Canton, NC
DATE: 8:00 pt cloudy
SAMPLING PERSONNEL: P Brooks
WEATHER: 7/23/13

Well ID: 5B1
Screen Interval: 30-40 bgs
Depth to Water: 7.99 toc
Stickup: 1.0
Depth of Pump Intake: 36.0 toc
Drawdown Set: 8.99 toc

Arrive at Well: 1553
Start Time: 1602
Sample Time: 1626
Finish Sample Time: 1636
Leave Well: 1649
Well Diameter: 4"

COMMENTS: orange color to water

Time	DTW (feet)	Temp (°C)	Specific Cond. (µS)	DO (mg/L)	pH (S.U.) report to 0.1 S.U.	ORP (mV)	Turbidity (NTU)
1602	8.29	15.17	37	5.39	6.86	91.5	519.6
1605	8.99	15.27	36	3.51	6.59	104.1	265.0
1608	8.99	14.56	36	3.15	6.48	91.9	179.6
1611	8.99	15.79	38	3.00	6.48	81.5	169.4
1614	8.99	13.95	35	2.17	6.24	84.9	227.8
1617	8.99	13.96	35	3.10	6.24	85.4	242.9
1620	8.99	13.86	35	3.19	6.25	85.7	237.6
1623	8.99	13.71	35	3.17	6.26	85.9	251.7
1626	8.99	13.69	35	3.15	6.25	86.7	262.4

Time between recharge during sample collection: 5 sec @ 30%

Sampling Personnel Signature: [signature]
Date: 7/23/13

NOTES:

STABILIZATION
3 successive readings, 3 minutes apart:
within +/- 10% DO and turbidity; +/- 3% Conductivity; +/- 0.1 pH unit; +/- 10 mV for ORP
from *EPA - Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures*, April 1996

bgs = below ground surface
toc = top of casing
°C = degrees Celsius
µS = micro-Siemen
DO = dissolved oxygen
mg/L = milligrams per liter
Samples are analyzed immediately upon collection.

S.U. = standard units
ORP = oxidation reduction potential
mV = millivolt
NTU = nephelometric turbidity units

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Low-Flow Sampling Log

PROJECT NAME: IP LFS GW Sampling
PROJECT NUMBER: 2055
LOCATION: Canton, NC
DATE: 7/23/13
SAMPLING PERSONNEL: P Brooks
WEATHER: 80s pt cloudy

Well ID: 5B2
Screen Interval: 10-20 bgs
Depth to Water: 2.92 toc
Stickup: 0.0
Depth of Pump Intake: 16.0 toc
Drawdown Set: 3.42 toc

Arrive at Well: ~~1425~~ 1435
Start Time: 1444
Sample Time: 1520
Finish Sample Time: 1528
Leave Well: 1535
Well Diameter: 4"

COMMENTS:

Time	DTW (feet)	Temp (°C)	Specific Cond. (µS)	DO (mg/L)	pH (S.U.) report to 0.1 S.U.	ORP (mV)	Turbidity (NTU)
~~1444~~	2.99	15.37	167	1.20	6.33	26.0	830.5
1447	3.21	14.81	166	0.39	6.26	23.2	146.5
1450	3.42	14.72	167	0.29	6.23	17.4	114.3
1453	3.42	14.67	166	0.27	6.23	14.5	75.79
1456	3.42	14.56	171	0.21	6.22	2.2	59.14
1459	3.42	14.64	173	0.21	6.25	-1.7	73.61
1502	3.42	14.55	178	0.18	6.26	-7.2	32.89
1505	3.42	14.42	180	0.16	6.28	-11.5	35.60
1508	3.42	14.40	184	0.17	6.27	-12.4	43.26
1511	3.42	14.31	196	0.14	6.31	-23.1	40.17
1514	3.42	14.29	198	0.13	6.32	-24.7	38.70
1517	3.42	14.28	199	0.12	6.33	-24.9	41.25
1520	3.42	14.25	200	0.13	6.33	-24.7	40.10

Time between recharge during sample collection: 5 sec @ 30PM

Sampling Personnel Signature: [signature]
Date: 7/23/13

NOTES:

STABILIZATION
3 successive readings, 3 minutes apart:
within +/- 10% DO and turbidity; +/- 3% Conductivity; +/- 0.1 pH unit; +/- 10 mV for ORP
from EPA - Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures, April 1996

bgs = below ground surface
toc = top of casing
°C = degrees Celsius
µS = micro-Siemen
DO = dissolved oxygen
mg/L = milligrams per liter
S.U. = standard units
ORP = oxidation reduction potential
mV = millivolt
NTU = nephelometric turbidity units

Samples are analyzed immediately upon collection.

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Low-Flow Sampling Log

PROJECT NAME: IP Cardinal Groundwater Sampling PROJECT NUMBER: 2055
LOCATION: Canton, NC DATE: 7/23/13
SAMPLING PERSONNEL: P Brooks WEATHER: 80s pt cloudy

Well ID:	5B3	Arrive at Well:	1240
Screen Interval:	55-65 bgs	Start Time:	1249
Depth to Water:	5.10 toc	Sample Time:	1414
Stickup:	2.0	Finish Sample Time:	1423
Depth of Pump Intake:	62.0 toc	Leave Well:	1432
Drawdown Set:	6.10 toc	Well Diameter:	4"

COMMENTS: Small orange particulate matter at first, then cleared up

Time	DTW (feet)	Temp (°C)	Specific Cond. (µS)	DO (mg/L)	pH (S.U.) report to 0.1 S.U.	ORP (mV)	Turbidity (NTU)
1249	4.85	15.86	216	3.32	6.38	-43.1	137.4
1252	5.12	14.31	248	3.29	6.50	-69.1	117.2
1255	5.40	13.68	242	1.75	6.54	-70.5	127.0
1258	5.81	13.83	240	1.40	6.53	-71.9	101.9
1335	6.10	14.34	253	0.43	6.56	-67.8	415.5
1338	6.10	13.93	252	0.36	6.59	-74.8	403.1
1341	6.10	13.88	248	0.27	6.61	-80.3	327.8
1344	6.10	14.92	253	0.13	6.64	-86.3	314.4
1347	6.10	15.33	240	0.15	6.50	-81.6	306.5
1350	6.10	14.62	224	0.14	6.48	-57.6	280.7
1353	6.10	14.56	222	0.16	6.49	-59.2	191.4
1356	6.10	13.99	218	0.18	6.45	-53.0	190.9
1359	6.10	13.86	217	0.12	6.44	-52.2	127.4
1402	6.10	13.92	219	0.12	6.44	-52.5	91.87
1405	6.10	14.02	218	0.12	6.45	-52.7	90.60
1408	6.10	14.05	218	0.11	6.44	-52.0	90.92
1411	6.10	14.04	217	0.11	6.43	-51.9	85.90
1414	6.10	14.18	219	0.11	6.42	-51.5	80.92

had to take out pump end

Time between recharge during sample collection: 1 min 30 sec @ 3CPM

Sampling Personnel Signature: Date: 7/23/13

NOTES:

STABILIZATION
3 successive readings, 3 minutes apart:
within +/- 10% DO and turbidity; +/- 3% Conductivity; +/- 0.1 pH unit; +/- 10 mV for ORP
from *EPA - Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures*, April 1996

bgs = below ground surface
toc = top of casing
°C = degrees Celsius
µS = micro-Siemen
DO = dissolved oxygen
mg/L = milligrams per liter
Samples are analyzed immediately upon collection.

S.U. = standard units
ORP = oxidation reduction potential
mV = millivolt
NTU = nephelometric turbidity units

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Low-Flow Sampling Log

PROJECT NAME: IP LF5 GW Sampling
PROJECT NUMBER: 2055
LOCATION: Canton, NC
DATE: 7/23/13
SAMPLING PERSONNEL: P Brooks
WEATHER: 80s pt cloudy

Well ID: SC7
Screen Interval: 15-25 bgs
Depth to Water: 3.34 toc
Stickup: 1.0 ft
Depth of Pump Intake: 21 toc
Drawdown Set: 3.91 toc

Arrive at Well: 1046
Start Time: 1051
Sample Time: 1121
Finish Sample Time: 1132
Leave Well: 1136
Well Diameter: 10"

COMMENTS: bad access (overgrown); recharge very slow

Time	DTW (feet) 3.40	Temp (°C)	Specific Cond. (µS)	DO (mg/L)	pH (S.U.) report to 0.1 S.U.	ORP (mV)	Turbidity (NTU)
1051	~~17.38~~	17.38	305	7.46	6.46	121.7	0.00
1054	3.41	18.60	312	7.02	6.37	119.2	0.00
1057	3.41	15.48	290	2.46	6.14	125.8	0.00
1100	3.45	14.60	283	2.06	6.02	130.8	0.00
1103	3.64	15.34	286	2.01	6.10	123.5	0.00
1106	3.71	15.06	284	2.28	6.22	116.4	0.00
1109	3.91	14.27	279	2.16	6.13	122.3	0.00
1112	3.94	14.38	284	1.98	6.15	121.3	0.00
1115	3.94	14.67	289	1.97	6.23	114.9	0.00
1118	3.94	15.21	290	2.03	6.25	114.1	0.00
1121	3.94	15.30	286	2.11	6.25	114.4	0.00

Time between recharge during sample collection: 2 min 30 sec @ 3GPM

Sampling Personnel Signature: [signature] Date: 7/23/13

NOTES:

STABILIZATION
3 successive readings, 3 minutes apart:
within +/- 10% DO and turbidity; +/- 3% Conductivity; +/- 0.1 pH unit; +/- 10 mV for ORP
from *EPA - Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures*, April 1996

bgs = below ground surface
toc = top of casing
°C = degrees Celsius
µS = micro-Siemen
DO = dissolved oxygen
mg/L = milligrams per liter
S.U. = standard units
ORP = oxidation reduction potential
mV = millivolt
NTU = nephelometric turbidity units

Samples are analyzed immediately upon collection.

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Low-Flow Sampling Log

PROJECT NAME: IP LF5 GW Sampling
PROJECT NUMBER: 2055
LOCATION: Canton, NC
DATE: 7/23/2013
SAMPLING PERSONNEL: P. Brooks
WEATHER: 80's pt cloudy

Well ID: SC3
Screen Interval: ~~19-24~~ 14-24 bgs
Depth to Water: 0.24 * AF toc
Stickup: 0.00
Depth of Pump Intake: 19.0 toc
Drawdown Set: 1.24 toc

Arrive at Well: 1140
Start Time: 1148
Sample Time: 1215
Finish Sample Time: 1230
Leave Well: 1238
Well Diameter: 6"

COMMENTS: DTW is very shallow; overflowed a little with pump displacement; very low recharge

Time	DTW (feet)	Temp (°C)	Specific Cond. (µS)	DO (mg/L)	pH (S.U.) report to 0.1 S.U.	ORP (mV)	Turbidity (NTU)
1148	0.64	16.59	~~35~~ 358	6.61	6.03	163.8	0.00
1151	0.80	14.10	340	3.12	5.62	192.1	0.00
1154	1.03	14.04	339	2.91	5.58	184.1	0.00
1157	1.24	13.93	338	2.81	5.57	176.7	0.00
1200	1.24	13.87	337	2.74	5.56	175.2	0.00
1203	1.24	14.10	338	2.40	5.57	169.2	0.00
1206	1.24	15.18	360	2.71	5.56	165.2	0.00
1209	1.24	15.06	349	2.81	5.57	167.2	0.00
1212	1.24	14.79	346	2.71	5.56	168.0	0.00
1215	1.24	14.85	342	2.69	5.55	169.7	0.00

Time between recharge during sample collection: 3 min @ 3CPM

Sampling Personnel Signature: [signature] Date: 7/23/13

NOTES:

STABILIZATION
3 successive readings, 3 minutes apart:
within +/- 10% DO and turbidity; +/- 3% Conductivity; +/- 0.1 pH unit; +/- 10 mV for ORP
from *EPA - Low-Flow (Minimal Drawdown) Groundwater Sampling Procedures*, April 1996

bgs = below ground surface
toc = top of casing
°C = degrees Celsius
µS = micro-Siemen
DO = dissolved oxygen
mg/L = milligrams per liter
S.U. = standard units
ORP = oxidation reduction potential
mV = millivolt
NTU = nephelometric turbidity units

Samples are analyzed immediately upon collection.

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Surface Water Sampling Log

PROJECT NAME: IP LF5 GW Sampling
DATE: 7/23/13
PROJECT NUMBER: 2055
WEATHER: 80s pt. cloudy
SAMPLING PERSONNEL: P Brooks

SAMPLE NAME: BD-DOWN

COMMENTS: taken downstream of landfill near SC3 as indicated on map

SAMPLE METHOD: GRAB SYRINGE PUMP BAILER-DISP. OTHER:

TIME	TEMP (°C)	SPECIFIC COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH (S.U.) *report to 0.1 S.U.*	OXIDATION REDUCTION POTENTIAL (mV)	TURBIDITY (NTU)	COMMENTS
1537	20.36	69	9.48	7.08	20.8	25.99	

SAMPLING CONTAINER	NUMBER OF CONTAINERS	REQUESTED ANALYSIS
500 mL PLASTIC	1	TDS
250 mL PLASTIC	2	Metals by 200.7, Sulfate
125 mL PLASTIC		
40 mL GLASS		
1 L GLASS		
OTHER		

VEGETATION: lots ACCESS: bad

Sampling Personnel Signature: Date: 7/23/13

Notes: °C = degrees Celsius
µS/cm = micro-Siemen per cubic centimeter
mg/L = milligrams per liter
S.U. = standard units
mV = millivolt
NTU = nephelometric turbidity units
Samples are analyzed immediately upon collection.

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Surface Water Sampling Log

PROJECT NAME: IP LFS GW Sampling
DATE: 7/23/13
PROJECT NUMBER: 2055
WEATHER: 80s cloudy
SAMPLING PERSONNEL: P Brooks

SAMPLE NAME: BD-UP

COMMENTS: collected under bridge by landfill (upstream) as indicated on map

SAMPLE METHOD: GRAB SYRINGE PUMP BAILER-DISP. OTHER:

TIME	TEMP (°C)	SPECIFIC COND. (µS/cm)	DISSOLVED OXYGEN (mg/L)	pH (S.U.) *report to 0.1 S.U.*	OXIDATION REDUCTION POTENTIAL (mV)	TURBIDITY (NTU)	COMMENTS
1655	20.53	67	9.29	6.98	80.1	6.57	

SAMPLING CONTAINER	NUMBER OF CONTAINERS	REQUESTED ANALYSIS
500 mL PLASTIC	1	TDS
250 mL PLASTIC	2	Metals by 200.7, Sulfate
125 mL PLASTIC		
40 mL GLASS		
1 L GLASS		
OTHER		

VEGETATION: bad ACCESS: bad

Sampling Personnel Signature: [signature] Date: 7/23/13

Notes: °C = degrees Celsius
µS/cm = micro-Siemen per cubic centimeter
mg/L = milligrams per liter
S.U. = standard units
mV = millivolt
NTU = nephelometric turbidity units
Samples are analyzed immediately upon collection.

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Equipment Documentation & Instrument Calibration Data Sheet

Project Name: IP Landfill S GW Sampling
Project Number: 2055
Project Location: Canton, NC

Calibration Documentation
Person Conducting Calibration: P Brooks
Date of Calibration: 7/23/13
Date of Field Measurements: 7/23/13

Equipment Documentation

Equipment or meters used to take measurements (e.g. water level meters, survey equipment, etc.):

Equipment Type	Serial Number	Brand	Date of Use
150-ft Water Level	26154	Solinist	
150-ft Water Level	22754	Solinist	
150-ft Water Level	150	Testwell	
150-ft Drawdown	MP30-1527	QED	7/23/13
Other			

Micro TPW Turbidity Meter

Calibration Standards Exp Date	Instrument Serial #	Instrument Reading		
		0.02 NTU	10.0 NTU	1000 NTU
8/13	200601045	Initial: 0.00	Initial: 9.61	Initial: 1011
		Cal: 0.02	Cal: 10.0	Cal: 1000
		Time: 824	Time: 822	Time: 820

YSI 556 Multiparameter Meter

Instrument Serial Number	12L101057						
Instrument Readings =1012.2 mb							Calibration Expiration Date
Dissolved Oxygen	Initial: 7.44	Cal: 8.31	mmHg: 759.21	Time: 835			NA
pH 7 S.U. *report to 0.1 S.U.*	Initial: 7.00	pHmV:	Cal: 7.00	pHmV:	Time: 805		3/14 5/14
pH 4 S.U. *report to 0.1 S.U.*	Initial: 3.96	pHmV:	Cal: 4.00	pHmV:	Time: 809		3/14
pH 10 S.U. *report to 0.1 S.U.*	Initial: 10.03	pHmV:	Cal: 10.01	pHmV:	Time: 824		5/14
QC* pH 7 S.U. *report to 0.1 S.U.*	AM Time: 852	Meas: 6.98	Mid Day Time:	Check:	PM Time:	Check:	
Spec. Cond. 1413/447/84/23 µS/cm**	Initial: 1393	Cal: 1413	Time: 759				
1413 QC* ~~84~~ µS/cm	AM Time: 850	Meas: 1399	Mid Day Time:	Check:	PM Time:	Check:	
ORP 240 mV	Initial: 239.4	Cal:	Time: 240.0	Time 846			10/17

Comments:
Signature: [signature] Date: 7/23/13

Notes:
1. Electronic equipment calibrated according to the manufacturer's operation manual.
2. Specific Conductivity should be calibrated according to values representative of historic range.
3. Order of Calibration is as follows : Specific Conductivity, pH 7, pH 4, pH 10, ORP, QC checks.
4. QC Acceptable Ranges: pH +/- 0.1 S.U. and Specific Conductivity 10% of the true value. If readings are out of these ranges, meter needs to be recalibrated.
5. * Indicates that a QC check must be performed in the morning, afternoon, and the end of the day, or every four hours.
6. ** Indicates to choose a Specific Conductivity buffer of 1413, 447, 84, or 23 mS which is closest to historical readings from the project location.

North Carolina
Department of Environment and Natural Resources
Division of Waste Management

NCDENR

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Director

July 18, 2003

Mr. Thomas C. Richardson
International Paper Corporation
6400 Poplar Ave.
Memphis, Tn. 38197

RE: Water Quality Monitoring Requirements - International Paper Landfill No. 5 - Canton, NC

Dear Mr. Richardson:

The request to modify water quality monitoring requirements at the International Paper Corporation Landfill No. 5 located at Canton, NC has been reviewed. The request, dated July 2, 2003, was made by Altamont Environmental, Inc. on behalf of International Paper. Proposed modifications included a reduction in the sampling parameter list and sampling frequency.

Based on the monitoring results for the facility, the Solid Waste Section conditionally approves some changes in the current monitoring plan. Beginning in 2004, monitoring well and surface water samples shall be sampled on an annual basis for the following list of parameters:

1. Total Iron;
2. Total Cadmium;
3. Chloride;
4. Sulfate;
5. Total Dissolved Solids.

In addition, the field parameters of temperature, pH, and specific conductivity must be measured for each sample during each sampling event.

The following parameters will be removed from monitoring requirements: (1.) Calcium, (2.) Magnesium, (3.) Manganese, (4.) Potassium, (5.) Sodium, (6.) Arsenic, (7.) Barium, (8.) Chromium, (9.) Nickel, (10.) Nitrate, (11.) Nitrite, (12.) Phenolics, (13.) Selenium, (14.) Silver, (15.) Total Organic Carbon, (16.) Zinc, (17.) Copper, (18.) Fluoride, (19.) Lead, and (20.) Mercury.

If monitoring data from the revised list of parameters indicate a decline in water quality or if conditions change at the site, the Solid Waste Section reserves the right to reinitiate semiannual monitoring for the full list of parameters. If there are violations of groundwater standards, an assessment with possible corrective action may be required.

If you have any questions, please call me at (919) 733-0692, extension 257.

Sincerely,

Larry Rose

Larry Rose
Environmental Compliance
Solid Waste Section

cc: Mark Poindexter - Head, Field Operations Branch
Brent Rockett - Western District Supervisor
Al Hetzell - Waste Management Specialist
Cheryl Marks - Hydrogeologist
James McElduff - Altamont Environmental, Inc.

1646 Mail Service Center, Raleigh, North Carolina 27699-1646
Phone: 919-733-0692 \ FAX: 919-733-4810 \ Internet: www.enr.state.nc.us/

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August 12, 2013

Mr. Evan Yurkovich
Altamont Environmental
231 Haywood St.
Asheville, NC 28801

RE: Project: IP LF 5 7/23
Pace Project No.: 92166268

Dear Mr. Yurkovich:
Enclosed are the analytical results for sample(s) received by the laboratory on July 24, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Lorri Patton

Lorri Patton

lorri.patton@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Asheville Certification IDs
2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

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SAMPLE ANALYTE COUNT

Project: IP LF 5 7/23
Pace Project No.: 92166268

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92166268001	5B1	EPA 200.7	JMW	2	PASI-A
		SM 2540C	ANS	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-Cl-E	DMN	1	PASI-A
92166268002	5B2	EPA 200.7	JMW	2	PASI-A
		SM 2540C	ANS	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-Cl-E	DMN	1	PASI-A
92166268003	5B3	EPA 200.7	JMW	2	PASI-A
		SM 2540C	ANS	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-Cl-E	DMN	1	PASI-A
92166268004	5C1	EPA 200.7	JMW	2	PASI-A
		SM 2540C	ANS	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-Cl-E	DMN	1	PASI-A
92166268005	5C2	EPA 200.7	JMW	2	PASI-A
		SM 2540C	ANS	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-Cl-E	DMN	1	PASI-A
92166268006	5C3	EPA 200.7	JMW	2	PASI-A
		SM 2540C	ANS	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-Cl-E	DMN	1	PASI-A
92166268007	DUP 1	EPA 200.7	JMW	2	PASI-A
		SM 2540C	ANS	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-Cl-E	DMN	1	PASI-A
92166268008	BD-UP	EPA 200.7	JMW	2	PASI-A
		SM 2540C	ANS	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-Cl-E	DMN	1	PASI-A
92166268009	BD-DOWN	EPA 200.7	JMW	2	PASI-A
		SM 2540C	ANS	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-Cl-E	DMN	1	PASI-A

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ANALYTICAL RESULTS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Sample: 5B1 **Lab ID: 92166268001** Collected: 07/23/13 16:26 Received: 07/24/13 09:34 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Cadmium	ND	ug/L	1.0	1	07/25/13 14:55	07/29/13 18:42	7440-43-9	
Iron	**32600**	ug/L	50.0	1	07/25/13 14:55	07/29/13 18:42	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**35.0**	mg/L	25.0	1		07/26/13 10:11		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	ND	mg/L	2.0	1		07/29/13 18:39	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	**1.3**	mg/L	1.0	1		08/06/13 23:20	16887-00-6	

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ANALYTICAL RESULTS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Sample: 5B2 **Lab ID: 92166268002** Collected: 07/23/13 15:20 Received: 07/24/13 09:34 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Cadmium	ND	ug/L	1.0	1	07/25/13 14:55	07/29/13 18:45	7440-43-9	
Iron	**22800**	ug/L	50.0	1	07/25/13 14:55	07/29/13 18:45	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**131**	mg/L	25.0	1		07/26/13 10:18		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	**5.7**	mg/L	2.0	1		07/29/13 18:53	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	**8.6**	mg/L	1.0	1		08/06/13 23:22	16887-00-6	

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ANALYTICAL RESULTS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Sample: 5B3 **Lab ID: 92166268003** Collected: 07/23/13 14:14 Received: 07/24/13 09:34 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Cadmium	**3.6**	ug/L	1.0	1	07/25/13 14:55	07/29/13 18:48	7440-43-9	
Iron	**57800**	ug/L	50.0	1	07/25/13 14:55	07/29/13 18:48	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**165**	mg/L	25.0	1		07/26/13 10:18		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	**15.7**	mg/L	2.0	1		07/29/13 19:06	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	**23.9**	mg/L	1.0	1		08/06/13 23:24	16887-00-6	

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ANALYTICAL RESULTS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Sample: 5C1 **Lab ID: 92166268004** Collected: 07/23/13 10:14 Received: 07/24/13 09:34 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Cadmium	ND	ug/L	1.0	1	07/25/13 14:55	07/29/13 19:00	7440-43-9	
Iron	ND	ug/L	50.0	1	07/25/13 14:55	07/29/13 19:00	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**67.0**	mg/L	25.0	1		07/26/13 10:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	**9.2**	mg/L	2.0	1		07/29/13 19:47	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	**5.6**	mg/L	1.0	1		08/06/13 23:25	16887-00-6	

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ANALYTICAL RESULTS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Sample: 5C2 **Lab ID: 92166268005** Collected: 07/23/13 11:21 Received: 07/24/13 09:34 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Cadmium	ND	ug/L	1.0	1	07/25/13 14:55	07/29/13 19:03	7440-43-9	
Iron	**211**	ug/L	50.0	1	07/25/13 14:55	07/29/13 19:03	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**241**	mg/L	25.0	1		07/26/13 10:20		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	**4.4**	mg/L	2.0	1		07/29/13 20:01	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	**64.2**	mg/L	5.0	5		08/07/13 00:07	16887-00-6	

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ANALYTICAL RESULTS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Sample: 5C3 **Lab ID: 92166268006** Collected: 07/23/13 12:15 Received: 07/24/13 09:34 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Cadmium	ND	ug/L	1.0	1	07/25/13 14:55	07/29/13 19:06	7440-43-9	
Iron	**306**	ug/L	50.0	1	07/25/13 14:55	07/29/13 19:06	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**283**	mg/L	25.0	1		07/26/13 10:20		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	**4.5**	mg/L	2.0	1		07/29/13 20:14	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	**91.9**	mg/L	5.0	5		08/07/13 00:09	16887-00-6	

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ANALYTICAL RESULTS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Sample: DUP 1 **Lab ID: 92166268007** Collected: 07/23/13 10:14 Received: 07/24/13 09:34 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Cadmium	ND	ug/L	1.0	1	07/25/13 14:55	07/29/13 19:10	7440-43-9	
Iron	ND	ug/L	50.0	1	07/25/13 14:55	07/29/13 19:10	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**68.0**	mg/L	25.0	1		07/26/13 10:21		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	**9.2**	mg/L	2.0	1		07/29/13 20:55	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	**4.9**	mg/L	1.0	1		08/06/13 23:28	16887-00-6	

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Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Sample: BD-UP **Lab ID: 92166268008** Collected: 07/23/13 16:55 Received: 07/24/13 09:34 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Cadmium	ND	ug/L	1.0	1	07/25/13 14:55	07/29/13 19:13	7440-43-9	
Iron	**1160**	ug/L	50.0	1	07/25/13 14:55	07/29/13 19:13	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**57.0**	mg/L	25.0	1		07/26/13 10:21		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	**6.2**	mg/L	2.0	1		07/29/13 21:08	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	**2.6**	mg/L	1.0	1		08/06/13 23:29	16887-00-6	

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ANALYTICAL RESULTS

Project: IP LF 5 7/23
Pace Project No.: 92166268

Sample: BD-DOWN **Lab ID: 92166268009** Collected: 07/23/13 15:37 Received: 07/24/13 09:34 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7							
Cadmium	ND	ug/L	1.0	1	07/25/13 14:55	07/29/13 19:16	7440-43-9	
Iron	**1270**	ug/L	50.0	1	07/25/13 14:55	07/29/13 19:16	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**58.0**	mg/L	25.0	1		07/26/13 10:21		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	**6.2**	mg/L	2.0	1		07/29/13 21:22	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	**3.3**	mg/L	1.0	1		08/06/13 23:30	16887-00-6	

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QUALITY CONTROL DATA

Project: IP LF 5 7/23
Pace Project No.: 92166268

QC Batch: MPRP/13853 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET
Associated Lab Samples: 92166268001, 92166268002, 92166268003, 92166268004, 92166268005, 92166268006, 92166268007, 92166268008, 92166268009

METHOD BLANK: 1016873 Matrix: Water
Associated Lab Samples: 92166268001, 92166268002, 92166268003, 92166268004, 92166268005, 92166268006, 92166268007, 92166268008, 92166268009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	1.0	07/29/13 17:42	
Iron	ug/L	ND	50.0	07/29/13 17:42	

LABORATORY CONTROL SAMPLE: 1016874

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	500	478	96	85-115	
Iron	ug/L	5000	4730	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1016875 1016876

Parameter	Units	92165983001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Cadmium	ug/L	ND	500	500	446	468	89	94	70-130	5	
Iron	ug/L	0.18 mg/L	5000	5000	4430	4680	85	90	70-130	6	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1016877 1016878

Parameter	Units	92166186007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Cadmium	ug/L	ND	500	500	464	454	93	91	70-130	2	
Iron	ug/L	973	5000	5000	5540	5460	91	90	70-130	1	

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QUALITY CONTROL DATA

Project: IP LF 5 7/23
Pace Project No.: 92166268

QC Batch: WET/26394 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92166268001, 92166268002, 92166268003, 92166268004, 92166268005, 92166268006, 92166268007, 92166268008, 92166268009

METHOD BLANK: 1017464 Matrix: Water
Associated Lab Samples: 92166268001, 92166268002, 92166268003, 92166268004, 92166268005, 92166268006, 92166268007, 92166268008, 92166268009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	07/26/13 10:09	

LABORATORY CONTROL SAMPLE: 1017465

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	260	104	80-120	

SAMPLE DUPLICATE: 1017466

Parameter	Units	92166187001 Result	Dup Result	RPD	Qualifiers
Total Dissolved Solids	mg/L	1680	1690	0	

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QUALITY CONTROL DATA

Project: IP LF 5 7/23
Pace Project No.: 92166268

QC Batch: WETA/15949 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 92166268001, 92166268002, 92166268003, 92166268004, 92166268005, 92166268006, 92166268007, 92166268008, 92166268009

METHOD BLANK: 1017321 Matrix: Water
Associated Lab Samples: 92166268001, 92166268002, 92166268003, 92166268004, 92166268005, 92166268006, 92166268007, 92166268008, 92166268009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	2.0	07/29/13 15:29	

LABORATORY CONTROL SAMPLE: 1017322

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	20	19.3	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1017323 1017324

Parameter	Units	92165888001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Sulfate	mg/L	44.5	20	20	63.4	63.8	95	97	90-110	1	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1017325 1017326

Parameter	Units	92166268003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Sulfate	mg/L	15.7	20	20	36.6	36.5	104	104	90-110	0	

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QUALITY CONTROL DATA

Project: IP LF 5 7/23
Pace Project No.: 92166268

QC Batch: WETA/16049 Analysis Method: SM 4500-Cl-E
QC Batch Method: SM 4500-Cl-E Analysis Description: 4500 Chloride
Associated Lab Samples: 92166268001, 92166268002, 92166268003, 92166268004, 92166268005, 92166268006, 92166268007, 92166268008, 92166268009

METHOD BLANK: 1023670 Matrix: Water
Associated Lab Samples: 92166268001, 92166268002, 92166268003, 92166268004, 92166268005, 92166268006, 92166268007, 92166268008, 92166268009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	08/06/13 23:18	

LABORATORY CONTROL SAMPLE: 1023671

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.5	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1023672 1023673

Parameter	Units	92166268001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Chloride	mg/L	1.3	20	20	22.1	22.0	104	104	75-125	0	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1023674 1023675

Parameter	Units	92166268002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Chloride	mg/L	8.6	20	20	27.3	27.2	94	93	75-125	0	

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QUALIFIERS

Project: IP LF 5 7/23
Pace Project No.: 92166268

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: IP LF 5 7/23
Pace Project No.: 92166268

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92166268001	5B1	EPA 200.7	MPRP/13853	EPA 200.7	ICP/12612
92166268002	5B2	EPA 200.7	MPRP/13853	EPA 200.7	ICP/12612
92166268003	5B3	EPA 200.7	MPRP/13853	EPA 200.7	ICP/12612
92166268004	5C1	EPA 200.7	MPRP/13853	EPA 200.7	ICP/12612
92166268005	5C2	EPA 200.7	MPRP/13853	EPA 200.7	ICP/12612
92166268006	5C3	EPA 200.7	MPRP/13853	EPA 200.7	ICP/12612
92166268007	DUP 1	EPA 200.7	MPRP/13853	EPA 200.7	ICP/12612
92166268008	BD-UP	EPA 200.7	MPRP/13853	EPA 200.7	ICP/12612
92166268009	BD-DOWN	EPA 200.7	MPRP/13853	EPA 200.7	ICP/12612
92166268001	5B1	SM 2540C	WET/26394		
92166268002	5B2	SM 2540C	WET/26394		
92166268003	5B3	SM 2540C	WET/26394		
92166268004	5C1	SM 2540C	WET/26394		
92166268005	5C2	SM 2540C	WET/26394		
92166268006	5C3	SM 2540C	WET/26394		
92166268007	DUP 1	SM 2540C	WET/26394		
92166268008	BD-UP	SM 2540C	WET/26394		
92166268009	BD-DOWN	SM 2540C	WET/26394		
92166268001	5B1	EPA 300.0	WETA/15949		
92166268002	5B2	EPA 300.0	WETA/15949		
92166268003	5B3	EPA 300.0	WETA/15949		
92166268004	5C1	EPA 300.0	WETA/15949		
92166268005	5C2	EPA 300.0	WETA/15949		
92166268006	5C3	EPA 300.0	WETA/15949		
92166268007	DUP 1	EPA 300.0	WETA/15949		
92166268008	BD-UP	EPA 300.0	WETA/15949		
92166268009	BD-DOWN	EPA 300.0	WETA/15949		
92166268001	5B1	SM 4500-Cl-E	WETA/16049		
92166268002	5B2	SM 4500-Cl-E	WETA/16049		
92166268003	5B3	SM 4500-Cl-E	WETA/16049		
92166268004	5C1	SM 4500-Cl-E	WETA/16049		
92166268005	5C2	SM 4500-Cl-E	WETA/16049		
92166268006	5C3	SM 4500-Cl-E	WETA/16049		
92166268007	DUP 1	SM 4500-Cl-E	WETA/16049		
92166268008	BD-UP	SM 4500-Cl-E	WETA/16049		
92166268009	BD-DOWN	SM 4500-Cl-E	WETA/16049		

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1690955

Section A Required Client Information:

Company: Altamont Environmental
Address: 231 Haywood St
Asheville, NC 28801
Email To: evurkovich@altamontenvironmental.com
Phone: 828 281 3350 Fax: 828 281 3351
Requested Due Date/TAT: Standard

Section B Required Project Information:

Report To: Evan Yurkovich
Copy To: Marta van Dussen
Purchase Order No.:
Project Name: International Paper Landfill 5
Project Number: 2955

Section C Invoice Information:

Attention: Sue Brewer
Company Name: Altamont
Address: Same
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NC

Section D Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Tissue TS, Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N): Metals by 200.7; Sulfate; TDS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	COLLECTED Composite Start TIME	COLLECTED Composite End/GRAB DATE	COLLECTED Composite End/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Metals by 200.7	Sulfate	TDS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92166268
1	5B1	WT	G	7/23/13	1626			14	3	X		X						X	X	X		92166268001
2	5B2	WT	G	7/23/13	1520			14	3	X		X						X	X	X		92166268002
3	5B3	WT	G	7/23/13	1414			14	3	X		X						X	X	X		92166268003
4	5C1	WT	G	7/23/13	1014			12	3	X		X						X	X	X		92166268004
5	5C2	WT	G	7/23/13	1121			15	3	X		X						X	X	X		92166268005
6	5C3	WT	G	7/23/13	1215			15	3	X		X						X	X	X		92166268006
7	DUP 1	WT	G	7/23/13	1014			12	3	X		X						X	X	X		92166268007
8	BD-UP	WT	G	7/23/13	1655			21	3	X		X						X	X	X		92166268008
9	BD-DOWN	WT	G	7/23/13	1537			20	3	X		X						X	X	X		92166268009
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	[signature] / Altamont	7/24/13	934	Jane Meehan	7/24/13	9:34	1.6

SAMPLER NAME AND SIGNATURE
PRINT Name of SAMPLER: Parker Brooks
SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 07/23/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical www.pacelabs.com	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: March 13, 2013 Page 1 of 2
	Document No.: F-ASV-CS-003-rev.09	Issuing Authorities: Pace Asheville Quality Office

Client Name: Altamont

Where Received: ☐ Huntersville ☑ Asheville ☐ Eden ☐ Raleigh

Courier (Circle): Fed Ex UPS USPS Client Commercial Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other_____

Circle Thermometer Used: IR Gun#2 -80344039 **Type of Ice:** Wet Blue None ☑ Samples on ice, cooling process has begun

IR Gun Back Up- 111565135

Temp Correction Factor: Add / Subtract 0.1 C

Corrected Cooler Temp.: 1.6 C **Biological Tissue is Frozen:** Yes No N/A

Temp should be above freezing to 6°C

Date and Initials of person examining contents: 7/24/13

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WT		
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☑No	**Initial when completed**
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review:	LP	Date:	7/25/13
SRF Review:	LP	Date:	7/25/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

WO# : 92166268

92166268

LEGEND

- SURFACE WATER SAMPLE LOCATIONS
- LF 5 MONITORING WELL LOCATIONS
- IP LANDFILL 5 PARCEL BOUNDARY
- 100-YEAR FLOODPLAIN
- HAYWOOD COUNTY HYDROLOGY
- HAYWOOD COUNTY ROADS
- 20-FOOT INTERVAL CONTOURS

SOURCE:
-PARCEL BOUNDARY, HYDROLOGY, CONTOURS, ROADS FROM HAYWOOD COUNTY GIS
-FLOODPLAIN FROM NC ONE MAP
-AERIAL IMAGERY FROM ESRI MAPS AND DATA RESOURCE CENTER (LAST MODIFIED MAY 20, 2010)

REV.	DATE	DESCRIPTION	BY	CHK	APV
1	08/09/2011	FONT AND AERIAL IMAGERY UPDATE	MAV	AS	JL

ALTAMONT ENVIRONMENTAL, INC.
ENGINEERING & HYDROGEOLOGY
231 HAYWOOD STREET ASHEVILLE NC 28801
TEL 828 281 3350 FAX 828 281 3351
WWW.ALTAMONTENVIRONMENTAL.COM

DRAWN BY: EVAN YURKOVICH
PROJECT MANAGER: STU RYMAN
CLIENT: INTERNATIONAL PAPER CO.
DATE: 8/27/2013

SCALE
0 100 200 400 FEET

GROUNDWATER AND SURFACE WATER SAMPLING LOCATIONS

CLOSED INTERNATIONAL PAPER LANDFILL 5
PERMIT 44-01
CANTON, NORTH CAROLINA

FIGURE 2

P:\IP\LF 5\GROUNDWATER SURFACE WATER SAMPLING\FIGURES\GIS\FIGURE 2-GW AND SW SAMPLING LOCATIONS.MXD

Table 1
Analytical Data and Field Parameters
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

FACILITY PERMIT	WELL ID	CAS NUMBER	SWS ID	PARAMETER	RESULT	UNITS	QUALIFIER	METHOD	MDL	MRL	SWSL	DILUTION FACTOR	COLLECT DATE	EXTRACTION DATE	ANALYSIS DATE	NC LABORATORY CERTIFICATION NUMBER
44-01	4401-MW5B1	7440-43-9	34	Cadmium	1.0	µg/L	U	EPA 200.7	1.0	1.0	1	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5B1	7439-89-6	340	Iron	**32,600**	µg/L		EPA 200.7	50.0	50.0	300	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5B1	16887-00-6	455	Chloride	1,300	µg/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/23/2013		08/06/2013	40
44-01	4401-MW5B1	14808-79-8	315	Sulfate	2,000	µg/L	U	EPA 300.0	2,000	2,000	250,000	1	07/23/2013		07/29/2013	40
44-01	4401-MW5B1	SW311	311	Total Dissolved Solids	35,000	µg/L		SM 2540C	25,000	25,000	NE	1	07/23/2013		07/26/2013	40
44-01	4401-MW5B1	7782-44-7	356	Dissolved Oxygen	3.15	mg/L					NE		07/23/2013			
44-01	4401-MW5B1	SW336	336	Oxygen Reduction Potential	86.7	mV					NE		07/23/2013			
44-01	4401-MW5B1	SW320	320	pH	**6.25**	SU					NE		07/23/2013			
44-01	4401-MW5B1	SW323	323	Specific Conductivity	35	µS					NE		07/23/2013			
44-01	4401-MW5B1	SW325	325	Temperature	13.69	°C					NE		07/23/2013			
44-01	4401-MW5B1	SW330	330	Turbidity	262.4	NTU					NE		07/23/2013			
44-01	4401-MW5B1	SW318	318	Depth to Water	7.99	ft					NE		07/23/2013			
44-01	4401-MW5B1	SW411	411	Total Well Depth	40.7	ft					NE		07/23/2013			
44-01	4401-MW5B2	7440-43-9	34	Cadmium	1.0	µg/L	U	EPA 200.7	1.0	1.0	1	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5B2	7439-89-6	340	Iron	**22,800**	µg/L		EPA 200.7	50.0	50.0	300	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5B2	16887-00-6	455	Chloride	8,600	µg/L		SM 4500-Cl-E	5,000	5,000	NE	5	07/23/2013		08/06/2013	40
44-01	4401-MW5B2	14808-79-8	315	Sulfate	5,700	µg/L	J	EPA 300.0	2,000	2,000	250,000	1	07/23/2013		07/29/2013	40
44-01	4401-MW5B2	SW311	311	Total Dissolved Solids	131,000	µg/L		SM 2540C	25,000	25,000	NE	1	07/23/2013		07/26/2013	40
44-01	4401-MW5B2	7782-44-7	356	Dissolved Oxygen	0.13	mg/L					NE		07/23/2013			
44-01	4401-MW5B2	SW336	336	Oxygen Reduction Potential	-24.7	mV					NE		07/23/2013			
44-01	4401-MW5B2	SW320	320	pH	**6.33**	SU					NE		07/23/2013			
44-01	4401-MW5B2	SW323	323	Specific Conductivity	200	µS					NE		07/23/2013			
44-01	4401-MW5B2	SW325	325	Temperature	14.25	°C					NE		07/23/2013			
44-01	4401-MW5B2	SW330	330	Turbidity	40.10	NTU					NE		07/23/2013			
44-01	4401-MW5B2	SW318	318	Depth to Water	2.92	ft					NE		07/23/2013			
44-01	4401-MW5B2	SW411	411	Total Well Depth	20.4	ft					NE		07/23/2013			
44-01	4401-MW5B3	7440-43-9	34	Cadmium	3.6	µg/L		EPA 200.7	1.0	1.0	1	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5B3	7439-89-6	340	Iron	**57,800**	µg/L		EPA 200.7	50.0	50.0	300	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5B3	16887-00-6	455	Chloride	23,900	µg/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/23/2013		08/06/2013	40
44-01	4401-MW5B3	14808-79-8	315	Sulfate	15,700	µg/L	J	EPA 300.0	2,000	2,000	250,000	1	07/23/2013		07/29/2013	40
44-01	4401-MW5B3	SW311	311	Total Dissolved Solids	165,000	µg/L		SM 2540C	25,000	25,000	NE	1	07/23/2013		07/26/2013	40
44-01	4401-MW5B3	7782-44-7	356	Dissolved Oxygen	0.11	mg/L					NE		07/23/2013			
44-01	4401-MW5B3	SW336	336	Oxygen Reduction Potential	-51.5	mV					NE		07/23/2013			
44-01	4401-MW5B3	SW320	320	pH	**6.42**	SU					NE		07/23/2013			
44-01	4401-MW5B3	SW323	323	Specific Conductivity	219	µS					NE		07/23/2013			
44-01	4401-MW5B3	SW325	325	Temperature	14.18	°C					NE		07/23/2013			
44-01	4401-MW5B3	SW330	330	Turbidity	80.92	NTU					NE		07/23/2013			
44-01	4401-MW5B3	SW318	318	Depth to Water	5.10	ft					NE		07/23/2013			
44-01	4401-MW5B3	SW411	411	Total Well Depth	65.56	ft					NE		07/23/2013			

Table 1
Analytical Data and Field Parameters
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

FACILITY PERMIT	WELL ID	CAS NUMBER	SWS ID	PARAMETER	RESULT	UNITS	QUALIFIER	METHOD	MDL	MRL	SWSL	DILUTION FACTOR	COLLECT DATE	EXTRACTION DATE	ANALYSIS DATE	NC LABORATORY CERTIFICATION NUMBER
44-01	4401-MW5C1	7440-43-9	34	Cadmium	1.0	µg/L	U	EPA 200.7	1.0	1.0	1	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5C1	7439-89-6	340	Iron	50.0	µg/L	U	EPA 200.7	50.0	50.0	300	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5C1	16887-00-6	455	Chloride	5,600	µg/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/23/2013		08/06/2013	40
44-01	4401-MW5C1	14808-79-8	315	Sulfate	9,200	µg/L	J	EPA 300.0	2,000	2,000	250,000	1	07/23/2013		07/29/2013	40
44-01	4401-MW5C1	SW311	311	Total Dissolved Solids	67,000	µg/L		SM 2540C	25,000	25,000	NE	1	07/23/2013		07/26/2013	40
44-01	4401-MW5C1	7782-44-7	356	Dissolved Oxygen	5.07	mg/L					NE		07/23/2013			
44-01	4401-MW5C1	SW336	336	Oxygen Reduction Potential	170.9	mV					NE		07/23/2013			
44-01	4401-MW5C1	SW320	320	pH	**5.30**	SU					NE		07/23/2013			
44-01	4401-MW5C1	SW323	323	Specific Conductivity	70	µS					NE		07/23/2013			
44-01	4401-MW5C1	SW325	325	Temperature	11.79	°C					NE		07/23/2013			
44-01	4401-MW5C1	SW330	330	Turbidity	0.00	NTU					NE		07/23/2013			
44-01	4401-MW5C1	SW318	318	Depth to Water	7.60	ft					NE		07/23/2013			
44-01	4401-MW5C1	SW411	411	Total Well Depth	30.0	ft					NE		07/23/2013			
44-01	4401-MW5C2	7440-43-9	34	Cadmium	1.0	µg/L	U	EPA 200.7	1.0	1.0	1	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5C2	7439-89-6	340	Iron	211	µg/L	J	EPA 200.7	50.0	50.0	300	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5C2	16887-00-6	455	Chloride	64,200	µg/L		SM 4500-Cl-E	5,000	5,000	NE	5	07/23/2013		08/07/2013	40
44-01	4401-MW5C2	14808-79-8	315	Sulfate	4,400	µg/L	J	EPA 300.0	2,000	2,000	250,000	1	07/23/2013		07/29/2013	40
44-01	4401-MW5C2	SW311	311	Total Dissolved Solids	241,000	µg/L		SM 2540C	25,000	25,000	NE	1	07/23/2013		07/26/2013	40
44-01	4401-MW5C2	7782-44-7	356	Dissolved Oxygen	2.11	mg/L					NE		07/23/2013			
44-01	4401-MW5C2	SW336	336	Oxygen Reduction Potential	114.4	mV					NE		07/23/2013			
44-01	4401-MW5C2	SW320	320	pH	**6.25**	SU					NE		07/23/2013			
44-01	4401-MW5C2	SW323	323	Specific Conductivity	286	µS					NE		07/23/2013			
44-01	4401-MW5C2	SW325	325	Temperature	15.30	°C					NE		07/23/2013			
44-01	4401-MW5C2	SW330	330	Turbidity	0.00	NTU					NE		07/23/2013			
44-01	4401-MW5C2	SW318	318	Depth to Water	3.34	ft					NE		07/23/2013			
44-01	4401-MW5C2	SW411	411	Total Well Depth	25.92	ft					NE		07/23/2013			
44-01	4401-MW5C3	7440-43-9	34	Cadmium	1.0	µg/L	U	EPA 200.7	1.0	1.0	1	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5C3	7439-89-6	340	Iron	**306**	µg/L		EPA 200.7	50.0	50.0	300	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-MW5C3	16887-00-6	455	Chloride	91,900	µg/L		SM 4500-Cl-E	5,000	5,000	NE	5	07/23/2013		08/07/2013	40
44-01	4401-MW5C3	14808-79-8	315	Sulfate	4,500	µg/L	J	EPA 300.0	2,000	2,000	250,000	1	07/23/2013		07/29/2013	40
44-01	4401-MW5C3	SW311	311	Total Dissolved Solids	283,000	µg/L		SM 2540C	25,000	25,000	NE	1	07/23/2013		07/26/2013	40
44-01	4401-MW5C3	7782-44-7	356	Dissolved Oxygen	2.69	mg/L					NE		07/23/2013			
44-01	4401-MW5C3	SW336	336	Oxygen Reduction Potential	169.7	mV					NE		07/23/2013			
44-01	4401-MW5C3	SW320	320	pH	**5.55**	SU					NE		07/23/2013			
44-01	4401-MW5C3	SW323	323	Specific Conductivity	342	µS					NE		07/23/2013			
44-01	4401-MW5C3	SW325	325	Temperature	14.85	°C					NE		07/23/2013			
44-01	4401-MW5C3	SW330	330	Turbidity	0.00	NTU					NE		07/23/2013			
44-01	4401-MW5C3	SW318	318	Depth to Water	0.24	ft					NE		07/23/2013			
44-01	4401-MW5C3	SW411	411	Total Well Depth	24.0	ft					NE		07/23/2013			

Table 1
Analytical Data and Field Parameters
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

FACILITY PERMIT	WELL ID	CAS NUMBER	SWS ID	PARAMETER	RESULT	UNITS	QUALIFIER	METHOD	MDL	MRL	SWSL	DILUTION FACTOR	COLLECT DATE	EXTRACTION DATE	ANALYSIS DATE	NC LABORATORY CERTIFICATION NUMBER
44-01	4401-BDDOWN	7440-43-9	34	Cadmium	1.0	µg/L	U	EPA 200.7	1.0	1.0	1	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-BDDOWN	7439-89-6	340	Iron	**1,270**	µg/L		EPA 200.7	50.0	50.0	300	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-BDDOWN	16887-00-6	455	Chloride	3,300	µg/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/23/2013		08/06/2013	40
44-01	4401-BDDOWN	14808-79-8	315	Sulfate	6,200	µg/L	*J*	EPA 300.0	2,000	2,000	250,000	1	07/23/2013		07/29/2013	40
44-01	4401-BDDOWN	SW311	311	Total Dissolved Solids	58,000	µg/L		SM 2540C	25,000	25,000	NE	1	07/23/2013		07/26/2013	40
44-01	4401-BDDOWN	7782-44-7	356	Dissolved Oxygen	9.48	mg/L					NE		07/23/2013			
44-01	4401-BDDOWN	SW336	336	Oxygen Reduction Potential	20.8	mV					NE		07/23/2013			
44-01	4401-BDDOWN	SW320	320	pH	7.08	SU					NE		07/23/2013			
44-01	4401-BDDOWN	SW323	323	Specific Conductivity	69	µS					NE		07/23/2013			
44-01	4401-BDDOWN	SW325	325	Temperature	20.36	°C					NE		07/23/2013			
44-01	4401-BDDOWN	SW330	330	Turbidity	25.99	NTU					NE		07/23/2013			
44-01	4401-BDUP	7440-43-9	34	Cadmium	1.0	µg/L	U	EPA 200.7	1.0	1.0	1	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-BDUP	7439-89-6	340	Iron	**1,160**	µg/L		EPA 200.7	50.0	50.0	300	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-BDUP	16887-00-6	455	Chloride	2,600	µg/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/23/2013		08/06/2013	40
44-01	4401-BDUP	14808-79-8	315	Sulfate	6,200	µg/L	*J*	EPA 300.0	2,000	2,000	250,000	1	07/23/2013		07/29/2013	40
44-01	4401-BDUP	SW311	311	Total Dissolved Solids	57,000	µg/L		SM 2540C	25,000	25,000	NE	1	07/23/2013		07/26/2013	40
44-01	4401-BDUP	7782-44-7	356	Dissolved Oxygen	9.29	mg/L					NE		07/23/2013			
44-01	4401-BDUP	SW336	336	Oxygen Reduction Potential	80.1	mV					NE		07/23/2013			
44-01	4401-BDUP	SW320	320	pH	6.98	SU					NE		07/23/2013			
44-01	4401-BDUP	SW323	323	Specific Conductivity	67	µS					NE		07/23/2013			
44-01	4401-BDUP	SW325	325	Temperature	20.53	°C					NE		07/23/2013			
44-01	4401-BDUP	SW330	330	Turbidity	6.57	NTU					NE		07/23/2013			
44-01	4401-DUP1	7440-43-9	34	Cadmium	1.0	µg/L	U	EPA 200.7	1.0	1.0	1	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-DUP1	7439-89-6	340	Iron	50.0	µg/L	U	EPA 200.7	50.0	50.0	300	1	07/23/2013	07/25/2013	07/29/2013	40
44-01	4401-DUP1	16887-00-6	455	Chloride	4,900	µg/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/23/2013		08/06/2013	40
44-01	4401-DUP1	14808-79-8	315	Sulfate	9,200	µg/L	*J*	EPA 300.0	2,000	2,000	250,000	1	07/23/2013		07/29/2013	40
44-01	4401-DUP1	SW311	311	Total Dissolved Solids	68,000	µg/L		SM 2540C	25,000	25,000	NE	1	07/23/2013		07/26/2013	40
44-01	4401-DUP1	7782-44-7	356	Dissolved Oxygen	5.07	mg/L					NE		07/23/2013			
44-01	4401-DUP1	SW336	336	Oxygen Reduction Potential	170.9	mV					NE		07/23/2013			
44-01	4401-DUP1	SW320	320	pH	**5.30**	SU					NE		07/23/2013			
44-01	4401-DUP1	SW323	323	Specific Conductivity	70	µS					NE		07/23/2013			
44-01	4401-DUP1	SW325	325	Temperature	11.79	°C					NE		07/23/2013			
44-01	4401-DUP1	SW330	330	Turbidity	0.00	NTU					NE		07/23/2013			
44-01	4401-DUP1	SW318	318	Depth to Water	7.60	ft					NE		07/23/2013			
44-01	4401-DUP1	SW411	411	Total Well Depth	30.0	ft					NE		07/23/2013			

Table 1
Analytical Data and Field Parameters
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

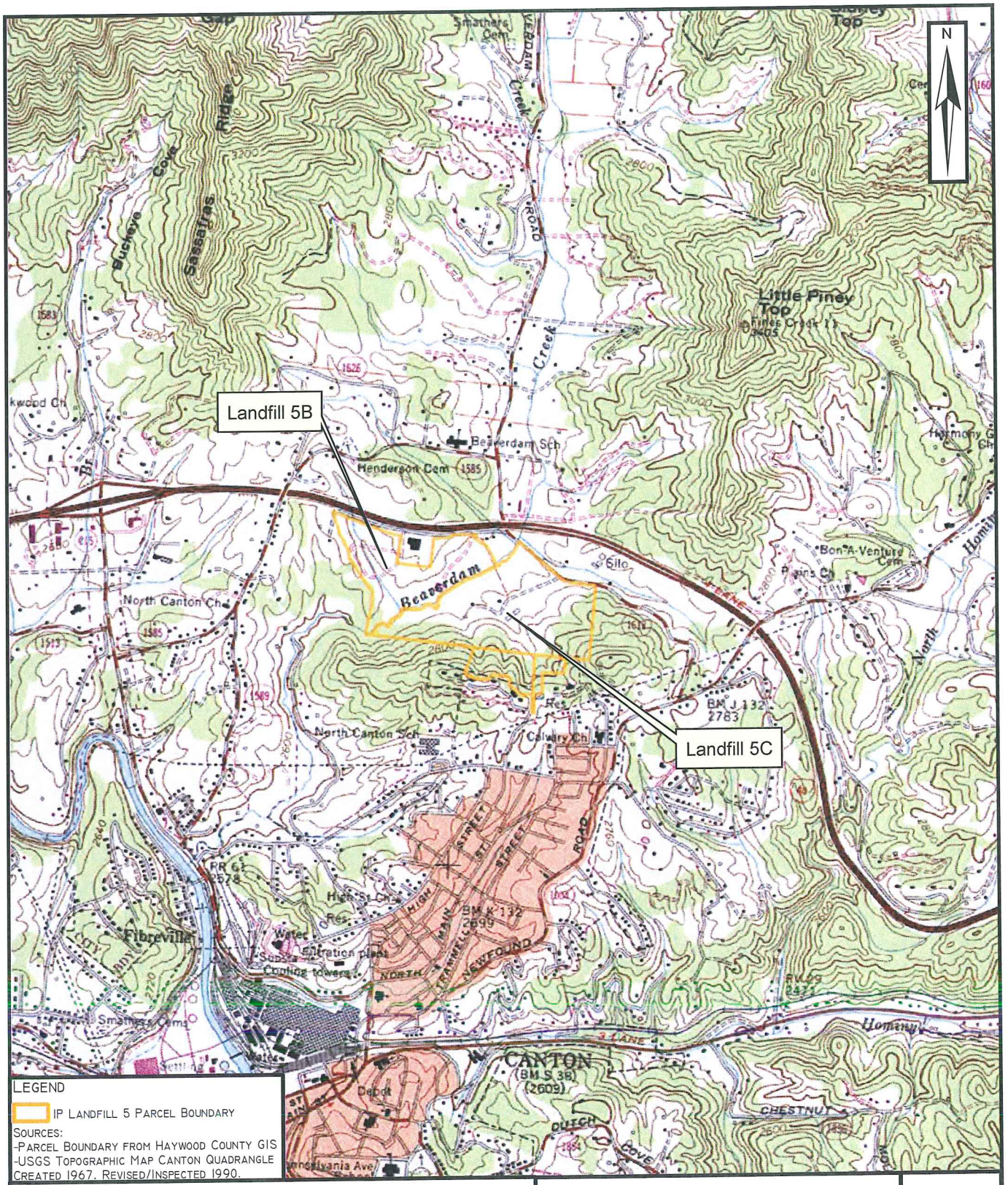
FACILITY PERMIT	WELL ID	CAS NUMBER	SWS ID	PARAMETER	RESULT	UNITS	QUALIFIER	METHOD	MDL	MRL	SWSL	DILUTION FACTOR	COLLECT DATE	EXTRACTION DATE	ANALYSIS DATE	NC LABORATORY CERTIFICATION NUMBER

Notes:
1. "CAS Number" is a unique number assigned by the Chemical Abstracts Service (CAS) to all identified parameters.
2. "SWS ID" is the Solid Waste Section Identification Number.
3. "Result" is analytical data reported by the laboratory in units of micrograms per liter (µg/L) or milligrams per liter (mg/L).
4. Qualifiers in non-italicized (roman type) text are laboratory data qualifiers or "flags". "U" is used for parameters not detected at concentrations above the method detection limit (MDL). "J" is used for parameters detected at estimated concentrations above the MDL but below the laboratory's method reporting limit (MRL) and the Solid Waste Section Limit (SWSL). An italicized *J*-flag is a data qualifier added by Altamont per DENR requirement to reflect a detected concentration that is greater than MDL and the laboratory's MRL but less than the SWSL.
5. "Method" is the analytical method used to analyze the constituents.
6. "MDL" is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero.
7. "MRL" is the minimum concentration of a target analyte that can be accurately determined by the referenced method. MRL is listed under "practical quantitation limit" (PQL) column in the analytical report.
8. "SWSL" is the Solid Waste Section Limit. This limit (identified by DENR) is the lowest amount of analyte in a sample that can be quantitatively determined with suitable precision and accuracy.
9. "Dilution Factor" is reported as a single number indicating dilution performed prior to analysis. A value of 1 indicates that the sample was not diluted prior to analysis.
10. "Collect Date" is the date on which the sample was collected in the field.
11. "Extraction Date" is the date on which the sample was prepared/extracted for analysis. If no extraction date is listed, then no separate preparation/extraction was required for analysis.
12. "Analysis Date" is the date on which the sample was analyzed by the lab.
13. Bold numbers indicate a result equal to or in exceedance of the 2L standard, 2B standard, or groundwater protection standard (GWPS). If no 2L standard exists, then values are compared to the GWPS.
14. 2L standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," DENR (last amended on April 1, 2013).
15. 2B standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2B - Surface Water and Wetland Standards," DENR (last amended on May 1, 2007).
16. GWPS is pursuant to "15A NCAC 13B .1634," DENR. Current standards were obtained from http://www.wastenotnc.org/sw/swenvmonitoringlist.asp (last amended on June 13, 2011).
17. "NE" means Not Established. Blank cells indicate that there is no information relevant to the respective row.

Table 3
Water Quality Standard Limit Exceedance Notification
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

FACILITY PERMIT	WELL ID	CAS NUMBER	SWS ID	PARAMETER	RESULT	UNITS	METHOD	MDL	MRL	SWSL	WATER QUALITY STANDARD	COLLECT DATE	CAUSE AND SIGNIFICANCE
GROUNDWATER SAMPLES - 2L STANDARD OR GWPS (µg/L)													
44-01	4401-MW5B1	7439-89-6	340	Iron	**32,600**	µg/L	EPA 200.7	50.0	50.0	300	300	07/23/2013	Likely Naturally Occuring.
44-01	4401-MW5B1	SW320	320	pH	**6.25**	SU				NE	6.5 - 8.5	07/23/2013	Turbidity of sample at 262.4 NTU.
44-01	4401-MW5B2	7439-89-6	340	Iron	**22,800**	µg/L	EPA 200.7	50.0	50.0	300	300	07/23/2013	Likely Naturally Occuring.
44-01	4401-MW5B2	SW320	320	pH	**6.33**	SU				NE	6.5 - 8.5	07/23/2013	Turbidity of sample at 40.10 NTU.
44-01	4401-MW5B3	7439-89-6	340	Iron	**57,800**	µg/L	EPA 200.7	50.0	50.0	300	300	07/23/2013	Likely Naturally Occuring.
44-01	4401-MW5B3	7440-43-9	34	Cadmium	**0.0036**	µg/L	EPA 200.7	1.0	1.0	1	0.002	07/23/2013	Likely Naturally Occurring. Turbidity of sample at 80.92 NTU.
44-01	4401-MW5B3	SW320	320	pH	**6.42**	SU				NE	6.5 - 8.5	07/23/2013	Turbidity of sample at 80.92 NTU.
44-01	4401-MW5C1	SW320	320	pH	**5.30**	SU				NE	6.5 - 8.5	7/23/2013	Likely Naturally Occuring.
44-01	4401-MW5C2	SW320	320	pH	**6.25**	SU				NE	6.5 - 8.5	07/23/2013	Likely Naturally Occuring.
44-01	4401-MW5C3	7439-89-6	340	Iron	**306**	µg/L	EPA 200.7	50.0	50.0	300	300	07/23/2013	
44-01	4401-MW5C3	SW320	320	pH	**5.55**	SU				NE	6.5 - 8.5	07/23/2013	Likely Naturally Occuring.
SURFACE WATER SAMPLES - 2B STANDARD (µg/L)													
44-01	4401-BDDOWN	7439-89-6	340	Iron	**1,270**	µg/L	EPA 200.7	50.0	50.0	300	1,000	07/23/2013	Likely Naturally Occuring. Turbidity of sample at 25.99 NTU.
44-01	4401-BDUP	7439-89-6	340	Iron	**1,160**	µg/L	EPA 200.7	50.0	50.0	300	1,000	07/23/2013	Likely Naturally Occuring. Turbidity of sample at 6.57 NTU.

Notes:
1. "CAS NUMBER" is a unique number assigned by the Chemical Abstracts Service (CAS) to all identified parameters.
2. "SWS ID" is the Solid Waste Section Identification Number.
3. "RESULT" is analytical data reported by the laboratory or field data collected by Altamont.
4. "UNITS" are micrograms per liter (µg/L) for analytical results and Standard Units (SU) for pH.
5. "QUALIFIER" is a data qualifier or "flag". A blank cell indicates that there is no qualifier associated with the reported result.
6. "METHOD" is the analytical method used to analyze the constituents.
7. "MDL" is the method detection limit, which is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero.
8. "MRL" is the method reporting limit, which is the minimum concentration of a target analyte that can be accurately determined by the referenced method.
9. "SWSL" is the Solid Waste Section Limit. This limit (identified by DENR) is the lowest amount of analyte in a sample that can be quantitatively determined with suitable precision and accuracy.
10. "GROUNDWATER QUALITY STANDARD" refers to the 2L standard, interim maximum allowable concentration (IMAC), or groundwater protection standard (GWPS) for groundwater.
11. "COLLECT DATE" is the date on which the sample was collected in the field.
12. "NE" means Not Established.
13. 2L standard and IMAC are from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," DENR (Amended Eff April 1, 2013). The IMAC concentrations listed in Appendix #1 of the 2L rule last updated April 1, 2013.
14. GWPS is pursuant to "15A NCAC 13B .1634," DENR. Current standards were obtained from http://portal.ncdenr.org/web/sw/envmonitoringlist (last updated June 13, 2011).



LEGEND

IP LANDFILL 5 PARCEL BOUNDARY

SOURCES:
-PARCEL BOUNDARY FROM HAYWOOD COUNTY GIS
-USGS TOPOGRAPHIC MAP CANTON QUADRANGLE CREATED 1967. REVISED/INSPECTED 1990.

ALTAMONT ENVIRONMENTAL, INC.
ENGINEERING & HYDROGEOLOGY
231 HAYWOOD STREET, ASHEVILLE, NC 28801
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WWW.ALTAMONTENVIRONMENTAL.COM

SITE LOCATION MAP

CLOSED INTERNATIONAL PAPER LANDFILL 5
PERMIT #44-01
CANTON, NORTH CAROLINA

FIGURE

1

DRAWN BY: EVAN YURKOVICH
PROJECT MANAGER: STU RYMAN
CLIENT: INTERNATIONAL PAPER CO.
DATE: 08/27/2013

SCALE

FEET

0 500 1,000 2,000

P:\IP\LF 5\FIGURES\GIS\SITE LOCATION MAP.MXD

Table 2
Solid Waste Section Limit Exceedance Notification
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

FACILITY PERMIT	WELL ID	CAS NUMBER	SWS ID	PARAMETER	RESULT	UNITS	METHOD	MDL	MRL	SWSL	COLLECT DATE
GROUNDWATER SAMPLES											
44-01	4401-MW5B1	7439-89-6	340	Iron	**32,600**	µg/L	EPA 200.7	50.0	50.0	300	07/23/2013
44-01	4401-MW5B2	7439-89-6	340	Iron	**22,800**	µg/L	EPA 200.7	50.0	50.0	300	07/23/2013
44-01	4401-MW5B3	7439-89-6	340	Iron	**57,800**	µg/L	EPA 200.7	50.0	50.0	300	07/23/2013
44-01	4401-MW5C3	7439-89-6	340	Iron	**306**	µg/L	EPA 200.7	50.0	50.0	300	07/23/2013
SURFACE WATER SAMPLES											
44-01	4401-BDDOWN	7439-89-6	340	Iron	**1,270**	µg/L	EPA 200.7	50.0	50.0	300	07/23/2013
44-01	4401-BDUP	7439-89-6	340	Iron	**1,160**	µg/L	EPA 200.7	50.0	50.0	300	07/23/2013

Notes:

1. "CAS NUMBER" is a unique number assigned by the Chemical Abstracts Service (CAS) to all identified parameters.
2. "SWS ID" is the Solid Waste Section Identification Number.
3. "RESULT" is the analytical data reported by the laboratory.
4. "UNITS" are micrograms per liter (µg/L) for analytical results.
5. "METHOD" is the analytical method used to analyze the constituents.
6. "MDL" is the method detection limit, which is the minimum concentration of a substance that can be measured and reported with 99percent confidence that the analyte concentration is greater than zero.
7. "MRL" is the method reporting limit, which is the minimum concentration of a target analyte that can be accurately determined by the referenced method.
8. "SWSL" is the Solid Waste Section Limit. This limit (identified by DENR) is the lowest amount of analyte in a sample that can be quantitatively determined with suitable precision and accuracy.
9. "COLLECT DATE" is the date on which the sample was collected in the field.
10. Bold numbers indicate result in exceedance of the 2L or interim maximum allowable concentration (IMAC) standards or greater than or equal to the groundwater protection standard (GWPS [if no 2L or IMAC exist]).
11. 2L standard and IMAC are from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2L - Groundwater Classifications and Standards," DENR (Amended Eff April 1,, 2013).
12. GWPS is pursuant to "15A NCAC 13B .1634," DENR. Current standards were obtained from http://portal.ncdenr.org/web/sw/envmonitoringlist (last updated June 13, 2011).

Table 4
Historic Groundwater Quality Results
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

Sample Location	Date	pH	Cadmium	Iron	Total Dissolved Solids	Chloride	Sulfate
2L Standards		*6.5 - 8.5*	*0.002*	*0.3*	*500*	*250*	*250*
MW-5B1	05/01/1991	6.73	ND	19	20	0.62	ND
	05/01/1992	6.40	ND	15	26	1.5	3.2
	05/01/1993	NA	NA	NA	NA	NA	NA
	11/01/1993	6.11	ND	3.1	25	2.3	3.2
	05/01/1994	6.42	ND	2.5	29	ND	ND
	11/01/1994	7.20	0.001	10.6	35	1.1	1.4
	05/01/1995	6.60	ND	5.85	32	1.2	0.24
	11/01/1995	5.80	0.001	7.808	45	1.2	1.3
	05/01/1996	6.30	ND	12.77	27	0.9	ND
	11/01/1996	6.80	0.001	10.43	34	2.4	ND
	05/01/1997	6.60	ND	4.4	43	ND	ND
	11/01/1997	7.20	ND	44	49	1.5	ND
	05/01/1998	6.60	ND	2.5	85	ND	ND
	11/01/1998	7.20	ND	2.6	44	2.1	ND
	05/01/1999	6.70	ND	2.8	98	ND	ND
	11/01/1999	6.40	ND	14	38	1	10.8
	05/01/2000	5.80	0.0026	10	41	ND	2.3
	11/01/2000	6.50	ND	2.8	52	ND	ND
	05/01/2001	6.40	ND	1.2	ND	1.4	ND
	11/05/2001	5.79	ND	5.2	35	ND	1.7
	05/28/2002	6.55	ND	1.5	32	ND	ND
	12/02/2002	5.12	ND	1.6	38	1.3	ND
	12/03/2003	6.39	ND	1.6	90	1.2	ND
	07/20/2004	6.27	ND	10	56	ND	ND
	07/13/2005	5.57	ND	20	48	ND	ND
	07/10/2006	6.02	ND	17	28	ND	ND
	07/27/2007	3.87	ND	16	42	ND	ND
	07/22/2008	6.20	ND	11.1	40	ND	ND
	07/21/2009	6.11	ND	26	60	ND	ND
DUP-1	07/21/2009	6.11	ND	21.1	38	ND	ND
	07/14/2010	6.51	ND	16.7	ND	ND	ND
	07/26/2011	4.62	ND	22.1	35	ND	ND
	07/19/2012	6.28	ND	27.2	31	1.4	ND
	07/23/2013	6.25	ND	32.6	35	1.3	ND

Table 4
Historic Groundwater Quality Results
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

Sample Location	Date	pH	Cadmium	Iron	Total Dissolved Solids	Chloride	Sulfate
2L Standards		*6.5 - 8.5*	*0.002*	*0.3*	*500*	*250*	*250*
MW-5B2	05/01/1991	6.57	ND	35.9	192	40.3	12.5
	05/01/1992	6.60	ND	70	210	31	18
	05/01/1993	NA	NA	NA	NA	NA	NA
	11/01/1993	5.96	ND	28	190	33	ND
	05/01/1994	6.30	ND	25.001	215	42.8	7.3
	11/01/1994	6.30	0.004	22.2	257	66.3	8.8
	05/01/1995	6.70	0.005	50.277	187	15.3	38.3
	11/01/1995	6.10	0.004	27.63	263	49.5	38.8
	05/01/1996	6.20	ND	49	298	65.3	21.6
	11/01/1996	6.60	0.002	19.415	327	95.4	7
	05/01/1997	6.60	ND	36	280	85	2.7
	11/01/1997	6.30	ND	12	290	110	7.1
	05/01/1998	6.30	ND	0.12	350	99	5.1
	11/01/1998	6.40	ND	47	330	96	3.3
	05/01/1999	6.60	ND	170	360	81	9.13
	11/01/1999	6.00	0.0022	32	410	110	132
	05/01/2000	6.10	0.0041	39	350	97	13.3
	11/01/2000	6.10	0.0039	29	360	120	11
	05/01/2001	6.30	0.007	49	500	100	6.8
	11/05/2001	6.25	0.003	23	160	120	6.9
	05/28/2002	6.36	0.034	89	390	87	540
	12/02/2002	5.33	0.0025	35	400	91	13
	12/03/2003	6.57	ND	22	320	67	10
	07/19/2004	6.21	ND	25	256	50	9.9
	07/13/2005	4.42	ND	28	170	5.5	14
	07/11/2006	6.63	ND	34	160	ND	28
	07/27/2007	5.69	ND	33	330	65	6.9
	07/23/2008	6.04	ND	26.8	496	113	6.6
	07/21/2009	6.22	ND	45.6	518	103	ND
	07/14/2010	6.62	ND	56.3	192	46.5	ND
DUP-1	07/14/2010	6.62	ND	55.3	214	48.5	ND
	07/26/2011	5.49	ND	51.4	270	80.2	ND
	07/18/2012	6.42	ND	45.3	107	107	ND
	07/23/2013	6.33	ND	22.8	131	8.6	5.7

Table 4
Historic Groundwater Quality Results
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

Sample Location	Date	pH	Cadmium	Iron	Total Dissolved Solids	Chloride	Sulfate
2L Standards		*6.5 - 8.5*	*0.002*	*0.3*	*500*	*250*	*250*
MW-5B3	05/01/1991	6.76	ND	26.4	102	9.73	11.7
	05/01/1992	6.50	ND	46	90	9.8	ND
	05/01/1993	NA	NA	NA	NA	NA	NA
	11/01/1993	6.14	ND	13	140	20	23
	05/01/1994	6.40	ND	12.661	153	21.4	18.1
	11/01/1994	6.70	0.004	23.705	142	27.1	11.2
	05/01/1995	6.60	0.004	18.392	169	26.5	10.9
	11/01/1995	5.90	0.004	16.407	158	30.3	7.8
	05/01/1996	6.20	ND	15.9	157	31.5	9.3
	11/01/1996	6.50	0.001	16.03	161	26.7	9.9
	05/01/1997	6.50	0.003	16	180	30	7.9
	11/01/1997	6.30	ND	26	160	31	8.9
	05/01/1998	6.40	ND	38	170	39	7.4
	11/01/1998	6.60	ND	17	200	36	9
	05/01/1999	6.60	ND	17	190	38	7.06
	11/01/1999	6.20	ND	19	180	34	3.1
	05/01/2000	6.20	0.002	16	190	36	12.8
	11/01/2000	6.30	0.0021	17	190	35	24
	05/01/2001	6.20	0.0068	18	220	34	9.4
	11/05/2001	6.78	0.0022	18	21	42	9.4
	05/28/2002	6.41	0.015	91	180	34	85
	12/02/2002	6.45	0.0014	13	56	31	15
	12/03/2003	6.49	ND	15	180	50	11
	07/20/2004	6.36	ND	35	124	20	12
	07/12/2005	5.86	ND	33	160	19	17
	07/10/2006	6.37	0.0011	45	120	17	15
	07/27/2007	6.29	ND	36	140	17	12
	07/23/2008	6.35	ND	73.6	152	17.0	13.1
DUP-1	07/23/2008	6.35	ND	61.8	154	16.9	13.9
	07/21/2009	6.48	0.0142	77.1	236	50.3	9.0
	07/14/2010	6.35	ND	58.6	130	20.7	13.5
	07/26/2011	5.36	ND	57.6	132	19.5	11.9
	07/19/2012	6.95	ND	30.3	168	23.8	13.4
	07/23/2013	6.42	0.0036	57.8	165	23.9	15.7

Table 4
Historic Groundwater Quality Results
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

Sample Location	Date	pH	Cadmium	Iron	Total Dissolved Solids	Chloride	Sulfate
2L Standards		*6.5 - 8.5*	*0.002*	*0.3*	*500*	*250*	*250*
MW-5C1	05/01/1991	**6.26**	ND	**31.3**	71	7.66	12.7
	05/01/1992	**6.10**	ND	0.3	79	7.7	9.4
	05/01/1993	NA	NA	NA	NA	NA	NA
	11/01/1993	**5.52**	ND	0.14	63	8.1	5.9
	05/01/1994	**5.60**	ND	0.078	76	7.4	9.2
	11/01/1994	6.50	ND	0.262	27	7.7	10.9
	05/01/1995	**6.00**	0.002	0.074	84	7.5	8.5
	11/01/1995	**5.50**	ND	0.044	95	7.9	8.4
	05/01/1996	**5.90**	ND	**765.32**	51.5	6.8	8.6
	11/01/1996	**6.30**	ND	ND	79.5	7.8	9.9
	05/01/1997	**6.00**	ND	0.27	85	7.4	8.6
	11/01/1997	**6.00**	ND	0.11	94	7.4	8.6
	05/01/1998	**5.60**	ND	ND	75	5.2	10
	11/01/1998	**6.00**	NA	NA	NA	NA	NA
	05/01/1999	**5.20**	ND	ND	77	7.7	4
	11/01/1999	**5.50**	ND	0.12	82	7.2	7.45
	05/01/2000	**6.30**	ND	0.069	91	9.1	10
	11/01/2000	**6.20**	ND	0.094	77	7.4	11
	05/01/2001	**5.40**	ND	0.064	140	7.2	6.7
	11/05/2001	**5.46**	ND	0.18	96	8.3	7.9
	05/28/2002	**6.07**	ND	0.083	76	9.3	8.5
	12/02/2002	**6.20**	ND	ND	100	6.8	12
	12/03/2003	**6.02**	ND	ND	60	8.4	10
	07/19/2004	**5.80**	ND	ND	76	6.8	10
	07/12/2005	**5.00**	ND	ND	110	7.6	8.5
	07/11/2006	**5.37**	ND	ND	90	7.1	6.8
	07/27/2007	**5.38**	ND	0.13	120	8.8	5.3
DUP-1	07/27/2007	**5.38**	ND	ND	98	8.8	5.2
	07/22/2008	**5.69**	ND	ND	124	9.5	6.5
	07/21/2009	**5.14**	ND	ND	114	9.6	7.2
	07/14/2010	**5.97**	ND	0.284	71	8.1	7.7
	07/26/2011	**7.04**	ND	0.0371 J	71	7.1	7.7
DUP-1	07/26/2011	**7.04**	ND	0.0305 J	79	7.5	7.7
	07/19/2012	**5.72**	ND	ND	80	7.9	7.7
DUP-1	07/19/2012	**5.72**	ND	0.0653	80	8.1	7.2
	07/23/2013	**5.30**	ND	ND	67	5.6	9.2
DUP-1	07/23/2013	**5.30**	ND	ND	68	4.9	9.2

Table 4
Historic Groundwater Quality Results
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

Sample Location	Date	pH	Cadmium	Iron	Total Dissolved Solids	Chloride	Sulfate
2L Standards		*6.5 - 8.5*	*0.002*	*0.3*	*500*	*250*	*250*
MW-5C2	05/01/1991	7.56	ND	**0.41**	**1607**	7.30	ND
	05/01/1992	6.90	ND	**100**	140	25	16
	05/01/1993	NA	NA	NA	NA	NA	NA
	11/01/1993	**6.18**	ND	**2.3**	97	11	8.6
	05/01/1994	6.58	ND	0.157	99	12.5	2.2
	11/01/1994	7.20	ND	**0.598**	99.5	15	17.3
	05/01/1995	6.70	ND	**11.19**	96	13.7	2.1
	11/01/1995	**6.10**	ND	**3.123**	103	14.5	2.1
	05/01/1996	**6.40**	ND	**6.029**	83	12.6	2.2
	11/01/1996	**6.40**	0.002	NA	104	16.2	3.3
	05/01/1997	6.80	ND	**3.2**	90	14	ND
	11/01/1997	7.20	ND	**1.6**	86	13	1.6
	05/01/1998	6.50	ND	**24**	100	14	1.4
	11/01/1998	**5.70**	NA	NA	NA	NA	NA
	05/01/1999	6.60	ND	**7.6**	100	13	ND
	11/01/1999	**5.80**	ND	**0.32**	96	11	ND
	05/01/2000	**5.80**	ND	**0.51**	120	16	ND
	11/01/2000	6.80	0.0016	**16**	110	14	6.9
	05/01/2001	**6.40**	ND	**1.2**	140	13	1.2
	11/05/2001	**6.21**	ND	**2**	97	15	2.8
	05/28/2002	6.75	0.0014	**4.1**	88	15	ND
	12/02/2002	**4.98**	ND	**1.9**	110	15	5.5
	12/03/2003	6.61	ND	**0.58**	92	27	ND
	07/19/2004	**6.24**	ND	ND	106	24	ND
	07/12/2005	**5.89**	ND	0.26	170	28	ND
	07/11/2006	**6.12**	ND	0.14	420	30	ND
	07/27/2007	**6.26**	ND	0.076	210	37	ND
	07/22/2008	**6.31**	ND	0.124	218	43.0	ND
	07/21/2009	**6.16**	ND	0.0727	240	42.4	ND
	07/14/2010	**6.36**	ND	ND	205	55.5	ND
	07/26/2011	**5.74**	ND	0.171	217	62.8	ND
	07/18/2012	**6.18**	ND	0.0923	216	92.4	3.3
	07/23/2013	**6.25**	ND	0.211	241	64.2	4.4

Table 4
Historic Groundwater Quality Results
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

Sample Location	Date	pH	Cadmium	Iron	Total Dissolved Solids	Chloride	Sulfate
2L Standards		*6.5 - 8.5*	*0.002*	*0.3*	*500*	*250*	*250*
MW- 5C3	05/01/1991	**6.18**	ND	**11.3**	315	23.9	2.3
	05/01/1992	6.60	ND	**89**	430	40	5.1
	05/01/1993	NA	NA	NA	NA	NA	NA
	11/01/1993	**5.66**	ND	**0.39**	170	46	ND
	05/01/1994	**5.82**	ND	0.171	186	52.2	1.8
	11/01/1994	**6.30**	ND	**0.597**	187	55.7	2
	05/01/1995	**6.40**	**0.005**	**31.08**	374	63.9	32.2
	11/01/1995	**5.50**	**0.003**	**15.28**	272.5	70.2	1.9
	05/01/1996	**5.70**	ND	**1.45**	242	75.6	1.9
	11/01/1996	**6.00**	**0.003**	**12.5**	223	95.5	2.6
	05/01/1997	6.90	ND	**2.9**	310	83	ND
	11/01/1997	7.00	ND	**2.4**	350	20	8.4
	05/01/1998	**5.80**	ND	0.06	350	86	1.7
	11/01/1998	**5.70**	ND	**0.32**	380	92	2.2
	05/01/1999	**5.80**	ND	**1.7**	330	94	7.42
	11/01/1999	**5.80**	ND	**0.79**	310	96	3.1
	05/01/2000	**5.50**	ND	**0.86**	280	98	ND
	11/01/2000	**6.00**	ND	**6.6**	280	93	ND
	05/01/2001	**5.90**	ND	**2.7**	360	93	1.1
	11/05/2001	**5.83**	0.0017	**1.5**	290	100	2.6
	05/28/2002	**5.90**	ND	**2**	400	96	ND
	12/02/2002	**5.31**	ND	**1.2**	340	99	6.7
	12/03/2003	**5.64**	ND	0.12	280	130	ND
	07/19/2004	**5.50**	ND	0.072	312	97	ND
	07/13/2005	**5.20**	ND	0.10	490	100	ND
	07/11/2006	**5.47**	ND	ND	**980**	88	ND
	07/27/2007	**5.57**	ND	ND	410	85	ND
	07/23/2008	**5.64**	ND	0.13	388	88.6	ND
	07/21/2009	**5.62**	ND	0.0515	366	94.1	ND
	07/14/2010	**5.86**	ND	0.219	263	94.6	ND
	07/26/2011	**4.84**	ND	0.0658	248	97.6	ND
	07/18/2012	**5.47**	ND	0.162	245	110	3.7
	07/23/2013	**5.55**	ND	**0.306**	283	91.9	4.5

Notes:
1. Concentrations are in milligrams per liter (mg/L).
2. pH is measured in Standard Units.
3. 2L standard values were taken from Title 15A, North Carolina Administrative Code (NCAC), Subchapter 2L Groundwater Quality Standards last amended April 1, 2013.
4. **Bold** indicates exceedance of 2L Standard in monitoring wells.
5. "ND" signifies that the parameter was not detected at or above the adjusted laboratory reporting limit.
6. "NA" signifies that analytical data is not present or available.

Table 5
Historic Surface Water Quality Results
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

Sample Location	Date	pH	Cadmium	Iron	Total Dissolved Solids	Chloride	Sulfate
2B Standards		*6.0 - 9.0*	*0.002*	*1.0*	*500*	*230*	*250*
BD-UP	05/01/1991	7.47	ND	0.96	37	1.56	ND
	05/01/1992	NA	NA	**1.6**	NA	NA	NA
	05/01/1993	NA	NA	NA	NA	NA	NA
	11/01/1993	7.50	ND	0.41	75	2.9	4.1
	05/01/1994	7.10	ND	0.24	37	1.9	4.3
	11/01/1994	7.40	ND	**1.179**	56	3.3	3.7
	05/01/1995	7.90	ND	**1.125**	49	2.5	4.1
	11/01/1995	6.20	ND	0.192	72	4.2	4.9
	05/01/1996	6.20	ND	**1.316**	34	2.6	5.9
	11/01/1996	7.10	ND	**1.099**	43	2.9	3.7
	05/01/1997	7.30	ND	0.64	62	1.5	3.1
	11/01/1997	7.40	ND	0.3	38	3.4	3.8
	05/01/1998	7.60	ND	ND	36	ND	3
	11/01/1998	NA	NA	NA	NA	NA	NA
	05/01/1999	6.70	ND	0.81	76	2.0	4.1
	11/01/1999	6.60	ND	0.28	75	1.5	2.63
	05/01/2000	6.70	ND	0.39	68	2.4	6.1
	11/01/2000	7.20	ND	0.29	55	3.2	7.7
	05/01/2001	6.90	ND	0.46	86	3.9	ND
	11/05/2001	7.80	ND	0.44	64	2.9	3.7
	05/28/2002	7.20	ND	0.56	62	3.2	ND
	12/02/2002	6.62	ND	**2.9**	66	3.2	9.1
	12/03/2003	7.32	ND	0.53	50	3.6	ND
	07/19/2004	6.86	ND	0.88	50	ND	ND
	07/12/2005	NA	ND	0.60	86	ND	ND
	07/11/2006	7.7	ND	0.29	36	ND	ND
	07/27/2007	**5.31**	ND	0.70	72	ND	ND
	07/22/2008	7.22	ND	0.512	64	ND	ND
	07/21/2009	6.95	ND	0.504	48	ND	ND
	07/14/2010	6.89	ND	0.584	55	ND	ND
	07/26/2011	**5.75**	ND	**2.790**	53	ND	ND
	07/19/2012	7.11	ND	**1.430**	65	3.9	6.3
	07/23/2013	6.98	ND	**1.160**	57	2.6	6.2

Table 5
Historic Surface Water Quality Results
Closed International Paper Landfill 5 (Permit 44-01), Canton, North Carolina

Sample Location	Date	pH	Cadmium	Iron	Total Dissolved Solids	Chloride	Sulfate
2B Standards		*6.0 - 9.0*	*0.002*	*1.0*	*500*	*230*	*250*
BD-DOWN	05/01/1991	7.47	ND	0.67	46	2.41	ND
	05/01/1992	NA	NA	**1.7**	NA	NA	NA
	05/01/1993	NA	NA	NA	NA	NA	NA
	11/01/1993	7.45	ND	0.51	110	5.2	9.6
	05/01/1994	7.04	ND	0.343	42	3.2	4
	11/01/1994	7.30	ND	0.89	34	4.4	3.3
	05/01/1995	7.20	ND	**1.495**	48	3.0	3.9
	11/01/1995	6.40	ND	0.241	52	4.4	5.1
	05/01/1996	6.70	ND	**1.513**	41	3.4	7
	11/01/1996	7.20	ND	0.264	49	4.2	3.9
	05/01/1997	6.80	ND	**1.3**	65	3.9	3.6
	11/01/1997	7.00	ND	0.19	51	3.7	3.1
	05/01/1998	7.20	ND	0.51	48	2.6	3.1
	11/01/1998	NA	NA	NA	NA	NA	NA
	05/01/1999	6.60	ND	0.9	75	4.7	3.54
	11/01/1999	6.90	ND	0.36	60	2.6	2.63
	05/01/2000	6.60	ND	0.27	59	3.1	6.9
	11/01/2000	6.90	ND	0.3	87	4.2	8.1
	05/01/2001	6.90	ND	0.62	**2600**	4.2	2.8
	11/05/2001	7.98	ND	0.33	ND	4.7	3.8
	05/28/2002	7.20	ND	0.63	66	4.4	ND
	12/02/2002	6.19	ND	**7.0**	88	6.0	10
	12/03/2003	7.32	ND	0.57	50	5.0	ND
	07/19/2004	6.92	ND	**1.5**	62	ND	ND
	07/12/2005	NA	ND	0.84	84	ND	ND
	07/10/2006	7.58	ND	0.28	44	ND	ND
	07/27/2007	7.03	ND	1.0	66	ND	ND
	07/22/2008	6.99	ND	0.555	92	5.7	ND
	07/21/2009	6.97	ND	0.453	56	ND	ND
	07/14/2010	**6.45**	ND	0.593	57	5.1	ND
	07/26/2011	**6.04**	ND	**1.910**	51	ND	ND
	07/19/2012	7.22	ND	**1.820**	65	4.7	6.3
	07/23/2013	7.08	ND	**1.270**	58	3.3	6.2

Notes:
1. Concentrations are in milligrams per liter (mg/L).
2. pH is measured in Standard Units.
3. 2B standard values were taken from Title 15A, North Carolina Administrative Code (NCAC), Subchapter 2B Surface Water and Wetland Standards, amendment effective May 1, 2007.
4. **Bold** indicates exceedance of 2B standard in monitoring wells.
5. "ND" signifies that the parameter was not detected at or above the adjusted laboratory reporting limit.
6. "NA" signifies that analytical data is not present or available.