

DENR USE ONLY:

Paper Report

Electronic Data - Email CD (data loaded: Yes / No)

Doc/Event #:

NC DENR

Environmental Monitoring Reporting Form

Division of Waste Management - Solid Waste

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: Joel Lenk

Phone: 828-381-3350

E-mail: jlenk@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 18-19, 2012

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

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.

Joel Lenk

Professional Geologist

(828) 281-3350

Facility Representative Name (Print)

Title

(Area Code) Telephone Number

Affix NC Licensed Professional Geologist Seal

Signature

Date

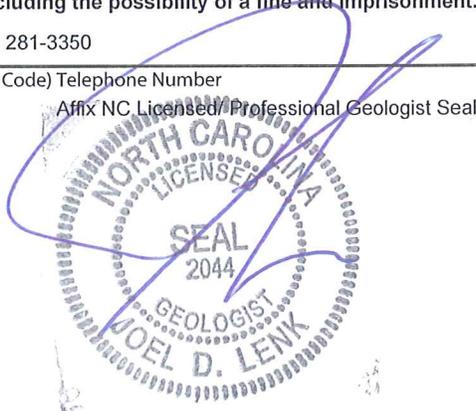
231 Haywood Street, Asheville, North Carolina 28801

Facility Representative Address

#C-2185

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

Revised 6/2009



ALTAMONT ENVIRONMENTAL, INC.

ENGINEERING & HYDROGEOLOGY

231 HAYWOOD STREET, ASHEVILLE, NC 28801

TEL. 828.281.3350 FAC. 828.281.3351

WWW.ALTAMONTENVIRONMENTAL.COM

September 18, 2012

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 2012
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 18 and 19, 2012.

Methods

On July 18 and 19, 2012, Altamont Environmental, Inc. (Altamont) conducted 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 using laboratory-supplied sample containers by a technician wearing a new pair of non-reactive nitrile gloves.

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 in laboratory-supplied sample containers by a technician wearing a new pair of non-reactive nitrile gloves. 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

Both, the laboratory analytical results and field parameters for the groundwater and surface water samples collected at the landfill are included 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, North Carolina Administrative Code (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-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 – 8.5 SU.
- Cadmium was not detected in the groundwater samples collected from the six referenced monitoring wells.

- Iron concentrations exceeded the 2L Standard (0.3 mg/L) in samples collected from monitoring wells MW-5B1, MW-5B2, and MW-5B3 at concentrations of 27.2, 45.3, 30.3 milligrams per liter (mg/L), respectively. Iron was also detected, but did not exceed the 2L Standard in groundwater samples collected from monitoring wells MW-5C2 and MW-5C3.
- Total dissolved solids (TDSs) 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.
- 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 value for surface water samples BD-UP and BD-DOWN was within the acceptable range of 6.0 SU – 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 (1.43 mg/L) and BD-DOWN (1.82 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 of 230 mg/L 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 except for MW-5B3. 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 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. 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.

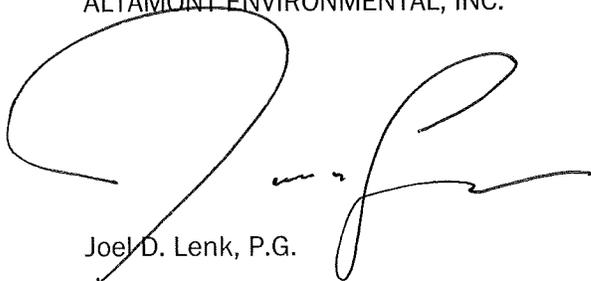
Iron concentrations present in both surface water samples exceeded the 2B Standard. The concentration of iron detected in the surface water sample downstream location (BD-DOWN) was higher than the concentration of iron detected in the sample collected at the upstream of the site (BD-UP). Both surface 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 2013.

Altamont is pleased to provide the results for the 2012 sampling event. Please feel free to contact me if you have any questions or need additional information. We appreciate your assistance with this project.

Sincerely,

ALTAMONT ENVIRONMENTAL, INC.

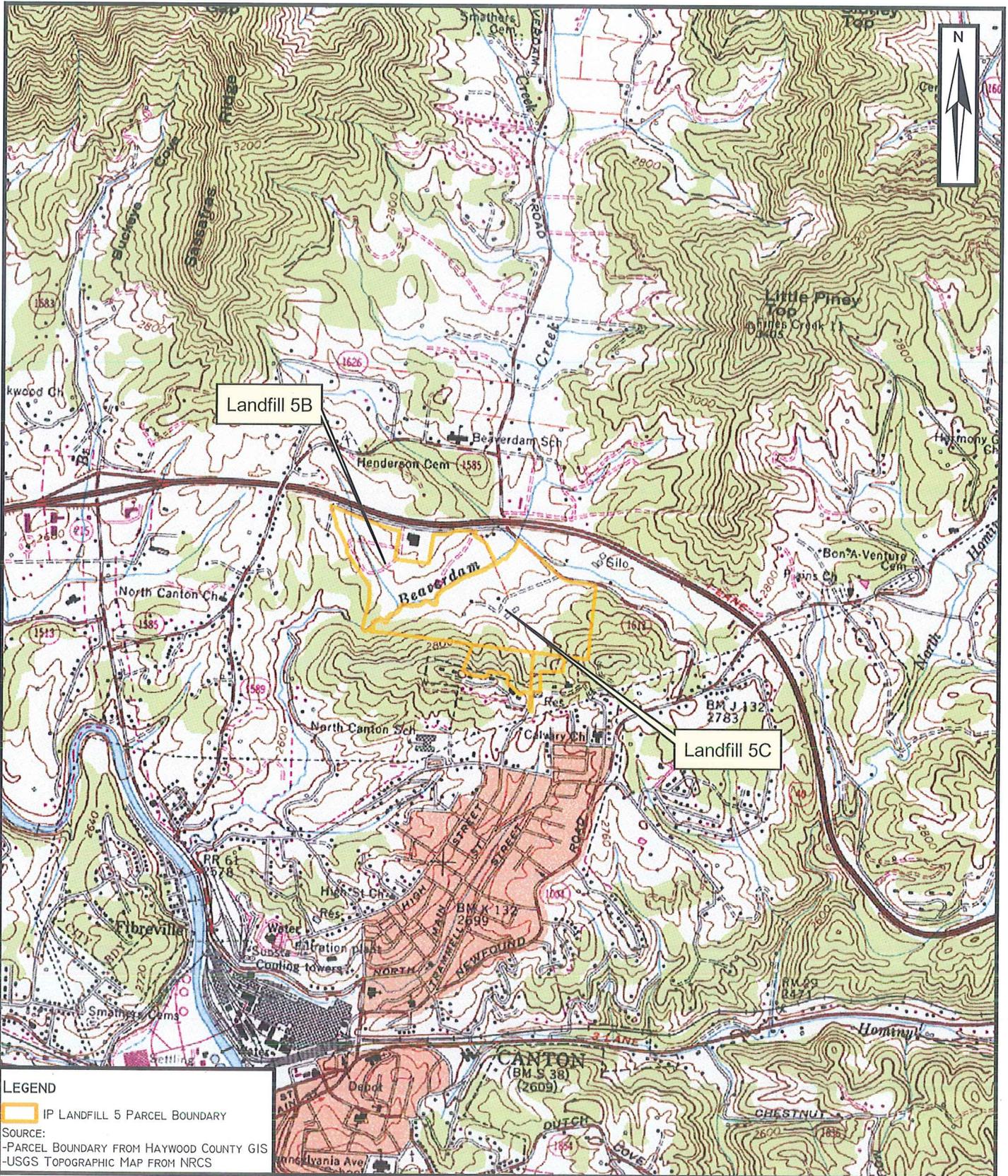
A handwritten signature in black ink, appearing to read "Joel D. Lenk", with a large, stylized initial "J" and a long horizontal stroke extending to the right.

Joel D. Lenk, 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

FIGURES



ALTAMONT ENVIRONMENTAL, INC.
ENGINEERING & HYDROGEOLOGY

231 HAYWOOD STREET, ASHEVILLE, NC 28801
TEL. 828.281.3350 FAC. 828.281.3351
WWW.ALTAMONTENVIRONMENTAL.COM

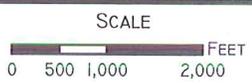
SITE LOCATION MAP

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

FIGURE

1

DRAWN BY: ANNA SAYLOR
PROJECT MANAGER: JOEL LENK
CLIENT: INTERNATIONAL PAPER CO.
DATE: 08/09/2011





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

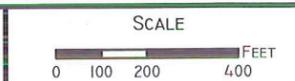
SOURCE:
 -PARCEL BOUNDARY, HYDROLOGY, CONTOURS, ROADS FROM HAYWOOD COUNTY GIS
 -FLOODPLAIN FROM NC ONE MAP
 -AERIAL IMAGERY FROM ESRI MAPS AND DATA RESOURCE CENTER (LAST MODIFIED MAY 20, 2010)

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 FAC. 828.281.3351
 WWW.ALTAMONTENVIRONMENTAL.COM

DRAWN BY: ANNA SAYLOR
 PROJECT MANAGER: JOEL LENK
 CLIENT: INTERNATIONAL PAPER CO.
 DATE: 8/13/2010



GROUNDWATER AND SURFACE WATER SAMPLING LOCATIONS

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

FIGURE
2

TABLES

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	ug/L	U	EPA 200.7	1.0	1.0	1	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5B1	7439-89-6	340	Iron	27,200	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5B1	16887-00-6	455	Chloride	1,400	ug/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/19/2012		07/31/2012	40
44-01	4401-MW5B1	14808-79-8	315	Sulfate	2,000	ug/L	U	EPA 300.0	2,000	2,000	250,000	1	07/19/2012		07/30/2012	40
44-01	4401-MW5B1	SW311	311	Total Dissolved Solids	31,000	ug/L		SM 2540C	25,000	25,000	NE	1	07/19/2012		07/20/2012	40
44-01	4401-MW5B1	7782-44-7	356	Dissolved Oxygen	2.53	mg/L							07/19/2012			
44-01	4401-MW5B1	SW336	336	Oxygen Reduction Potential	120.5	mV							07/19/2012			
44-01	4401-MW5B1	SW320	320	pH	6.28	SU							07/19/2012			
44-01	4401-MW5B1	SW323	323	Specific Conductivity	44	µS							07/19/2012			
44-01	4401-MW5B1	SW325	325	Temperature	12.52	°C							07/19/2012			
44-01	4401-MW5B1	SW330	330	Turbidity	391.4	NTU							07/19/2012			
44-01	4401-MW5B1	SW318	318	Depth to Water	9.95	ft							07/19/2012			
44-01	4401-MW5B1	SW411	411	Total Well Depth	40.7	ft							07/19/2012			
44-01	4401-MW5B2	7440-43-9	34	Cadmium	1.0	ug/L	U	EPA 200.7	1.0	1.0	1	1	07/18/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5B2	7439-89-6	340	Iron	45,300	ug/L		EPA 200.7	50.0	50.0	300	1	07/18/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5B2	16887-00-6	455	Chloride	107,000	ug/L		SM 4500-Cl-E	5,000	5,000	NE	5	07/18/2012		07/31/2012	40
44-01	4401-MW5B2	14808-79-8	315	Sulfate	3,200	ug/L	J	EPA 300.0	2,000	2,000	250,000	1	07/18/2012		07/30/2012	40
44-01	4401-MW5B2	SW311	311	Total Dissolved Solids	323,000	ug/L		SM 2540C	25,000	25,000	NE	1	07/18/2012		07/31/2012	40
44-01	4401-MW5B2	7782-44-7	356	Dissolved Oxygen	0.97	mg/L							07/18/2012			
44-01	4401-MW5B2	SW336	336	Oxygen Reduction Potential	-74.2	mV							07/18/2012			
44-01	4401-MW5B2	SW320	320	pH	6.42	SU							07/18/2012			
44-01	4401-MW5B2	SW323	323	Specific Conductivity	635	µS							07/18/2012			
44-01	4401-MW5B2	SW325	325	Temperature	13.38	°C							07/18/2012			
44-01	4401-MW5B2	SW330	330	Turbidity	54.92	NTU							07/18/2012			
44-01	4401-MW5B2	SW318	318	Depth to Water	3.90	ft							07/18/2012			
44-01	4401-MW5B2	SW411	411	Total Well Depth	20.4	ft							07/18/2012			
44-01	4401-MW5B3	7440-43-9	34	Cadmium	1.0	ug/L	U	EPA 200.7	1.0	1.0	1	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5B3	7439-89-6	340	Iron	30,300	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5B3	16887-00-6	455	Chloride	23,800	ug/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/19/2012		07/31/2012	40
44-01	4401-MW5B3	14808-79-8	315	Sulfate	13,400	ug/L	J	EPA 300.0	2,000	2,000	250,000	1	07/19/2012		07/30/2012	40
44-01	4401-MW5B3	SW311	311	Total Dissolved Solids	168,000	ug/L		SM 2540C	25,000	25,000	NE	1	07/19/2012		07/20/2012	40
44-01	4401-MW5B3	7782-44-7	356	Dissolved Oxygen	0.57	mg/L							07/19/2012			
44-01	4401-MW5B3	SW336	336	Oxygen Reduction Potential	-56.2	mV							07/19/2012			
44-01	4401-MW5B3	SW320	320	pH	6.95	SU							07/19/2012			
44-01	4401-MW5B3	SW323	323	Specific Conductivity	274	µS							07/19/2012			
44-01	4401-MW5B3	SW325	325	Temperature	13.42	°C							07/19/2012			
44-01	4401-MW5B3	SW330	330	Turbidity	46.68	NTU							07/19/2012			
44-01	4401-MW5B3	SW318	318	Depth to Water	6.08	ft							07/19/2012			
44-01	4401-MW5B3	SW411	411	Total Well Depth	65.56	ft							07/19/2012			

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	ug/L	U	EPA 200.7	1.0	1.0	1	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5C1	7439-89-6	340	Iron	50.0	ug/L	U	EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5C1	16887-00-6	455	Chloride	7,900	ug/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/19/2012		07/31/2012	40
44-01	4401-MW5C1	14808-79-8	315	Sulfate	7,700	ug/L	J	EPA 300.0	2,000	2,000	250,000	1	07/19/2012		07/30/2012	40
44-01	4401-MW5C1	SW311	311	Total Dissolved Solids	80,000	ug/L		SM 2540C	25,000	25,000	NE	1	07/19/2012		07/20/2012	40
44-01	4401-MW5C1	7782-44-7	356	Dissolved Oxygen	7.87	mg/L							07/19/2012			
44-01	4401-MW5C1	SW336	336	Oxygen Reduction Potential	187.9	mV							07/19/2012			
44-01	4401-MW5C1	SW320	320	pH	5.72	SU							07/19/2012			
44-01	4401-MW5C1	SW323	323	Specific Conductivity	112	µS							07/19/2012			
44-01	4401-MW5C1	SW325	325	Temperature	10.67	°C							07/19/2012			
44-01	4401-MW5C1	SW330	330	Turbidity	0.74	NTU							07/19/2012			
44-01	4401-MW5C1	SW318	318	Depth to Water	14.60	ft							07/19/2012			
44-01	4401-MW5C1	SW411	411	Total Well Depth	30.0	ft							07/19/2012			
44-01	4401-MW5C2	7440-43-9	34	Cadmium	1.0	ug/L	U	EPA 200.7	1.0	1.0	1	1	07/18/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5C2	7439-89-6	340	Iron	92.3	ug/L	J	EPA 200.7	50.0	50.0	300	1	07/18/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5C2	16887-00-6	455	Chloride	92,400	ug/L		SM 4500-Cl-E	5,000	5,000	NE	5	07/18/2012		07/31/2012	40
44-01	4401-MW5C2	14808-79-8	315	Sulfate	3,300	ug/L	J	EPA 300.0	2,000	2,000	250,000	1	07/18/2012		07/30/2012	40
44-01	4401-MW5C2	SW311	311	Total Dissolved Solids	216,000	ug/L		SM 2540C	25,000	25,000	NE	1	07/18/2012		07/20/2012	40
44-01	4401-MW5C2	7782-44-7	356	Dissolved Oxygen	2.06	mg/L							07/18/2012			
44-01	4401-MW5C2	SW336	336	Oxygen Reduction Potential	119.8	mV							07/18/2012			
44-01	4401-MW5C2	SW320	320	pH	6.18	SU							07/18/2012			
44-01	4401-MW5C2	SW323	323	Specific Conductivity	365	µS							07/18/2012			
44-01	4401-MW5C2	SW325	325	Temperature	15.17	°C							07/18/2012			
44-01	4401-MW5C2	SW330	330	Turbidity	0.00	NTU							07/18/2012			
44-01	4401-MW5C2	SW318	318	Depth to Water	3.96	ft							07/18/2012			
44-01	4401-MW5C2	SW411	411	Total Well Depth	25.92	ft							07/18/2012			
44-01	4401-MW5C3	7440-43-9	34	Cadmium	1.0	ug/L	U	EPA 200.7	1.0	1.0	1	1	07/18/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5C3	7439-89-6	340	Iron	162	ug/L	J	EPA 200.7	50.0	50.0	300	1	07/18/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5C3	16887-00-6	455	Chloride	110,000	ug/L		SM 4500-Cl-E	5,000	5,000	NE	5	07/18/2012		07/31/2012	40
44-01	4401-MW5C3	14808-79-8	315	Sulfate	3,700	ug/L	J	EPA 300.0	2,000	2,000	250,000	1	07/18/2012		07/30/2012	40
44-01	4401-MW5C3	SW311	311	Total Dissolved Solids	245,000	ug/L		SM 2540C	25,000	25,000	NE	1	07/18/2012		07/20/2012	40
44-01	4401-MW5C3	7782-44-7	356	Dissolved Oxygen	3.40	mg/L							07/18/2012			
44-01	4401-MW5C3	SW336	336	Oxygen Reduction Potential	229.2	mV							07/18/2012			
44-01	4401-MW5C3	SW320	320	pH	5.47	SU							07/18/2012			
44-01	4401-MW5C3	SW323	323	Specific Conductivity	430	µS							07/18/2012			
44-01	4401-MW5C3	SW325	325	Temperature	14.41	°C							07/18/2012			
44-01	4401-MW5C3	SW330	330	Turbidity	0.70	NTU							07/18/2012			
44-01	4401-MW5C3	SW318	318	Depth to Water	1.32	ft							07/18/2012			
44-01	4401-MW5C3	SW411	411	Total Well Depth	24.0	ft							07/18/2012			

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	ug/L	U	EPA 200.7	1.0	1.0	1	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-BDDOWN	7439-89-6	340	Iron	1,820	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-BDDOWN	16887-00-6	455	Chloride	4,700	ug/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/19/2012		07/31/2012	40
44-01	4401-BDDOWN	14808-79-8	315	Sulfate	6,300	ug/L	J	EPA 300.0	2,000	2,000	250,000	1	07/19/2012		07/31/2012	40
44-01	4401-BDDOWN	SW311	311	Total Dissolved Solids	65,000	ug/L		SM 2540C	25,000	25,000	NE	1	07/19/2012		07/20/2012	40
44-01	4401-BDDOWN	7782-44-7	356	Dissolved Oxygen	7.78	mg/L							07/19/2012			
44-01	4401-BDDOWN	SW336	336	Oxygen Reduction Potential	57.1	mV							07/19/2012			
44-01	4401-BDDOWN	SW320	320	pH	7.22	SU							07/19/2012			
44-01	4401-BDDOWN	SW323	323	Specific Conductivity	91	µS							07/19/2012			
44-01	4401-BDDOWN	SW325	325	Temperature	17.84	°C							07/19/2012			
44-01	4401-BDDOWN	SW330	330	Turbidity	29.02	NTU							07/19/2012			
44-01	4401-BDUP	7440-43-9	34	Cadmium	1.0	ug/L	U	EPA 200.7	1.0	1.0	1	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-BDUP	7439-89-6	340	Iron	1,430	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-BDUP	16887-00-6	455	Chloride	3,900	ug/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/19/2012		07/31/2012	40
44-01	4401-BDUP	14808-79-8	315	Sulfate	6,300	ug/L	J	EPA 300.0	2,000	2,000	250,000	1	07/19/2012		07/30/2012	40
44-01	4401-BDUP	SW311	311	Total Dissolved Solids	65,000	ug/L		SM 2540C	25,000	25,000	NE	1	07/19/2012		07/20/2012	40
44-01	4401-BDUP	7782-44-7	356	Dissolved Oxygen	4.16	mg/L							07/19/2012			
44-01	4401-BDUP	SW336	336	Oxygen Reduction Potential	62.1	mV							07/19/2012			
44-01	4401-BDUP	SW320	320	pH	7.11	SU							07/19/2012			
44-01	4401-BDUP	SW323	323	Specific Conductivity	86	µS							07/19/2012			
44-01	4401-BDUP	SW325	325	Temperature	18.45	°C							07/19/2012			
44-01	4401-BDUP	SW330	330	Turbidity	38.52	NTU							07/19/2012			
44-01	4401-DUP1	7440-43-9	34	Cadmium	1.0	ug/L	U	EPA 200.7	1.0	1.0	1	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-DUP1	7439-89-6	340	Iron	65.3	ug/L	J	EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-DUP1	16887-00-6	455	Chloride	8,100	ug/L		SM 4500-Cl-E	1,000	1,000	NE	1	07/19/2012		07/31/2012	40
44-01	4401-DUP1	14808-79-8	315	Sulfate	7,200	ug/L	J	EPA 300.0	2,000	2,000	250,000	1	07/19/2012		07/31/2012	40
44-01	4401-DUP1	SW311	311	Total Dissolved Solids	80,000	ug/L		SM 2540C	25,000	25,000	NE	1	07/19/2012		07/20/2012	40
44-01	4401-DUP1	7782-44-7	356	Dissolved Oxygen	7.87	mg/L							07/19/2012			
44-01	4401-DUP1	SW336	336	Oxygen Reduction Potential	187.9	mV							07/19/2012			
44-01	4401-DUP1	SW320	320	pH	5.72	SU							07/19/2012			
44-01	4401-DUP1	SW323	323	Specific Conductivity	112	µS							07/19/2012			
44-01	4401-DUP1	SW325	325	Temperature	10.67	°C							07/19/2012			
44-01	4401-DUP1	SW330	330	Turbidity	0.74	NTU							07/19/2012			
44-01	4401-DUP1	SW318	318	Depth to Water	14.60	ft							07/19/2012			
44-01	4401-DUP1	SW411	411	Total Well Depth	30.0	ft							07/19/2012			

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. "SWS ID" is the Solid Waste Section Identification Number.
2. "Result" is analytical data reported by the laboratory in units of micrograms per liter (µg/L) or milligrams per liter (mg/L).
3. "Method Detection Limit" (MDL) is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.
4. "Method Reporting Limit" (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.
5. "Method" is the analytical method used to analyze the constituents.
6. 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 Method Detection Limit (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.
7. "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.
8. "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.
9. "Collect Date" is the date on which the sample was collected in the field. "Analysis Date" is the date on which the sample was analyzed by the lab.
10. "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.
11. 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.
12. 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 January 1, 2010).
13. 2B Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2B - Surface Water and Wetland Standards," (last amended on May 1, 2007).
14. Groundwater Protection Standard 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).
15. "NE" means Not Established. Blank cells indicate that there is no information relevant to the respective row.

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	QUALIFIER	METHOD	MDL	MRL	SWSL	DILUTION FACTOR	COLLECT DATE	EXTRACTION DATE	ANALYSIS DATE	NC LABORATORY CERTIFICATION NUMBER
GROUNDWATER SAMPLES																
44-01	4401-MW5B1	7439-89-6	340	Iron	27,200	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5B2	7439-89-6	340	Iron	45,300	ug/L		EPA 200.7	50.0	50.0	300	1	07/18/2012	07/21/2012	07/28/2012	40
44-01	4401-MW5B3	7439-89-6	340	Iron	30,300	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40
SURFACE WATER SAMPLES																
44-01	4401-BDDOWN	7439-89-6	340	Iron	1,820	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40
44-01	4401-BDUP	7439-89-6	340	Iron	1,430	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/21/2012	07/28/2012	40

Notes:

1. "CAS Number" is a unique number assigned by the Chemical Abstracts Service (CAS) to all identified parameters. "SWS ID" is the Solid Waste Section Identification Number.
2. "Result" is analytical data reported by the laboratory in units of micrograms per liter (µg/L) or milligrams per liter (mg/L).
3. "Method Detection Limit" (MDL) is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.
4. "Method Reporting Limit" (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.
5. "Method" is the analytical method used to analyze the constituents.
6. 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 Method Detection Limit (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.
7. "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.
8. "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.
9. "Collect Date" is the date on which the sample was collected in the field. "Analysis Date" is the date on which the sample was analyzed by the lab.
10. "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.
11. 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.
12. 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 January 1, 2010).
13. 2B Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2B - Surface Water and Wetland Standards," (last amended on May 1, 2007).
14. Groundwater Protection Standard 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).
15. "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	WATER QUALITY STANDARD	RESULT	UNITS	QUALIFIER	METHOD	MDL	MRL	SWSL	DILUTION FACTOR	COLLECT DATE	ANALYSIS DATE	CAUSE AND SIGNIFICANCE
GROUNDWATER SAMPLES - 2L STANDARD OR GWPS (µg/L)																
44-01	4401-MW5B1	7439-89-6	340	Iron	300	27,200	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/28/2012	Likely Naturally Occuring.
44-01	4401-MW5B1	SW320	320	pH	6.5 - 8.5	6.28	SU							07/19/2012		Turbidity of sample at 391.4 NTU.
44-01	4401-MW5B2	7439-89-6	340	Iron	300	45,300	ug/L		EPA 200.7	50.0	50.0	300	1	07/18/2012	07/28/2012	Likely Naturally Occuring.
44-01	4401-MW5B2	SW320	320	pH	6.5 - 8.5	6.42	SU							07/18/2012		Turbidity of sample at 54.92 NTU.
44-01	4401-MW5B3	7439-89-6	340	Iron	300	30,300	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/28/2012	Likely Naturally Occuring.
44-01	4401-MW5C2	SW320	320	pH	6.5 - 8.5	6.18	SU							07/18/2012		Turbidity of sample at 0.00 NTU.
44-01	4401-MW5C3	SW320	320	pH	6.5 - 8.5	5.47	SU							07/18/2012		Turbidity of sample at 0.70 NTU.
SURFACE WATER SAMPLES - 2B STANDARD (µg/L)																
44-01	4401-BDDOWN	7439-89-6	340	Iron	1,000	1,820	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/28/2012	Likely Naturally Occuring. Turbidity of sample at 29.02 NTU.
44-01	4401-BDUP	7439-89-6	340	Iron	1,000	1,430	ug/L		EPA 200.7	50.0	50.0	300	1	07/19/2012	07/28/2012	Likely Naturally Occuring. Turbidity of sample at 38.52 NTU.

Notes:

- "CAS Number" is a unique number assigned by the Chemical Abstracts Service (CAS) to all identified parameters. "SWS ID" is the Solid Waste Section Identification Number.
- "Result" is analytical data reported by the laboratory in units of micrograms per liter (µg/L) or milligrams per liter (mg/L).
- "Method Detection Limit" (MDL) is the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero.
- "Method Reporting Limit" (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.
- "Method" is the analytical method used to analyze the constituents.
- 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 Method Detection Limit (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.
- "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.
- "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.
- "Collect Date" is the date on which the sample was collected in the field. "Analysis Date" is the date on which the sample was analyzed by the lab.
- "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.
- 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.
- 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 January 1, 2010).
- 2B Standard is from "North Carolina Administrative Code, Title 15A: Department of Environment and Natural Resources, Subchapter 2B - Surface Water and Wetland Standards," (last amended on May 1, 2007).
- Groundwater Protection Standard 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).
- "NE" means Not Established. Blank cells indicate that there is no information relevant to the respective row.

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
<i>2L Standards</i>		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

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
<i>2L Standards</i>		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

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
<i>2L Standards</i>		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

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
<i>2L Standards</i>		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

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
<i>2L Standards</i>		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	

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	

Notes:

1. 2L Standard values were taken from Title 15A, North Carolina Administrative Code (NCAC), Subchapter 2L Groundwater Quality Standards last amended January 1, 2010.
2. **Bold** indicates exceedance of 2L Standard in monitoring wells.
3. pH is measured in Standard Units.
4. Concentrations are in milligrams per liter (mg/L).
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
<i>2B Standards</i>		6.0 - 9.0	0.002	1.0	500	230	250
BD-UP	05/01/91	7.47	ND	0.96	37	1.56	ND
	05/01/92	NA	NA	1.6	NA	NA	NA
	05/01/93	NA	NA	NA	NA	NA	NA
	11/01/93	7.50	ND	0.41	75	2.9	4.1
	05/01/94	7.10	ND	0.24	37	1.9	4.3
	11/01/94	7.40	ND	1.179	56	3.3	3.7
	05/01/95	7.90	ND	1.125	49	2.5	4.1
	11/01/95	6.20	ND	0.192	72	4.2	4.9
	05/01/96	6.20	ND	1.316	34	2.6	5.9
	11/01/96	7.10	ND	1.099	43	2.9	3.7
	05/01/97	7.30	ND	0.64	62	1.5	3.1
	11/01/97	7.40	ND	0.3	38	3.4	3.8
	05/01/98	7.60	ND	ND	36	ND	3
	11/01/98	NA	NA	NA	NA	NA	NA
	05/01/99	6.70	ND	0.81	76	2.0	4.1
	11/01/99	6.60	ND	0.28	75	1.5	2.63
	05/01/00	6.70	ND	0.39	68	2.4	6.1
	11/01/00	7.20	ND	0.29	55	3.2	7.7
	05/01/01	6.90	ND	0.46	86	3.9	ND
	11/05/01	7.80	ND	0.44	64	2.9	3.7
	05/28/02	7.20	ND	0.56	62	3.2	ND
	12/02/02	6.62	ND	2.9	66	3.2	9.1
	12/03/03	7.32	ND	0.53	50	3.6	ND
	07/19/04	6.86	ND	0.88	50	ND	ND
	07/12/05	NA	ND	0.60	86	ND	ND
	07/11/06	7.7	ND	0.29	36	ND	ND
	07/27/07	5.31	ND	0.70	72	ND	ND
	07/22/08	7.22	ND	0.512	64	ND	ND
07/21/09	6.95	ND	0.504	48	ND	ND	
07/14/10	6.89	ND	0.584	55	ND	ND	
07/26/11	5.75	ND	2.790	53	ND	ND	
07/19/12	7.11	ND	1.430	65	3.9	6.3	

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
<i>2B Standards</i>		6.0 - 9.0	0.002	1.0	500	230	250
BD-DOWN	05/01/91	7.47	ND	0.67	46	2.41	ND
	05/01/92	NA	NA	1.7	NA	NA	NA
	05/01/93	NA	NA	NA	NA	NA	NA
	11/01/93	7.45	ND	0.51	110	5.2	9.6
	05/01/94	7.04	ND	0.343	42	3.2	4
	11/01/94	7.30	ND	0.89	34	4.4	3.3
	05/01/95	7.20	ND	1.495	48	3.0	3.9
	11/01/95	6.40	ND	0.241	52	4.4	5.1
	05/01/96	6.70	ND	1.513	41	3.4	7
	11/01/96	7.20	ND	0.264	49	4.2	3.9
	05/01/97	6.80	ND	1.3	65	3.9	3.6
	11/01/97	7.00	ND	0.19	51	3.7	3.1
	05/01/98	7.20	ND	0.51	48	2.6	3.1
	11/01/98	NA	NA	NA	NA	NA	NA
	05/01/99	6.60	ND	0.9	75	4.7	3.54
	11/01/99	6.90	ND	0.36	60	2.6	2.63
	05/01/00	6.60	ND	0.27	59	3.1	6.9
	11/01/00	6.90	ND	0.3	87	4.2	8.1
	05/01/01	6.90	ND	0.62	2600	4.2	2.8
	11/05/01	7.98	ND	0.33	ND	4.7	3.8
	05/28/02	7.20	ND	0.63	66	4.4	ND
	12/02/02	6.19	ND	7.0	88	6.0	10
	12/03/03	7.32	ND	0.57	50	5.0	ND
	07/19/04	6.92	ND	1.5	62	ND	ND
	07/12/05	NA	ND	0.84	84	ND	ND
	07/10/06	7.58	ND	0.28	44	ND	ND
	07/27/07	7.03	ND	1.0	66	ND	ND
	07/22/08	6.99	ND	0.555	92	5.7	ND
07/21/09	6.97	ND	0.453	56	ND	ND	
07/14/10	6.45	ND	0.593	57	5.1	ND	
07/26/11	6.04	ND	1.910	51	ND	ND	
07/19/12	7.22	ND	1.820	65	4.7	6.3	

Notes:

1. 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.
2. **Bold** indicates exceedance of 2B Standard in monitoring wells.
3. pH is measured in Standard Units.
4. Concentrations are in milligrams per liter (mg/L).
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.

APPENDICES

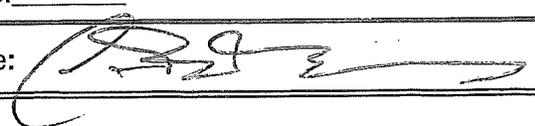
**APPENDIX A
ALTAMONT SAMPLING LOGS AND
EQUIPMENT DOCUMENTATION AND
CALIBRATION DATA SHEET**

ALTAMONT ENVIRONMENTAL, INC.

ENGINEERING & HYDROGEOLOGY

231 HAYWOOD STREET, ASHEVILLE, NC 28801
 TEL. 828.281.3350 FAC. 828.281.3351
 WWW.ALTAMONTENVIRONMENTAL.COM

Surface Water Sampling Log

PROJECT NAME: <u>IP LF#5 AW Sampling</u>				DATE: <u>7/19/12</u>			
PROJECT NUMBER: <u>2055.0501</u>				WEATHER: <u>90s pt cloudy</u>			
SAMPLING PERSONNEL: <u>P Brooks</u>							
SAMPLE NAME: <u>BD-UP</u>							
COMMENTS: <u>upstream of landfill</u>							
SAMPLE METHOD: <u>GRAB</u> SYRINGE PUMP BAILER-DISP. OTHER:							
TIME	TEMP (°C)	SPECIFIC COND. (µS)	DISSOLVED OXYGEN (mg/L)	pH (S.U.) <i>report to 0.1 S.U.</i>	OXIDATION REDUCTION POTENTIAL (mV)	TURBIDITY (NTU)	COMMENTS
<u>1309</u>	<u>18.45</u>	<u>86</u>	<u>4.16</u>	<u>7.11</u>	<u>62.1</u>	<u>38.52</u>	
SAMPLING CONTAINER		NUMBER OF CONTAINERS		REQUESTED ANALYSIS			
500 mL PLASTIC		<u>1</u>					
250 mL PLASTIC		<u>2</u>					
125 mL PLASTIC							
40 mL GLASS							
1 L GLASS							
OTHER							
VEGETATION: <u>ok</u> ACCESS: <u>ok</u>							
Sampling Personnel Signature: 						Date: <u>7/19/12</u>	

Notes: °C = degrees Celsius
 mS = 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.

ALTAMONT ENVIRONMENTAL, INC.

ENGINEERING & HYDROGEOLOGY

231 HAYWOOD STREET, ASHEVILLE, NC 28801
 TEL.828.281.3350 FAC.828.281.3351
 WWW.ALTAMONTENVIRONMENTAL.COM

Surface Water Sampling Log

PROJECT NAME: <u>IP LF#5 GW Sampling</u>				DATE: <u>7/19/12</u>			
PROJECT NUMBER: <u>2055.0501</u>				WEATHER: <u>80's pt cloudy</u>			
SAMPLING PERSONNEL: <u>P Brooks</u>							
SAMPLE NAME: <u>SD Down</u>							
COMMENTS: <u>downstream of landfill</u>							
SAMPLE METHOD: <input checked="" type="radio"/> GRAB <input type="radio"/> SYRINGE <input type="radio"/> PUMP <input type="radio"/> BAILER-DISP. <input type="radio"/> OTHER:							
TIME	TEMP (°C)	SPECIFIC COND. (µS)	DISSOLVED OXYGEN (mg/L)	pH (S.U.) <i>report to 0.1 S.U.</i>	OXIDATION REDUCTION POTENTIAL (mV)	TURBIDITY (NTU)	COMMENTS
1140	17.84	91	7.78	7.22	57.1	29.02	
SAMPLING CONTAINER			NUMBER OF CONTAINERS		REQUESTED ANALYSIS		
500 mL PLASTIC			2				
250 mL PLASTIC			2				
125 mL PLASTIC							
40 mL GLASS							
1 L GLASS							
OTHER							
VEGETATION: <u>ok</u> ACCESS: <u>ok</u>							
Sampling Personnel Signature: 						Date: <u>7/19/12</u>	

Notes: °C = degrees Celsius
 mS = 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.

ALTAMONT ENVIRONMENTAL, INC.

ENGINEERING & HYDROGEOLOGY

231 HAYWOOD STREET, ASHEVILLE, NC 28801
 TEL. 828.281.3350 FAC. 828.281.3351
 WWW.ALTAMONTENVIRONMENTAL.COM

Equipment Documentation & Instrument Calibration Data Sheet

Project Name: <u>IP</u>	Calibration Documentation
Project Number: <u>2055.05</u>	Person Conducting Calibration: <u>P Brooks</u>
Project Location: <u>Canton, NC</u>	Date of Calibration: <u>7/18/12</u>
	Date of Field Measurements: <u>7/18/12</u>

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	7/18/12
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: 0.41	Initial: 12.27	Initial: 713.0
		Cal: 0.02	Cal: 10.0	Cal: 1000
		Time: 813	Time: 812	Time: 809

YSI 556 Multiparameter Meter

Instrument Serial Number							Calibration Expiration Date
07D100979		Instrument Readings					
Dissolved Oxygen	Initial: 7.26	Cal: 8.08	mmHg: 702.4	Time: 829			NA
QC*	AM Time:	Meas:	Mid Day Time:	Check:	PM Time:	Check:	NA
pH 7 S.U. report to 0.1 S.U.	Initial: 7.96	pHmV:	Cal: 9.00	pHmV:	Time: 812		1/14
pH 4 S.U. report to 0.1 S.U.	Initial: 3.77	pHmV:	Cal: 3.99	pHmV:	Time: 814		3/13
pH 10 S.U. report to 0.1 S.U.	Initial: 9.79	pHmV:	Cal: 9.96	pHmV:	Time: 817		3/13
QC* pH 7 S.U. report to 0.1 S.U.	AM Time: 834	Meas: 7.02	Mid Day Time:	Check:	PM Time:	Check:	
Spec. Cond. 1413/447/84/23 mS**	Initial: 1422	Cal: 1413	Time: 808				2/13
QC* 84 mS	AM Time: 830	Meas: 91	Mid Day Time:	Check:	PM Time:	Check:	
ORP 240 mV	Initial: 241.7	Cal: 240.0	Time: 831				

Comments: _____
 Signature: Date: 7/18/12

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.

ALTAMONT ENVIRONMENTAL, INC.

ENGINEERING & HYDROGEOLOGY

231 HAYWOOD STREET, ASHEVILLE, NC 28801
 TEL. 828.281.3350 FAC. 828.281.3351
 WWW.ALTAMONTENVIRONMENTAL.COM

Equipment Documentation & Instrument Calibration Data Sheet

Project Name: <u>IP LEAS GW Sampling</u>	Calibration Documentation
Project Number: <u>2055_0501</u>	Person Conducting Calibration: <u>P Brooks</u>
Project Location: <u>Canton, NC</u>	Date of Calibration: <u>7/19/12</u>
	Date of Field Measurements: <u>7/19/12</u>

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	7/19/12
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: 7.07	Initial: 798.7
		Cal: 0.02	Cal: 10.0	Cal: 1000
		Time: 809	Time: 808	Time: 806

YSI 556 Multiparameter Meter

Instrument Serial Number	07D100979						Calibration Expiration Date
Instrument Readings							
Dissolved Oxygen	Initial: 9.31	Cal: 7.98	mmHg: 707.8	Time: 811			NA
QC*	AM Time:	Meas:	Mid Day Time:	Check:	PM Time:	Check:	NA
pH 7 S.U. report to 0.1 S.U.	Initial: 6.90	pHmV:	Cal: 7.00	pHmV:	Time: 802		
pH 4 S.U. report to 0.1 S.U.	Initial: 3.92	pHmV:	Cal: 4.00	pHmV:	Time: 804		
pH 10 S.U. report to 0.1 S.U.	Initial: 9.82	pHmV:	Cal: 9.97	pHmV:	Time: 806		
QC* pH 7 S.U. report to 0.1 S.U.	AM Time: 821	Meas: 6.98	Mid Day Time:	Check:	PM Time:	Check:	
Spec. Cond. (1413/447/84/23 mS**)	Initial: 1431	Cal: 1413	Time: 800				2/13
QC* 84 mS	AM Time: 824	Meas: 85	Mid Day Time:	Check:	PM Time:	Check:	
ORP 240 mV	Initial: 236.6	Cal: 240.0	Time: 819				

Comments: _____
 Signature: Date: 7/19/12

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.

APPENDIX B
JULY 18, 2003 LETTER FROM THE
NORTH CAROLINA DEPARTMENT OF
ENVIRONMENT AND NATURAL RESOURCES

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



Michael F. Easley, Governor
William G. Ross Jr., Secretary
Dexter R. Matthews, Director
Mr. Thomas C. Richardson
International Paper Corporation
6400 Poplar Ave.
Memphis, Tn. 38197

July 18, 2003

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.

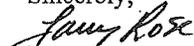
In-addition, the field parameters of temperature, pH, and specific conductivity must be measured for each sample during each sampling event.

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 reinstate 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

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/

APPENDIX C
LABORATORY ANALYTICAL REPORT AND
CHAIN OF CUSTODY



Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

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

August 02, 2012

Mr. Joel Lenk
Altamont Environmental
50 College Street
Asheville, NC 28801

RE: Project: IP Landfill #5
Pace Project No.: 92124889

Dear Mr. Lenk:

Enclosed are the analytical results for sample(s) received by the laboratory on July 19, 2012. 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,

Tom Williams for
Lorri Patton
lorri.patton@pacelabs.com
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, Inc..



Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

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

CERTIFICATIONS

Project: IP Landfill #5
Pace Project No.: 92124889

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



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

SAMPLE ANALYTE COUNT

Project: IP Landfill #5
 Pace Project No.: 92124889

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92124889001	MW-5B1	EPA 200.7	JDA	2	PASI-A
		SM 2540C	LMD	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-CI-E	JDA	1	PASI-A
92124889002	MW-5B2	EPA 200.7	JDA	2	PASI-A
		SM 2540C	LMD	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-CI-E	JDA	1	PASI-A
92124889003	MW-5B3	EPA 200.7	JDA	2	PASI-A
		SM 2540C	LMD	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-CI-E	JDA	1	PASI-A
92124889004	MW-5C1	EPA 200.7	JDA	2	PASI-A
		SM 2540C	LMD	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-CI-E	JDA	1	PASI-A
92124889005	MW-5C2	EPA 200.7	JDA	2	PASI-A
		SM 2540C	LMD	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-CI-E	JDA	1	PASI-A
92124889006	MW-5C3	EPA 200.7	JDA	2	PASI-A
		SM 2540C	LMD	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-CI-E	JDA	1	PASI-A
92124889007	BD-UP	EPA 200.7	JDA	2	PASI-A
		SM 2540C	LMD	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-CI-E	JDA	1	PASI-A
92124889008	BD-DOWN	EPA 200.7	JDA	2	PASI-A
		SM 2540C	LMD	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-CI-E	JDA	1	PASI-A
92124889009	DUP-1	EPA 200.7	JDA	2	PASI-A
		SM 2540C	LMD	1	PASI-A
		EPA 300.0	SAE	1	PASI-A
		SM 4500-CI-E	JDA	1	PASI-A

REPORT OF LABORATORY ANALYSIS



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

ANALYTICAL RESULTS

Project: IP Landfill #5
 Pace Project No.: 92124889

Sample: MW-5B1		Lab ID: 92124889001	Collected: 07/19/12 12:33	Received: 07/19/12 13:58	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	07/21/12 10:35	07/28/12 08:53	7440-43-9	
Iron	27200	ug/L	50.0	1	07/21/12 10:35	07/28/12 08:53	7439-89-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C						
Total Dissolved Solids	31.0	mg/L	25.0	1		07/20/12 19:56		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	ND	mg/L	2.0	1		07/30/12 21:04	14808-79-8	
4500 Chloride		Analytical Method: SM 4500-Cl-E						
Chloride	1.4	mg/L	1.0	1		07/31/12 11:15	16887-00-6	



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

ANALYTICAL RESULTS

Project: IP Landfill #5
 Pace Project No.: 92124889

Sample: MW-5B2		Lab ID: 92124889002	Collected: 07/18/12 10:05	Received: 07/19/12 13:58	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	07/21/12 10:35	07/28/12 08:57	7440-43-9	
Iron	45300	ug/L	50.0	1	07/21/12 10:35	07/28/12 08:57	7439-89-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C						
Total Dissolved Solids	323	mg/L	25.0	1		07/20/12 19:55		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	3.2	mg/L	2.0	1		07/30/12 21:17	14808-79-8	
4500 Chloride		Analytical Method: SM 4500-Cl-E						
Chloride	107	mg/L	5.0	5		07/31/12 11:15	16887-00-6	

ANALYTICAL RESULTS

Project: IP Landfill #5

Pace Project No.: 92124889

Sample: MW-5B3		Lab ID: 92124889003	Collected: 07/19/12 11:06	Received: 07/19/12 13:58	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	07/21/12 10:35	07/28/12 09:01	7440-43-9	
Iron	30300	ug/L	50.0	1	07/21/12 10:35	07/28/12 09:01	7439-89-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C						
Total Dissolved Solids	168	mg/L	25.0	1		07/20/12 19:56		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	13.4	mg/L	2.0	1		07/30/12 21:31	14808-79-8	
4500 Chloride		Analytical Method: SM 4500-Cl-E						
Chloride	23.8	mg/L	1.0	1		07/31/12 11:16	16887-00-6	



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

ANALYTICAL RESULTS

Project: IP Landfill #5
 Pace Project No.: 92124889

Sample: MW-5C1		Lab ID: 92124889004	Collected: 07/19/12 10:04	Received: 07/19/12 13:58	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	07/21/12 10:35	07/28/12 09:05	7440-43-9	
Iron	ND ug/L		50.0	1	07/21/12 10:35	07/28/12 09:05	7439-89-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C						
Total Dissolved Solids	80.0 mg/L		25.0	1		07/20/12 19:57		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	7.7 mg/L		2.0	1		07/30/12 21:44	14808-79-8	
4500 Chloride		Analytical Method: SM 4500-Cl-E						
Chloride	7.9 mg/L		1.0	1		07/31/12 11:17	16887-00-6	



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

ANALYTICAL RESULTS

Project: IP Landfill #5
 Pace Project No.: 92124889

Sample: MW-5C2		Lab ID: 92124889005	Collected: 07/18/12 12:13	Received: 07/19/12 13:58	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	07/21/12 10:35	07/28/12 09:08	7440-43-9	
Iron	92.3	ug/L	50.0	1	07/21/12 10:35	07/28/12 09:08	7439-89-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C						
Total Dissolved Solids	216	mg/L	25.0	1		07/20/12 19:55		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	3.3	mg/L	2.0	1		07/30/12 21:58	14808-79-8	
4500 Chloride		Analytical Method: SM 4500-Cl-E						
Chloride	92.4	mg/L	5.0	5		07/31/12 11:18	16887-00-6	M1



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

ANALYTICAL RESULTS

Project: IP Landfill #5
 Pace Project No.: 92124889

Sample: MW-5C3	Lab ID: 92124889006	Collected: 07/18/12 11:10	Received: 07/19/12 13:58	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	07/21/12 10:35	07/28/12 09:12	7440-43-9	
Iron	162 ug/L		50.0	1	07/21/12 10:35	07/28/12 09:12	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	245 mg/L		25.0	1		07/20/12 19:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	3.7 mg/L		2.0	1		07/30/12 23:06	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	110 mg/L		5.0	5		07/31/12 11:20	16887-00-6	



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

ANALYTICAL RESULTS

Project: IP Landfill #5
 Pace Project No.: 92124889

Sample: BD-UP		Lab ID: 92124889007	Collected: 07/19/12 13:09	Received: 07/19/12 13:58	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	07/21/12 10:35	07/28/12 09:15	7440-43-9	
Iron	1430	ug/L	50.0	1	07/21/12 10:35	07/28/12 09:15	7439-89-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	65.0	mg/L	25.0	1		07/20/12 19:57		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0							
Sulfate	6.3	mg/L	2.0	1		07/30/12 23:46	14808-79-8	
4500 Chloride	Analytical Method: SM 4500-Cl-E							
Chloride	3.9	mg/L	1.0	1		07/31/12 11:22	16887-00-6	



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

ANALYTICAL RESULTS

Project: IP Landfill #5
 Pace Project No.: 92124889

Sample: BD-DOWN		Lab ID: 92124889008	Collected: 07/19/12 11:40	Received: 07/19/12 13:58	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	07/21/12 10:35	07/28/12 09:22	7440-43-9	
Iron	1820	ug/L	50.0	1	07/21/12 10:35	07/28/12 09:22	7439-89-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C						
Total Dissolved Solids	65.0	mg/L	25.0	1		07/20/12 19:57		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	6.3	mg/L	2.0	1		07/31/12 00:00	14808-79-8	
4500 Chloride		Analytical Method: SM 4500-Cl-E						
Chloride	4.7	mg/L	1.0	1		07/31/12 11:23	16887-00-6	



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

ANALYTICAL RESULTS

Project: IP Landfill #5

Pace Project No.: 92124889

Sample: DUP-1		Lab ID: 92124889009	Collected: 07/19/12 10:08	Received: 07/19/12 13:58	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	07/21/12 10:35	07/28/12 09:38	7440-43-9	
Iron	65.3	ug/L	50.0	1	07/21/12 10:35	07/28/12 09:38	7439-89-6	
2540C Total Dissolved Solids		Analytical Method: SM 2540C						
Total Dissolved Solids	80.0	mg/L	25.0	1		07/20/12 19:58		
300.0 IC Anions 28 Days		Analytical Method: EPA 300.0						
Sulfate	7.2	mg/L	2.0	1		07/31/12 00:14	14808-79-8	
4500 Chloride		Analytical Method: SM 4500-Cl-E						
Chloride	8.1	mg/L	1.0	1		07/31/12 11:24	16887-00-6	

QUALITY CONTROL DATA

Project: IP Landfill #5
Pace Project No.: 92124889

QC Batch: MPRP/11084 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET
Associated Lab Samples: 92124889001, 92124889002, 92124889003, 92124889004, 92124889005, 92124889006, 92124889007, 92124889008, 92124889009

METHOD BLANK: 799696 Matrix: Water
Associated Lab Samples: 92124889001, 92124889002, 92124889003, 92124889004, 92124889005, 92124889006, 92124889007, 92124889008, 92124889009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	1.0	07/28/12 08:12	
Iron	ug/L	ND	50.0	07/28/12 08:12	

LABORATORY CONTROL SAMPLE: 799697

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	500	442	88	85-115	
Iron	ug/L	5000	4480	90	85-115	

MATRIX SPIKE SAMPLE: 799698

Parameter	Units	92124754001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	16.4	500	438	84	70-130	
Iron	ug/L	144000	5000	143000	-19	70-130 M1	

MATRIX SPIKE SAMPLE: 799700

Parameter	Units	92124889007 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	ND	500	452	90	70-130	
Iron	ug/L	1430	5000	6000	91	70-130	

SAMPLE DUPLICATE: 799699

Parameter	Units	92124754002 Result	Dup Result	RPD	Qualifiers
Cadmium	ug/L	2.5	2.1	16	
Iron	ug/L	60800	60200	1	

SAMPLE DUPLICATE: 799701

Parameter	Units	92124889008 Result	Dup Result	RPD	Qualifiers
Cadmium	ug/L	ND	ND		
Iron	ug/L	1820	1630	11	

QUALITY CONTROL DATA

Project: IP Landfill #5
Pace Project No.: 92124889

QC Batch: WET/21708 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 92124889001, 92124889002, 92124889003, 92124889004, 92124889005, 92124889006, 92124889007, 92124889008, 92124889009

METHOD BLANK: 799620 Matrix: Water
Associated Lab Samples: 92124889001, 92124889002, 92124889003, 92124889004, 92124889005, 92124889006, 92124889007, 92124889008, 92124889009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	25.0	07/20/12 19:49	

LABORATORY CONTROL SAMPLE: 799621

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	250	244	98	80-120	

SAMPLE DUPLICATE: 799622

Parameter	Units	92124412002 Result	Dup Result	RPD	Qualifiers
Total Dissolved Solids	mg/L	234	229	2	

SAMPLE DUPLICATE: 799623

Parameter	Units	92124889005 Result	Dup Result	RPD	Qualifiers
Total Dissolved Solids	mg/L	216	216	0	



QUALITY CONTROL DATA

Project: IP Landfill #5
 Pace Project No.: 92124889

QC Batch: WETA/12777 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 92124889001, 92124889002, 92124889003, 92124889004, 92124889005

METHOD BLANK: 804320 Matrix: Water
 Associated Lab Samples: 92124889001, 92124889002, 92124889003, 92124889004, 92124889005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	2.0	07/30/12 15:24	

LABORATORY CONTROL SAMPLE: 804321

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	20	19.2	96	90-110	

MATRIX SPIKE SAMPLE: 804322

Parameter	Units	92125708011 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	1600	20	1520	-386	90-110	M6

MATRIX SPIKE SAMPLE: 804324

Parameter	Units	92125708021 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	1380	20	1310	-368	90-110	M6

SAMPLE DUPLICATE: 804323

Parameter	Units	92125708011 Result	Dup Result	RPD	Qualifiers
Sulfate	mg/L	1600	1570	2	

SAMPLE DUPLICATE: 804325

Parameter	Units	92125708021 Result	Dup Result	RPD	Qualifiers
Sulfate	mg/L	1380	1390	1	



Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
 Eden, NC 27288
 (336)623-8921

Pace Analytical Services, Inc.
 2225 Riverside Dr.
 Asheville, NC 28804
 (828)254-7176

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

QUALITY CONTROL DATA

Project: IP Landfill #5
 Pace Project No.: 92124889

QC Batch: WETA/12778 Analysis Method: EPA 300.0
 QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
 Associated Lab Samples: 92124889006, 92124889007, 92124889008, 92124889009

METHOD BLANK: 804326 Matrix: Water
 Associated Lab Samples: 92124889006, 92124889007, 92124889008, 92124889009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	ND	2.0	07/30/12 22:39	

LABORATORY CONTROL SAMPLE: 804327

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	20	19.4	97	90-110	

MATRIX SPIKE SAMPLE: 804328

Parameter	Units	92124889006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	3.7	20	23.2	98	90-110	

SAMPLE DUPLICATE: 804329

Parameter	Units	92124889006 Result	Dup Result	RPD	Qualifiers
Sulfate	mg/L	3.7	3.7	0	

QUALITY CONTROL DATA

Project: IP Landfill #5
Pace Project No.: 92124889

QC Batch: WETA/12781 Analysis Method: SM 4500-Cl-E
QC Batch Method: SM 4500-Cl-E Analysis Description: 4500 Chloride
Associated Lab Samples: 92124889001, 92124889002, 92124889003, 92124889004

METHOD BLANK: 804867 Matrix: Water
Associated Lab Samples: 92124889001, 92124889002, 92124889003, 92124889004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	07/31/12 11:00	

LABORATORY CONTROL SAMPLE: 804868

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.2	106	90-110	

MATRIX SPIKE SAMPLE: 804869

Parameter	Units	92124533002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	14.9	20	35.1	101	75-125	

SAMPLE DUPLICATE: 804870

Parameter	Units	92124533003 Result	Dup Result	RPD	Qualifiers
Chloride	mg/L	155	158	2	

QUALITY CONTROL DATA

Project: IP Landfill #5
Pace Project No.: 92124889

QC Batch: WETA/12782 Analysis Method: SM 4500-Cl-E
QC Batch Method: SM 4500-Cl-E Analysis Description: 4500 Chloride
Associated Lab Samples: 92124889005, 92124889006, 92124889007, 92124889008, 92124889009

METHOD BLANK: 804872 Matrix: Water
Associated Lab Samples: 92124889005, 92124889006, 92124889007, 92124889008, 92124889009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	1.0	07/31/12 11:17	

LABORATORY CONTROL SAMPLE: 804873

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.1	105	90-110	

MATRIX SPIKE SAMPLE: 804874

Parameter	Units	92124889005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	92.4	20	102	48	75-125	M1

SAMPLE DUPLICATE: 804875

Parameter	Units	92124889006 Result	Dup Result	RPD	Qualifiers
Chloride	mg/L	110	141	25	D6

QUALIFIERS

Project: IP Landfill #5
Pace Project No.: 92124889

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

ANALYTE QUALIFIERS

D6 The relative percent difference (RPD) between the sample and sample duplicate exceeded laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: IP Landfill #5
Pace Project No.: 92124889

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92124889001	MW-5B1	EPA 200.7	MPRP/11084	EPA 200.7	ICP/10179
92124889002	MW-5B2	EPA 200.7	MPRP/11084	EPA 200.7	ICP/10179
92124889003	MW-5B3	EPA 200.7	MPRP/11084	EPA 200.7	ICP/10179
92124889004	MW-5C1	EPA 200.7	MPRP/11084	EPA 200.7	ICP/10179
92124889005	MW-5C2	EPA 200.7	MPRP/11084	EPA 200.7	ICP/10179
92124889006	MW-5C3	EPA 200.7	MPRP/11084	EPA 200.7	ICP/10179
92124889007	BD-UP	EPA 200.7	MPRP/11084	EPA 200.7	ICP/10179
92124889008	BD-DOWN	EPA 200.7	MPRP/11084	EPA 200.7	ICP/10179
92124889009	DUP-1	EPA 200.7	MPRP/11084	EPA 200.7	ICP/10179
92124889001	MW-5B1	SM 2540C	WET/21708		
92124889002	MW-5B2	SM 2540C	WET/21708		
92124889003	MW-5B3	SM 2540C	WET/21708		
92124889004	MW-5C1	SM 2540C	WET/21708		
92124889005	MW-5C2	SM 2540C	WET/21708		
92124889006	MW-5C3	SM 2540C	WET/21708		
92124889007	BD-UP	SM 2540C	WET/21708		
92124889008	BD-DOWN	SM 2540C	WET/21708		
92124889009	DUP-1	SM 2540C	WET/21708		
92124889001	MW-5B1	EPA 300.0	WETA/12777		
92124889002	MW-5B2	EPA 300.0	WETA/12777		
92124889003	MW-5B3	EPA 300.0	WETA/12777		
92124889004	MW-5C1	EPA 300.0	WETA/12777		
92124889005	MW-5C2	EPA 300.0	WETA/12777		
92124889006	MW-5C3	EPA 300.0	WETA/12778		
92124889007	BD-UP	EPA 300.0	WETA/12778		
92124889008	BD-DOWN	EPA 300.0	WETA/12778		
92124889009	DUP-1	EPA 300.0	WETA/12778		
92124889001	MW-5B1	SM 4500-CI-E	WETA/12781		
92124889002	MW-5B2	SM 4500-CI-E	WETA/12781		
92124889003	MW-5B3	SM 4500-CI-E	WETA/12781		
92124889004	MW-5C1	SM 4500-CI-E	WETA/12781		
92124889005	MW-5C2	SM 4500-CI-E	WETA/12782		
92124889006	MW-5C3	SM 4500-CI-E	WETA/12782		
92124889007	BD-UP	SM 4500-CI-E	WETA/12782		
92124889008	BD-DOWN	SM 4500-CI-E	WETA/12782		
92124889009	DUP-1	SM 4500-CI-E	WETA/12782		

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: Section B Required Project Information: Section C Invoice Information:

Company: **Albmont Environmental** Report To: **Soel Lent** Attention: **Sue Beaver** Page: **1** of **1**
 Address: **231 Hywood St** Copy To: **Soel Lent** Company Name: **Albmont Environmental** Regulatory Agency: **15666761**
 Email: **soel@albmontenvironmental.com** Purchase Order No.: **2055,0501** Address: **231 Hywood St** Reference: **Asentite 28801** NPDES GROUND WATER DRINKING WATER
 Phone: **888 281 3350** Fax: **888 281 3351** Project Name: **1P Landfill #5 GW Sampling** Page Quote Manager: **Asentite 28801** RCRA OTHER
 Requested Due Date/TAT: **Standard** Project Number: **2055,0501** Page Profile #:

ITEM #	Section D Required Client Information SAMPLE ID (A-Z, 0-9 /, -,) Sample IDs MUST BE UNIQUE	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	COLLECTED		SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
			DATE	TIME			DATE	TIME	Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH			
1	MW-SBI		7/19/12	1233		X	X	X	X	X	X	X	X	X	X	-001
2	MW-SB2		7/19/12	1005		X	X	X	X	X	X	X	X	X	X	-002
3	MW-SB3		7/19/12	1106		X	X	X	X	X	X	X	X	X	X	-003
4	MW-SC1		7/19/12	1004		X	X	X	X	X	X	X	X	X	X	-004
5	MW-SC2		7/19/12	1213		X	X	X	X	X	X	X	X	X	X	-005
6	MW-SC3		7/19/12	1110		X	X	X	X	X	X	X	X	X	X	-006
7	BD-UP		7/19/12	1309		X	X	X	X	X	X	X	X	X	X	-007
8	BD-DOWN		7/19/12	1140		X	X	X	X	X	X	X	X	X	X	-008
9	DUP-1		7/19/12	1008		X	X	X	X	X	X	X	X	X	X	-009

ADDITIONAL COMMENTS: **RELINQUISHED BY / AFFILIATION** **DATE** **TIME** **ACCEPTED BY / AFFILIATION** **DATE** **TIME** **SAMPLE CONDITIONS**

Albmont 7/19/12 13:58 **Gene M. Johnson 7/19/12 13:55** **Y** **N** **Y**

SAMPLER NAME AND SIGNATURE
 PRINT Name of SAMPLER: **Books Books**
 SIGNATURE of SAMPLER: **[Signature]** **DATE-Signed (MM/DD/YY): 7/19/12**
 Temp in °C: _____ Received on Ice (Y/N): _____ Custody Sealed Cooler (Y/N): _____ Samples Intact (Y/N): _____

*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 (except invoices not paid within 30 days). F-ALL-Q-020rev.07, 15-May-2007



Document Name: **Sample Condition Upon Receipt (SCUR)**
 Document No.: F-ASV-CS-003-rev.07

Document Revised: October 19, 2011
 Page 1 of 2
 Issuing Authorities:
 Pace Asheville Quality Office

Client Name: Altamont Project # 92124889

Where Received: Huntersville Asheville Eden

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

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

Optional
 Proj. Due Date
 Proj. Name

Packing Material: Bubble Wrap Bubble Bags None Other

Circle Thermometer Used: IR Gun# 80344039 Type of Ice: Wet Blue None Samples on ice, cooling process has begun
 IR Gun Back Up- 111565135

Temp Correction Factor: Add / Subtract 0.2 C

Corrected Cooler Temp.: 5.2 C Biological Tissue is Frozen: Yes No N/A
 Temp should be above freezing to 6°C

Date and Initials of person examining contents: 7/19/12 [Signature]

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

Client Notification/ Resolution: _____ Field Data Required? Y / N
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____

SCURF Review: [Signature] Date: 7/19/12 SRF Review: [Signature] Date: 7/19/12

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)