April 22, 2013

Ms. Wallace Coverdale
International Paper
Riegelwood Mill
865 John L. Riegel Road
Riegelwood, North Carolina 28456

Re: Semi-Annual Groundwater
Compliance Monitoring Results (February 2013)
Permit No. 24-02
International Paper, Riegelwood, North Carolina
URS Project No. 31829081

Dear Ms. Coverdale:

URS Corporation (URS) has prepared the attached North Carolina Department of Environment and Natural Resources (NCDENR) Environmental Monitoring Reporting Form and tables presenting the results of the 2013 first semi-annual groundwater compliance monitoring event in the vicinity of the International Paper Riegelwood Mill solid waste landfill. The sampling activities were conducted in accordance with NCDENR Division of Waste Management Solid Waste Section requirements for groundwater monitoring.

The sampling event was conducted on February 19, 2013. The sampling event included the collection of three water samples, designated Primary, Secondary, and Under-Drain, obtained from the New Landfill Cell 1, and the collection of groundwater samples from monitoring wells MW-1A, MW-1B, MW-4A, MW-5A, MW-7A, and MW-8A. All samples were submitted to Columbia Analytical Services (a North Carolina certified laboratory) for analysis.

The following are included as attachments to this document:

- NCDENR Environmental Monitoring Reporting Form
- NCDENR Electronic Data Deliverable (EDD)
- Table 1 – Semi-Annual Groundwater Analysis Results
- Table 2 – Historical Groundwater Analysis Results
- Table 3 – New Landfill Cell 1 Analysis Results
- Figure 1 – Location Map
- Figure 2 – Site Map
- Appendix A – Laboratory Report
- Appendix B – Field Activity Documentation

URS Corporation
1600 Perimeter Park, Suite 400
Morrisville, NC 27560
Tel: 919.461.1100
Fax: 919.461.1415

URS appreciates the opportunity to be of continued assistance to International Paper on this project. If you have any questions, please do not hesitate to contact Conan Fitzgerald at (919) 461-1260.

Sincerely,

URS CORPORATION

Conan Fitzgerald, P.E.
Project Engineer

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

NC DENR
Division of Waste Management - Solid Waste

Environmental Monitoring Reporting Form

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

Instructions:

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

Solid Waste Monitoring Data Submittal Information

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

International Paper

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

Name: Martha Meyers-Lee Phone: (919) 461-1100

E-mail: martha_meyers-lee@urscorp.com

Facility name:	Facility Address:	Facility Permit #	NC Landfill Rule: (.0500 or .1600)	Actual sampling dates (e.g., October 20-24, 2006)
International Paper	Riegelwood Mill 865 John L. Riegel Road Riegelwood, North Carolina 28456	24-02	.0500	February 19, 2013

Environmental Status: (Check all that apply)

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

Type of data submitted: (Check all that apply)

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

Notification attached?

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

Certification

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

Conan Fitzgerald, PE — Senior Project Manager — (919) 461-1100

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

Signature — 4/22/2013 Date

Affix NC Licensed Professional Geologist Seal

NORTH CAROLINA PROFESSIONAL SEAL 26500 ENGINEER CONAN D. FITZGERALD

URS Corporation, 1600 Perimeter Park Drive, Morrisville, North Carolina 27560

Facility Representative Address

C-2243

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

Revised 6/2009

PRELIMINARY ANALYSIS of the CAUSE and SIGNIFICANCE of EACH VALUE EXCEEDING

NC2L GROUNDWATER STANDARDS

Wells MW-1A and MW-1B are up-gradient background wells indicating natural conditions. Iron, manganese, and vanadium were detected at concentrations above NC2L groundwater standards in one or more of these wells, indicating that these metals are naturally present in groundwater at elevated concentrations. The pH measured in MW-1A was measured to be 4.85 standard units, indicating that shallow groundwater is naturally acidic.

Well MW-4A was found to exceed the 2L standard for iron, while the pH was below the range of 6.5 – 8.5 standard units. The iron result is within the range of historic background data, which has been as high as 12,000 ug/L in the background wells. The acidic pH is also noted to be within historic background data which has been measured several times to be less than 4.0 standard units. Thus these results are attributed to naturally occurring conditions.

Well MW-5A was found to have exceedences of the 2L standard for manganese and vanadium, both of which were within the historic range of background data, which has been detected as high as 330 ug/L and 13.6 ug/L respectively. Total Dissolved Solids (TDS) was also found to exceed the 2L groundwater standard. As the data does not indicate any obvious contamination, the TDS result is believed to be due to swampy conditions and is therefore naturally occurring.

Well MW-7A: Arsenic was also detected in both background samples. Arsenic is demonstrated to be naturally occurring by historic results in the background wells where it has been detected as high as 31 ug/L in MW-1A and 300 ug/L in MW-1B.

Iron, manganese, vanadium, and TDS were also detected above the 2L groundwater standard. The iron, manganese, and TDS were detected at concentrations consistent with historic levels, but generally less than results over the past three years. Vanadium was detected within the historical range for this element, which is generally consistent with background levels. It is noted that MW-7A has the highest natural turbidity of the wells in this monitoring program, which likely contributes to detected concentrations of naturally occurring constituents such as arsenic, iron, manganese, vanadium, and TDS.

Well MW-8A: Arsenic was detected at 11 ug/L in this well, which is slightly above the new 2L groundwater standard, but is within the historic range of detections both in this well and in the background wells, where arsenic has been demonstrated to be naturally occurring. Iron, manganese, and TDS, established above as naturally occurring, were also detected above the NC 2L standard, but within historic ranges for this well. Sulfate, which historically tests high in this well, was also detected above the 2L groundwater standard for only the second time since 2009.

TABLES

TABLE 1
SEMI-ANNUAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA
FEBRUARY 2013 EVENT

		Montioring Well:	MW-1A		MW-1B		MW-4A		MW-5A		MW-7A		MW-8B		2L	
		Collection Date:	2/19/13		2/19/13		2/19/13		2/19/13		2/19/13		2/19/13			
Method	Parameter	Units	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Standard	SWSL
SW-846 6010C	Arsenic	ug/l	4	J	6	J	3.6	U	5.4	J	13		5.1	J	10	10
SW-846 6010C	Barium	ug/l	111		22		42		134		36		41		700	100
SW-846 6010C	Cadmium	ug/l	0.17	U	0.17	U	0.17	U	3.4	J	1	J	0.17	U	2	1
SW-846 6010C	Chromium	ug/l	0.41	U	0.61	J	0.41	U	5.6	J	6	J	0.41	U	10	10
SW-846 6010C	Copper	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	1,000	10
SW-846 6010C	Iron	ug/l	865		1470		1260		306		14500		2670		300	300
SW-846 6010C	Lead	ug/l	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U	15	10
SW-846 6010C	Manganese	ug/l	15		83		46		226		232		82		50	50
SW-846 6010C	Selenium	ug/l	6.2	U	6.2	U	6.2	U	6.2	U	6.2	U	6.2	U	20	10
SW-846 6010C	Silver	ug/l	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	20	10
SW-846 6010C	Vanadium	ug/l	2	J	4.5	J	1.6	U	9.7	J	10	J	1.6	U	0.3 (I)	25
SW-846 6010C	Zinc	ug/l	6.7	BJ	1.4	U	4.8	BJ	1.8	BJ	3.1	BJ	3.3	BJ	1,000	10
SW-846 7470A	Mercury	ug/l	0.012	U	0.012	U	0.012	U	0.012	U	0.016	J	0.012	U	1	0.2
EPA 120.1	Specific Conductance	umhos/cm	146		439		175		2020		1240		747		NE	NE
EPA 300.0	Chloride	mg/l	6.73		10		17.9		234		141		2.2		250	NE
EPA 300.0	Fluoride	mg/l	0.17	J	0.15	J	0.14	J	0.15	J	0.18	J	0.22		2	2,000
EPA 300.0	Nitrate	mg/l	0.03	U	0.17	J	0.03	U	0.19	J	0.17	J	0.03	U	10	10,000
EPA 300.0	Sulfate	mg/l	51	J	22		45		11		50.1		131		250	250,000
EPA 410.4	Chemical oxygen demand	mg/l	16	U	16	U	16	U	155		49		16	U	NE	NE
SM 2540C	Total Dissolved Solids	mg/l	85		290		114		1250		848		511		500	NE
SM 4500H	pH	s.u.	4.37	J	7.43	J	4.77	J	6.91	J	7.12	J	7.02	J	6.5-8.5	NE
SM 5210B	Biochemical oxygen demand	mg/l	39.4	J	32.2	J	26.8	J	33.8	J	50.9	J	26.1	J	NE	NE
SM 5310B	Total Organic Carbon	mg/l	27.5		42.3		16.3		158		100		66.8		NE	NE
SW-846 9020B	Total Organic Halides	mg/l	0.08	U	0.078	J	0.08	U	1.1		0.6		0.08	U	NE	NE

Notes

Highlighted values indicate concentrations in excess of NC Groundwater quality standards for the protection of the groundwater.

2L Standard - 15A NCAC 2L Groundwater Standards

I - Ground Water Protection Standard (used when no 2L Standards are established). *The GWP Standard for vanadium is 0.3 ug/L

SWSL - Solid Waste Section Limits

NE = Not Established

s.u. = Standard unit

mg/L = Milligrams per Liter

ug/L = Micrograms per Liter

umhos/cm = Micromhos per centimeter

Qualifiers (Q):

U	The analyte was analyzed for, but was not detected above the associated detection limit.
B	The analyte was detected in a laboratory blank at a similar concentration.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
UJ	The analyte was not detected and the associated detection limit is estimated

TABLE 2
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA

PARAMETER	MONITORING WELL MW-1A																																	2L Std	SWSL
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013			
	SEPT	APRIL	SEPT	MAR	NOV	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB			
BOD, mg/L	<2	<2	<2	<2	5	12	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	< 5	< 2	<5	<2.00	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NS	2 U	2 U	2 U	2 U	2 U	4 U	4 UJ	39.4 J	NE	NE
COD, mg/L	<5	6.34	6.27	<5	46	<5.0	<5.0	<5.0	<5.0	25	<5.0	7	<20.0	< 20	< 20	<20	21	<20	<20	<20	<20	<20	<20	25 U	25 U	25 U	25 U	4 J	51	16 U	16 U	16 U	NE	NE
TOX, mg/L	0.0179	0.0119	0.02	<0.005	0.015	<0.010	0.022	0.0271	0.0173	0.0299	0.0156	0.022	<.010	0.013	< 0.100	<0.100	<0.100	<0.10	<0.10	<0.10	<0.10	0.0092	0.026	0.03	0.04	3.8	0.1 U	0.0214 B	0.12	0.1 U	0.1 UJ	0.08 U	NE	NE
TOC, as C, mg/L	4.99	2.01	2.46	1.72	7	3.3	2.1	3.64	3.40	2.90	<0.5	4.3	2.3	2.6	1.3	1.8	3.8	2.3	2.8	1.9	3.7	43	2.7	8.5	7	0.05 U	22.3	1.8	1.7	2.4	1.8	27.5	NE	NE
TDS, mg/L	90	110	110	113	96.4	31	103	123	116	112	133	111	110	100	99	94	210	62	90	86	200	260	74	82	20 U	64	82	83	90	90	96	85	500	NE
pH, s.u.	4.75	4.37	4.22	4.19	4.34	3.97	4.23	4.03	3.82	3.90	4.02	3.72	4.20	6.6	4.1	4.4	6.8	3.9	5.2	4.4	6.7	7.9	4.6	4.4 J	4.5 J	4 J	4.5 J	4.1 J	4.85 J	4.34 J	4.4 J	4.37 J	6.5-8.5	NE
Conductivity, umohs/cm	159	189	194	188	178	187.5	176	190	193	188	198	194	190	200	170	170	320	170	150	170	320	410	160	187	170	177	159	153	150	159	151	146	NE	NE
Sulfate, mg/L	29.2	52.2	53.9	61.7	63.5	39	36	61	58	35	59	49	62	55	50	54	38	40	33	42	21	51	42	38.2	35.1	46.1	42	46	47.4	43.2	49.5	51 J	250	250
Chloride, as Cl, mg/L	20.8	12.9	19.7	13.3	14.5	20.5	22.5	9.2	8.2	11.0	8.4	8.8	6.2	9.6	8.3	10.0	11.0	13	12	15	4.8	5.8	14	15.6	8.8	8.2	10	9.25	8.84	11.4	8.19	6.73	250	NE
Fluoride, as F, mg/L	<0.1	<0.1	<0.1	<0.1	0.14	0.49	0.17	<0.2	0.17	0.16	0.12	0.2	0.2	< 0.100	0.11	<0.100	<0.100	<0.10	0.32	<0.10	0.15	0.069	<0.10	0.1 U	0.1 U	0.1 U	0.1 U	0.13 J	0.2 J	0.18 J	0.18 J	0.17 J	2	2
Nitrate, as NO3-N, mg/L	<0.1	<0.5	<0.5	<0.1	0.09	0.17	0.15	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	< 0.100	< 0.100	<0.100	<0.100	<0.10	<0.10	<0.10	<0.10	0.097	<0.10	0.1 U	0.1 U	0.1 U	0.1 U	0.19 J	0.04 U	0.03 U	0.03 U	0.03 U	10	10
Arsenic, as As, mg/L	<0.025	<0.025	<0.025	<0.025	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.026	0.031	<0.020	<0.020	<0.020	<0.020	0.018	0.00028	0.0027 U	0.0027 U	0.0027 U	0.0027 U	0.003 U	0.0043 B	0.0061 J	0.0042 J	0.004 J	0.010	0.010
Barium, as Ba, mg/L	0.082	0.129	0.114	0.152	0.141	0.121	<0.1	0.148	0.156	0.148	0.148	0.139	0.16	0.150	0.140	0.120	0.020	0.11	0.12	0.12	<0.0050	0.028	0.12	0.0839	0.122	0.106	0.104	0.099	0.109	0.104	0.105	0.111	0.700	0.100
Cadmium, as Cd, mg/L	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.01	<0.0050	<0.005	<0.0100	<0.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0005	<0.0005	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0001 B	0.0002 U	0.0002 U	0.00017 U	0.002	0.001
Chromium, as Cr, mg/L	0.01	<0.010	<0.010	<0.010	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.010	< 0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.00063 B	0.0004 U	0.00046 B	0.00053 J	0.001 U	0.001 U	0.00071 J	0.0005 U	0.00041 U	0.010	0.010
Copper, as Cu, mg/L	0.009	<0.005	<0.005	<0.005	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	0.021	<0.0050	<0.0010	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.002 U	0.0004 U	0.002 U	0.002 U	0.002 U	1	0.010
Iron, as Fe, mg/L	0.834	1.5	1.96	2.52	2.28	1.97	2.63	2.73	3.31	2.35	2.34	2.56	2.6	2.80	1.90	1.60	12.00	0.34	1.2	1.7	<0.10	14	1.4	0.821	2.28	0.969	1.65	0.78	1.64	0.909	1.34	0.865	0.300	0.300
Lead, as Pb, mg/L	<0.020	<0.020	<0.020	<0.020	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	< 0.005	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.0007 U	0.004 U	0.004 U	0.0033 U	0.015	0.010
Manganese, as Mn, mg/L	<0.010	0.017	0.0225	0.0212	0.0244	0.0169	0.017	0.0757	0.0249	0.0208	0.0195	0.0201	0.03	0.020	0.017	0.018	0.330	0.016	0.02	0.014	0.026	0.32	0.013	0.0095	0.0173	0.0146	0.0139	0.012	0.015	0.014	0.014	0.015	0.050	0.050
Mercury, as Hg, mg/L	<0.0002	<0.0002	<0.0002	<0.001	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.00007 U	0.00007 U	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.00002 U	0.000012 BJ	0.000012 U	0.001	0.0002
Selenium, as Se, mg/L	<0.100	<0.100	<0.100	<0.100	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	< 0.010	0.01	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.0050	0.00081	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.020	0.010
Silver, as Ag, mg/L	<0.015	<0.015	<0.015	<0.015	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.005	< 0.0050	< 0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.032	<0.010	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.020	0.010
Vanadium, mg/L	NA	NA	NA	NA	NA	<0.05	<0.05	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.010	< 0.010	< 0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	0.0044	0.013	0.0057	0.0136	0.0041 J	0.0051	0.002 U	0.0043 J	0.0037 J	0.002 U	0.002 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.01	0.01	<0.100	0.0218	<0.02	<0.02	<0.02	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.044	0.032	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.050	0.025	0.0038 B	0.0093 B	0.0065 B	0.0017 J	0.004 J	0.0039 J	0.0054 BJ	0.0044 BJ	0.0067 BJ	1	0.010

NOTES:
< Symbol = Below Laboratory Detectable Limits
2L Std - Title 15, North Carolina Administrative Code, Subchapter 2L, class GA groundwater standard.
I - Ground Water Protection Standard (used when no 2L Standards are established). *The GWP Standard for vanadium is 0.0003 mg/L
SWSL - Solid Waste Section Limits - target laboratory method detection limits
Bold text denotes results that exceed NC groundwater standards
Data is reported in milligrams per liter (mg/L) unless otherwise noted
NA = Not Analyzed
NE = Not Established
Refer to laboratory reports for actual sample dates

BOD = Biological oxygen demand
COD = Chemical oxygen demand
s.u. = Standard units
TDS = Total Dissolved Solids
TOC = Total organic carbon
TOX = Total organic halides
umohs/cm = micromhos per centimeter

Qualifiers (Q):

U	The analyte was analyzed for, but was not detected above the associated detection limit.
B	The analyte was detected in a laboratory blank at a similar concentration.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
UJ	The analyte was not detected and the associated detection limit is estimated

TABLE 2 Continued
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA

PARAMETER	MONITORING WELL MW-1B																																	2L Std	SWSL
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013			
	SEPT	APRIL	SEPT	MAR	NOV	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB			
BOD, mg/L	<2	<2	<2	<2	>27*	2	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	< 5	< 2	<5	<2.00	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NS	2 U	2 U	2 U	2 U	2 U	4 U	4 UJ	32.2 J	NE	NE
COD, mg/L	9.47	8.46	6.55	5.18	6.00	9	5	<5.0	<5.0	<5.0	27	6	<20	< 20	94	<20	<20	<20	<20	<20	<20	<20	<20	25 U	25 U	25 U	25 U	4 J	2 J	16 U	16 U	16 U	NE	NE
TOX, mg/L	0.007	0.0	0.01	<0.005	<0.01	<0.020	<0.01	0.0463	0.0171	0.0443	0.0195	0.03	<0.010	NR	< 0.100	<0.100	<0.100	<0.10	<0.10	<0.10	<0.10	0.015	0.033	0.02	0.04	5	0.1 U	0.0186 B	0.0982	0.1 U	0.1 U	0.078 J	NE	NE
TOC, as C, mg/L	8.19	1.54	<0.100	1.02	8.40	5.3	1.7	3.18	16.80	<0.5	<0.5	5.50	1.90	2.3	1.3	1.0	2.1	1.6	2.4	1.5	4	2.4	4	15.6	4.6	0.4	10.8	1.8	1.7	1.9	2.1	42.3	NE	NE
TDS, mg/L	293	367	352	391	387	290	411	360	394	339	364	293	320	280	320	310	100	160	190	180	110	76	280	312	36	228	282	269	317	238	271	290	500	NE
pH, s.u.	7.38	7.42	7.19	7.35	7.27	7.37	7.26	7.47	7.64	7.35	7.42	7.41	7.30	6.4	6.9	7.4	5.0	6.5	6.8	6.8	4.4	4.8	7.2	7.5 J	6.4 J	7.4 J	7.2 J	6.85 J	7.75 J	7.63 J	7.43 J	7.43 J	6.5-8.5	NE
Conductivity, umohs/cm	449	499	554	564	543	583	599	501	610	513	596	442	540	480	540	500	160	310	280	290	160	160	480	585	265	431	506	424	522	363	393	439	NE	NE
Sulfate Turbidimetric, mg/L	30	48.2	55.2	56.7	49.0	50.0	44.5	49	51	38	60.0	35	42	39	40	34	38	20	15	20	48	48	37	31.6	9.9	22.2	26.1	27.5	24.4	20.2	27.2	22	250	250
Chloride, as Cl, mg/L	9.01	7.40	12.60	10.00	12.90	13.5	14.0	7.9	6.1	8.1	6.4	12.0	8.0	6.4	5.6	6.4	11.0	6.5	4.2	4.8	11	14	5	12.3	10.3	8.9	8.4	6.19	5.28	9.32	8.79	10	250	NE
Fluoride, as F, mg/L	0.138	0.155	0.145	0.162	0.150	0.44	0.15	<0.2	0.15	0.13	0.12	0.19	0.15	0.18	0.18	0.14	<0.100	<0.10	0.11	0.12	0.15	0.13	0.14	0.1 U	0.17	0.11	0.1 U	0.13 J	0.25	0.19 J	0.16 J	0.15 J	2	2
Nitrate, as NO3-N, mg/L	0.11	<0.5	<0.5	<0.1	0.08	0.33	0.13	<0.2	<0.2	0.38	0.2	0.45	<0.1	< 0.100	0.22	<0.100	<0.100	<0.10	<0.10	<0.10	<0.10	<0.10	0.15	0.1 U	0.1 U	0.1 U	0.1 U	0.19 J	0.2	0.18 J	0.18 J	0.17 J	10	10
Arsenic, as As, mg/L	<0.025	<0.025	<0.025	<0.025	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	0.31	<0.0050	0.0018	0.0044 U	0.0027 U	0.0097	0.0075	0.003 U	0.0076 B	0.0072 J	0.0071 J	0.006 J	0.010	0.010
Barium, as Ba, mg/L	0.054	0.041	0.044	0.038	<0.1	<0.1	<0.1	<0.100	<0.100	<0.100	<0.100	<0.0100	0.022	0.016	0.049	0.024	0.095	0.013	0.018	0.016	0.2	0.12	0.022	0.0186	0.0149	0.016	0.0261	0.022	0.032	0.017	0.021	0.022	0.700	0.100
Cadmium, as Cd, mg/L	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0050	<0.005	<0.0100	<0.005	< 0.005	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.00050	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.00007 U	0.0002 U	0.0002 U	0.00017 U	0.002	0.001
Chromium, as Cr, mg/L	0.012	<0.010	<0.010	<0.010	<0.01	<0.01	<0.02	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	0.028	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0035	<0.010	0.0032 B	0.0004 U	0.0004 U	0.0004 U	0.001 U	0.001 U	0.0007 J	0.00099 BJ	0.00061 J	0.010	0.010
Copper, as Cu, mg/L	<0.005	<0.005	<0.005	<0.005	<0.02	<0.02	<0.01	<0.0100	<0.0100	<0.0100	<0.0101	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.0050	<0.0010	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.002 U	0.0004 U	0.002 U	0.002 U	0.002 U	1	0.010
Iron, as Fe, mg/L	1.30	0.665	1.79	0.37	<0.1	1.28	<0.1	0.212	0.508	1.37	<0.0102	0.38	0.38	0.29	11.00	3.70	5.40	3.00	3.1	3.5	11	1.9	1.4	0.639	0.676	4.64	2.53	0.94	1.76	0.851	1.47	1.47	0.300	0.300
Lead, as Pb, mg/L	0.023	<0.020	<0.020	<0.020	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0103	<0.0100	<0.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.0007 U	0.004 U	0.004 U	0.0033 U	0.015	0.010
Manganese, as Mn, mg/L	0.077	0.046	0.072	0.028	0.026	0.0486	<0.01	<0.0100	0.0161	0.0429	<0.0104	0.0136	<0.01	0.010	0.130	0.300	0.015	0.047	0.16	0.05	1.2	0.015	0.041	0.0252	0.0095	0.0984	0.0794	0.045	0.081	0.043	0.094	0.083	0.050	0.050
Mercury, as Hg, mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0105	<0.0003	<0.0002	< 0.0002	< 0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00007 U	0.00007 U	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.00002 U	0.000012 U	0.000012 U	0.001	0.0002
Selenium, as Se, mg/L	<0.100	<0.100	<0.100	<0.100	<0.01	<0.01	<0.01	<0.0100	0.0142	<0.0100	<0.0106	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.0050	0.00039	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.020	0.010
Silver, as Ag, mg/L	<0.015	<0.015	<0.015	<0.015	<0.01	<0.02	<0.01	<0.0100	<0.0100	<0.0100	<0.0107	<0.0100	<0.005	< 0.005	< 0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0061	<0.010	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.020	0.010
Vanadium, mg/L	NA	NA	NA	NA	NA	<0.05	<0.05	<0.0500	<0.0500	<0.0500	<0.0108	<0.0500	<0.010	< 0.010	< 0.010	<0.010	0.015	<0.010	<0.010	<0.010	<0.010	0.015	<0.010	0.0013 B	0.00065 J	0.0019 J	0.0016 J	0.002 U	0.002 U	0.0021 J	0.0039 J	0.0045 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.021	0.012	<0.100	0.0149	<0.02	<0.02	<0.02	<0.0200	<0.0200	<0.0200	<0.0109	<0.0200	<0.030	< 0.030	0.054	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.050	<0.010	0.0059 B	0.0083 B	0.003 B	0.0004 U	0.004 J	0.0072 J	0.002 U	0.002 U	0.0014 U	1	0.010

NOTES:
< Symbol = Below Laboratory Detectable Limits
2L Std - Title 15, North Carolina Administrative Code, Subchapter 2L, class GA groundwater standard.
I - Ground Water Protection Standard (used when no 2L Standards are established). *The GWP Standard for vanadium is 0.0003 mg/L
SWSL - Solid Waste Section Limits - target laboratory method detection limits
Bold text denotes results that exceed NC ground-water standards
Data is reported in milligrams per liter (mg/L) unless otherwise noted
NA = Not Analyzed
NE = Not Established
Refer to laboratory reports for actual sample dates

BOD = Biological oxygen demand
COD = Chemical oxygen demand
s.u. = Standard units
TDS = Total Dissolved Solids
TOC = Total organic carbon
TOX = Total organic halides
umohs/cm = micromhos per centimeter

Qualifiers (Q):

U	The analyte was analyzed for, but was not detected above the associated detection limit.
B	The analyte was detected in a laboratory blank at a similar concentration.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
UJ	The analyte was not detected and the associated detection limit is estimated

TABLE 2 Continued
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA

PARAMETER	MONITORING WELL MW-4A																																2L Std	SWSL
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		
	SEPT	APRIL	SEPT	MAR	NOV	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB		
BOD, mg/L	<2	<2	<2	<2	4	4	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	< 5	<2	<5	<2.00	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	2 UJ	2 UJ	2 U	2 UJ	2 U	2 U	4 U	4 UJ	26.8 J	NE	NE
COD, mg/L	16.7	9.52	11.3	14.5	10	16	9.8	12	6	22	41	<5.0	<20	< 20	27	24	< 20	<20	<20	<20	<20	18	13	25 U	29.5	25 U	25 U	17 J	9 J	16 U	16 U	16 U	NE	NE
TOX, mg/L	0.047	0.039	0.041	0.013	<0.01	0.037	0.019	0.0329	0.0297	0.0255	0.0215	0.027	<0.010	0.018	<0.100	<0.100	<0.100	<0.10	<0.10	<0.10	<0.10	0.019	0.048	0.02	0.06	8.8	0.1	0.586	0.018 U	0.1 U	0.1 U	0.08 U	NE	NE
TOC, as C, mg/L	6.33	4.65	2.06	3.24	7.2	5.3	5	4.99	4.7	3.1	2.7	3.4	4.4	6.7	6.2	6.3	3.4	6.7	5.7	5.6	7.3	4.7	7.8	14.2	5.6	0.5	13.2	7.6	4.8	3.9	3.6	16.3	NE	NE
TDS, mg/L	104	155	131	170	117	35	108	153	112	104	186	77	120	190	160	200	200	180	210	110	88	160	95	108	160	174	183	270	152	134	106	114	500	NE
pH, s.u.	5.00	5.72	5.31	5.08	5.60	5.17	4.72	5.05	4.64	4.65	4.61	4.66	5.40	5.9	4.7	4.8	4.8	5.0	4.7	5.2	3.9	4.2	4.5	4.6 J	4.7 J	5.1 J	4.9 J	4.41 J	4.49 J	4.74 J	5.15 J	4.77 J	6.5-8.5	NE
Conductivity, umohs/cm	158	224	202	269	222	198.4	157	216.7	179	152	125	122	200	270	280	310	240	320	310	190	230	250	160	240	205	339	311	436	245	210	158	175	NE	NE
Sulfate Turbidimetric, mg/L	30.6	36.4	40	72.4	48.8	39	34	60	41	35	28	29	46	60	51	75	52	82	77	54	75	76	43	43.7	37.7	84.1	64.2 J	113	58	53.1	39.6	45	250	250
Chloride, as Cl, mg/L	20.2	28.9	29	29	26.5	25.5	29.5	19	17	16	13	9.8	19	24	34	34	24	31	28	10	16	22	14	24.1	26.6	28.9	33.2	50.5	26.4	22.2	16.1	17.9	250	NE
Fluoride, as F, mg/L	<0.1	<0.1	<0.1	<0.1	0.29	0.42	0.2	<0.2	0.15	0.11	<0.10	0.18	<0.10	< 0.100	< 0.100	0.110	0.120	0.180	0.12	<0.10	<0.10	<0.10	0.081	0.1 U	0.1 U	0.14	0.1 U	0.14 J	0.17 J	0.16 J	0.14 J	0.14 J	2	2
Nitrate, as NO3-N, mg/L	<0.1	<0.1	<0.1	<0.1	0.06	0.22	0.26	<0.2	<0.2	0.38	<0.2	<0.2	<0.1	< 0.100	< 0.100	<0.100	<0.100	<0.10	<0.10	<0.10	<0.10	<0.10	0.018	0.1 U	0.1 U	0.1 U	0.1 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	10	10
Arsenic, as As, mg/L	<0.025	<0.025	<0.025	<0.025	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.0010	<0.0010	0.0027 U	0.0027 U	0.0027 U	0.0028 J	0.003 U	0.0035 B	0.0045 J	0.004 U	0.0036 U	0.010	0.010
Barium, as Ba, mg/L	0.093	0.04	0.0344	0.0683	<0.1	<0.1	<0.1	<0.100	<0.100	<0.100	<0.100	<0.0100	0.043	0.075	0.066	0.081	0.074	0.071	0.087	0.039	<0.0050	0.051	0.047	0.0668	0.0612	0.0579	0.0728	0.11	0.059	0.042	0.033	0.042	0.700	0.100
Cadmium, as Cd, mg/L	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0050	<0.005	<0.0100	<0.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	0.00022	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0012 J	0.0002 U	0.0002 U	0.00017 U	0.002	0.001
Chromium, as Cr, mg/L	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.02	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0018 B	0.00046 J	0.00098 B	0.0004 U	0.001 B	0.001 U	0.0005 U	0.0005 U	0.00041 U	0.010	0.010
Copper, as Cu, mg/L	0.005	<0.005	<0.005	<0.005	<0.02	<0.02	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	0.062	<0.0010	<0.0010	0.00075 U	0.0003 U	0.0003 U	0.0003 U	0.002 U	0.0017 B	0.002 U	0.002 U	0.002 U	1	0.010
Iron, as Fe, mg/L	13.3	1.67	5.32	2.09	2.59	5.61	1.2	3.51	0.345	0.239	<0.100	0.519	6.1	10	9.2	9.3	3.8	11.0	9	8.6	<0.10	6.6	0.7	1.9	4.22	5.32	8.81	7.5	5.91	4.05	7.03	1.26	0.300	0.300
Lead, as Pb, mg/L	<0.020	<0.020	<0.020	<0.020	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.0007 U	0.004 U	0.004 U	0.0033 U	0.015	0.010
Manganese, as Mn, mg/L	0.076	0.096	0.053	0.058	0.055	0.0472	0.0397	0.0480	0.0394	0.0423	0.0301	0.0276	0.054	0.078	0.120	0.110	0.048	0.061	0.064	0.04	0.025	0.062	0.024	0.0507	0.0391	0.0501	0.0577	0.088	0.052	0.049	0.038	0.046	0.050	0.050
Mercury, as Hg, mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0002	< 0.0002	< 0.00020	< 0.00020	< 0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00007 U	0.00007 U	0.00007 U	0.00014 J	0.00008 U	0.00002 U	0.00002 U	0.000012 U	0.000012 U	0.001	0.0002
Selenium, as Se, mg/L	<0.100	<0.100	<0.100	<0.100	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.00066	0.00069	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.020	0.010
Silver, as Ag, mg/L	<0.015	<0.015	<0.015	<0.015	<0.01	<0.02	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.005	< 0.0050	< 0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0002 U	0.0001 U	0.0001 U	0.0001 U	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.020	0.010
Vanadium, mg/L	NA	NA	NA	NA	NA	<0.05	<0.05	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.010	< 0.010	< 0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.00045 B	0.0029 J	0.0011 J	0.002 J	0.002 U	0.002 U	0.002 U	0.002 U	0.0016 U	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.035	0.038	<0.100	0.019	<0.02	0.0473	<0.02	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.030	< 0.030	< 0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.0035	0.0064	0.0178 B	0.0385	0.0239	0.0112	0.034	0.017 J	0.0072 BJ	0.0025 BJ	0.0048 BJ	1	0.010

NOTES:
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Refer to laboratory reports for actual sample dates

BOD = Biological oxygen demand
COD = Chemical oxygen demand
s.u. = Standard units
TDS = Total Dissolved Solids
TOC = Total organic carbon
TOX = Total organic halides
umohs/cm = micromhos per centimeter

Qualifiers (Q):

U	The analyte was analyzed for, but was not detected above the associated detection limit.
B	The analyte was detected in a laboratory blank at a similar concentration.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
UJ	The analyte was not detected and the associated detection limit is estimated

TABLE 2 Continued
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA

PARAMETER	MONITORING WELL MW-5A																																	2L Std	SWSL
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013			
	SEPT.	APRIL	SEPT	MAR	NOV	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB			
BOD, mg/L	11.5	4.23	8.96	10.9	9	12	4	4	<2.0	3	10	16	4	< 5	<5	<5	3	<5.0	<5.0	6.3	<5.0	<5.0	9.6	3.7 J	5.8 J	10.9	6.3	5.3	2.5	3.8	4.1 J	33.8 J		NE	NE
COD, mg/L	203	193	99.9	181	107	212	125	222	171	93	166	66	160	110	190	52	93	95	120	120	92	74	66	74.5	86.1	138	114	124	94	131	98 J	155		NE	NE
TOX, mg/L	3.58	2.5	1.4	3.37	0.099	2.46	1.22	2.68	1.4	0.502	0.574	0.25	1.6	0.870	<4.0	0.170	< 1.00	<5.0	<5.0	<0.10	<2.0	0.35	0.46	0.2	0.37	41.1	0.8	3.36	0.982	0.7	0.5	1.1		NE	NE
TOC, as C, mg/L	105	62.2	23	46.3	23.5	81.5	22.3	90.3	75.6	7.5	<0.5	30.1	49	40	56	16	13	27	33	<1.0	37	31	35	34.3	30.4	0.8	46.6	45.4	30.8	44.8	30.7	158		NE	NE
TDS, mg/L	2390	1700	954	1820	1116	1599	1216	2220	1847	1540	879	704	1400	160	1,600	640	970	850	960	1100	980	1100	1000	1050	1180	840	1150	894	934	1320	1110	1250		500	NE
pH, s.u.	6.81	6.87	6.51	6.72	6.67	6.71	6.61	6.71	6.96	7.53	7.24	7.54	6.9	6.4	6.5	7.3	6.9	6.8	6.7	6.7	6.8	7.6	7	7.2 J	7.5 J	6.7 J	6.8 J	6.71 J	7.3 J	6.94 J	6.94 J	6.91 J		6.5-8.5	NE
Conductivity, umohs/cm	3260	2880	1590	3170	1703	3146	1792	2581	2564	1557	1808	1126	2300	1,900	2,900	1,100	1,800	1,500	1700	1900	1700	1800	1700	1940	1800	1700	1600	1580	1660	2190	1770	2020		NE	NE
Sulfate Turbidimetric, mg/L	25.6	65.2	55.9	26.7	42	62.0	78.0	49	29	21	43.0	32	57	110	<5.0	9.5	<5.00	<5.0	5	<5.0	<5.0	4.1	3.6	5 U	R	5 U	568	5.19	1.15	12.8	1.12	11		250	250
Chloride, as Cl, mg/L	600	265	249	479	119	396	211	440	300	130	150	95	280	170	410	64	180	170	170	220	170	130	130	115	160	177	234	175	141	278	188	234		250	NE
Fluoride, as F, mg/L	0.104	<0.1	<0.1	<0.1	0.17	0.34	0.21	<0.2	0.27	<0.10	0.1	0.46	0.13	< 0.100	< 0.100	<0.100	<0.100	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	0.12	0.13	0.1 U	0.1 U	0.1 J	0.19 J	0.18 J	0.17 J	0.15 J		2	2
Nitrate, as NO3-N, mg/L	0.835	0.948	0.344	5.09	0.57	0.13	0.22	<0.2	<0.2	<0.2	<0.2	<0.2	<0.100	< 0.100	< 0.100	<0.100	0.26	<0.10	<0.10	<0.10	<0.10	<0.10	0.24	0.1 U	0.1 U	0.1 U	0.1 U	0.04 U	0.2 J	0.03 U	0.15 J	0.19 J		10	10
Arsenic, as As, mg/L	<0.025	<0.025	<0.025	<0.025	<0.01	<0.01	<0.01	<0.0100	<0.0100	0.0113	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.00059	0.00066	0.0066	0.0033 J	0.0027 U	0.0031 J	0.003 U	0.0067 B	0.0092 J	0.0058 J	0.0054 J		0.010	0.010
Barium, as Ba, mg/L	0.181	0.193	0.0583	0.032	<0.1	0.139	<0.1	0.112	0.159	<0.100	0.111	<0.0100	0.18	0.140	0.190	0.052	0.032	0.088	0.12	0.13	0.011	0.11	0.12	0.093	0.0968	0.0975	0.13	0.11	0.102	0.141	0.114	0.134		0.700	0.100
Cadmium, as Cd, mg/L	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0050	<0.005	<0.0100	<.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.00050	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.00007 U	0.00037 BJ	0.0002 U	0.0034 J		0.002	0.001
Chromium, as Cr, mg/L	0.014	0.012	<0.010	<0.010	<0.01	<0.01	<0.02	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	0.015	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0103	0.0016 J	0.0036 J	0.0033 J	0.004 B	0.0018 J	0.0047 J	0.0022 BJ	0.0056 J		0.010	0.010
Copper, as Cu, mg/L	0.005	<0.005	<0.005	<0.010	<0.02	<0.02	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	0.021	<0.0010	0.0009	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.002 U	0.00049 B	0.0046 J	0.002 U	0.002 U		1	0.010
Iron, as Fe, mg/L	3.01	6.05	2.6	1.93	1.36	3.79	0.805	5.15	17.9	1.71	4.21	0.248	1.8	21	4.7	0.6	0.1	1.5	2	1.5	0.31	0.46	2.4	0.44	0.247	0.762	0.608	0.53	0.261	0.308	0.138	0.306		0.300	0.300
Lead, as Pb, mg/L	0.036	<0.020	<0.020	<0.020	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.004 U	0.004 U	0.004 U	0.004 U	0.002 B	0.0007 U	0.004 U	0.004 U	0.0033 U		0.015	0.010
Manganese, as Mn, mg/L	0.650	0.745	0.183	0.386	0.273	0.279	0.166	0.995	0.572	0.252	0.259	0.235	0.730	0.540	0.730	0.190	0.016	0.270	0.37	0.45	<0.010	0.34	0.18	0.232	0.26	0.278	0.332	0.33	0.227	0.251	0.244	0.226		0.050	0.050
Mercury, as Hg, mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	<0.0002	<0.0002	<0.00020	<0.00020	0.00007 U	0.00007 U	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.00002 U	0.000012 U	0.000012 U		0.001	0.0002
Selenium, as Se, mg/L	<0.100	<0.100	<0.100	<0.100	<0.01	<0.01	<0.01	0.0117	0.0159	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0018	0.0014	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U		0.020	0.010
Silver, as Ag, mg/L	<0.015	<0.015	<0.015	<0.015	<0.01	<0.02	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.005	< 0.0050	< 0.0050	<0.010	<0.010	<0.010	0.046	<0.010	<0.010	<0.010	<0.010	0.00035 J	0.00016 J	0.0001 U	0.0001 U	0.001 U	0.001 B	0.002 U	0.002 U	0.0012 U		0.020	0.010
Vanadium, mg/L	NA	NA	NA	NA	NA	<0.05	<0.05	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.010	0.014	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0041	0.0077	0.0042 J	0.0052	0.0096	0.0077	0.005 J	0.0024 J	0.002 U	0.002 U	0.0097 J		0.0003 (I)	0.025
Zinc, as Zn, mg/L	<0.010	0.029	<0.100	<0.01	<0.02	<0.02	<0.02	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	<0.030	< 0.030	0.063	<0.030	<0.030	<0.030	<0.030	<0.030	1.0	0.0042	0.0084	0.0023 B	0.0083 B	0.004 B	0.0004 U	0.007 J	0.008 J	0.004 BJ	0.002 U	0.0018 BJ		1	0.010

NOTES:
< Symbol = Below Laboratory Detectable Limits
2L Std - Title 15, North Carolina Administrative Code, Subchapter 2L, class GA groundwater standard.
I - Ground Water Protection Standard (used when no 2L Standards are established). *The GWP Standard for vanadium is 0.0003 mg/L
SWSL - Solid Waste Section Limits - target laboratory method detection limits
Bold text denotes results that exceed NC ground-water standards
Data is reported in milligrams per liter (mg/L) unless otherwise noted
NA = Not Analyzed
NE = Not Established
Refer to laboratory reports for actual sample dates

BOD = Biological oxygen demand
COD = Chemical oxygen demand
s.u. = Standard units
TDS = Total Dissolved Solids
TOC = Total organic carbon
TOX = Total organic halides
umohs/cm = micromhos per centimeter

Qualifiers (Q):

U	The analyte was analyzed for, but was not detected above the associated detection limit.
B	The analyte was detected in a laboratory blank at a similar concentration.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

TABLE 2 Continued
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA

PARAMETER	MONITORING WELL MW-7A																																2L Std	SWSL
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		
	SEPT	APRIL	SEPT	MAR	NOV	MAR	SEPT	MAR.	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB		
BOD, mg/L	4.02	6.02	<2	<2	3	2	<1.0	2	<2.0	<2.0	<2.0	3	<2.0	< 5	<5	<5	<2.00	<5.0	<5.0	<5.0	<5.0	<5.0	11	2 UJ	2.9 J	2 U	15 J	5.1	5.5	2.9	4 UJ	50.9 J	NE	NE
COD, mg/L	115	179	156	154	108	118	114	154	96	132	157	61	110	110	120	130	130	120	120	140	120	63	25	57.3	117	117	126	69	91	48	71	49	NE	NE
TOX, mg/L	2.560	2.28	1.97	2.21	0.540	1.02	1.4	1.79	0.976	0.914	0.964	0.91	1.5	1.30	12.00	1.60	< 5.0	<5.0	<5.0	0.51	<20	1.1	0.82	0.6	0.04	45.4	1.1	0.449	0.442	0.4	0.7	0.6	NE	NE
TOC, as C, mg/L	47.2	35	28.6	25.8	43.1	31.3	50.2	55.8	41.4	22.4	<0.5	29.7	32	42	34	37	50	35	35	35	43	28	24	24.6	34.3	1	55.4	26.7	27.2	17.1	23.8	100	NE	NE
TDS, mg/L	1370	1390	1190	1230	1200	832	1596	1740	1501	2110	1354	1168	1100	1400	1200	1400	1100	1000	1200	1200	1000	1100	740	1010	1020	1250	1190	770	1030	680	1080	848	500	NE
pH, s.u.	6.79	6.83	6.59	6.7	6.74	6.94	6.79	6.86	7.07	6.86	6.84	6.66	6.9	6.7	6.9	6.8	6.9	6.9	7.2	7.0	6.9	7.4	6.5	7 J	6.8 J	6.9 J	6.9 J	6.86 J	7.25 J	7.25 J	7.06 J	7.12 J	6.5-8.5	NE
Conductivity, umohs/cm	2190	2520	2290	2160	2250	1456	1445	2096	1628	1546	1928	1784	1800	2,200	2,100	2,200	1,600	1,800	2000	2000	1700	1900	1200	1950	1790	2410	1980	1300	1750	1070	1640	1240	NE	NE
Sulfate Turbidimetric, mg/L	0.395	2.26	0.824	7.22	<5.0	<5.0	<5.0	31	38	23	36	28	61	81	71	78	61	45	59	41	41	53	120	69	48.7 J	76.2	56	57.3	80.1	58.3	55.5	50.1	250	250
Chloride, as Cl, mg/L	515	527	550	437	477	274	281	360	230	260	330	320	250	290	250	260	180	170	200	200	200	270	160	232 J	193	223	227	144	186	114	196	141	250	NE
Fluoride, as F, mg/L	0.134	0.101	0.108	0.103	0.58	0.49	0.26	0.28	0.32	0.27	0.1	0.25	<0.100	0.140	0.120	<0.100	<0.100	0.110	0.13	<0.10	0.12	0.05	0.18	0.2	0.23	0.13	0.1 U	0.17 J	0.2	0.21	0.18 J	0.18 J	2	2
Nitrate, as NO3-N, mg/L	<0.1	<0.1	<0.1	<0.1	0.03	0.16	0.39	<0.2	<0.2	<0.2	<0.2	<0.2	<0.100	< 0.100	< 0.100	<0.100	0.17	<0.10	<0.10	<0.10	<0.10	<0.10	0.27	0.1 U	0.1 U	0.1 U	0.1 U	0.19 J	0.2	0.18 J	0.03 U	0.17 J	10	10
Arsenic, as As, mg/L	<0.025	<0.025	<0.025	0.0338	<0.01	0.0191	0.0105	0.017	<0.0100	0.0109	0.0136	<0.0100	0.016	0.013	<0.010	<0.020	0.035	<0.020	0.024	0.026	<0.020	0.016	0.003	0.0135	0.0394	0.0165	0.0146	0.029	0.02	0.023	0.015	0.013	0.010	0.010
Barium, as Ba, mg/L	0.073	0.075	0.0704	0.0876	<0.1	<0.1	<0.1	<0.100	<0.100	<0.100	<0.100	<0.0100	0.052	0.062	0.042	0.059	0.065	0.037	0.054	0.056	0.07	0.062	0.071	0.0438	0.0782	0.0497	0.0433	0.06	0.052	0.029	0.038	0.036	0.700	0.100
Cadmium, as Cd, mg/L	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0050	<0.005	<0.0100	<0.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.00050	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0011 J	0.00032 BJ	0.0002 U	0.001 J	0.002	0.001
Chromium, as Cr, mg/L	<0.010	<0.010	0.0106	0.0288	<0.01	<0.01	<0.02	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	0.032	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0028 B	0.0018 J	0.003 J	0.0033 J	0.005 B	0.0038 J	0.0097 J	0.0021 BJ	0.006 J	0.010	0.010
Copper, as Cu, mg/L	<0.005	<0.005	<0.005	<0.005	<0.02	<0.02	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	0.18	<0.0010	0.0014	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.002 U	0.0011 B	0.002 J	0.002 U	0.002 U	1	0.010
Iron, as Fe, mg/L	39.8	40.9	37	57.4	23.2	21.4	11.4	24.4	16.1	15.6	17.3	33.7	23	30	15	22.0	31.0	14.0	21	30	12	28	4.4	16.9	36	24.9	16	40	19.7	16.2	13.4	14.5	0.300	0.300
Lead, as Pb, mg/L	0.027	<0.020	<0.020	<0.020	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	0.0051	0.0072	0.0057	<0.0050	<0.0050	0.004 U	0.004 U	0.004 U	0.004 U	0.003 B	0.0007 U	0.004 U	0.004 U	0.0033 U	0.015	0.010
Manganese, as Mn, mg/L	0.795	0.794	0.691	0.759	0.522	0.352	0.267	0.404	0.402	0.396	0.463	0.447	0.490	0.610	0.360	0.520	0.230	0.340	0.34	0.51	0.079	0.68	0.094	0.511	0.409	0.505	0.398	0.31	0.374	0.18	0.301	0.232	0.050	0.050
Mercury, as Hg, mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	<0.0002	<0.00020	<0.00020	<0.00020	<0.00020	0.00007 U	0.00007 U	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.00002 U	0.000012 U	0.000016 J	0.001	0.0002
Selenium, as Se, mg/L	<0.100	<0.100	<0.100	<0.100	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0045	0.00081	0.0038 U	0.0038 U	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.020	0.010
Silver, as Ag, mg/L	<0.015	<0.015	<0.015	<0.015	<0.02	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0064	< 0.0050	< 0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	0.022	<0.010	<0.010	0.00029 U	0.00011 J	0.0001 U	0.0001 U	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.020	0.010
Vanadium, mg/L	NA	NA	NA	NA	NA	<0.05	<0.05	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	0.011	0.022	0.01	0.014	0.017	0.014	0.014	0.028	<0.010	0.0091	0.0041	0.0058	0.0225	0.0111	0.0126	0.013 J	0.0075 J	0.016 J	0.002 J	0.01 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	<0.010	0.017	<0.100	0.0348	<0.02	<0.02	<0.02	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	0.072	< 0.030	< 0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.67	<0.010	0.0093	0.0021 B	0.0085 B	0.0054 B	0.0004 U	0.011 J	0.023	0.0045 BJ	0.002 U	0.0031 BJ	1	0.010

NOTES:
< Symbol = Below Laboratory Detectable Limits
2L Std - Title 15, North Carolina Administrative Code, Subchapter 2L, class GA groundwater standard.
I - Ground Water Protection Standard (used when no 2L Standards are established). *The GWP Standard for vanadium is 0.0003 mg/L
SWSL - Solid Waste Section Limits - target laboratory method detection limits
Bold text denotes results that exceed NC ground-water standards
Data is reported in milligrams per liter (mg/L) unless otherwise noted
NA = Not Analyzed
NE = Not Established
Refer to laboratory reports for actual sample dates

BOD = Biological oxygen demand
COD = Chemical oxygen demand
s.u. = Standard units
TDS = Total Dissolved Solids
TOC = Total organic carbon
TOX = Total organic halides
umohs/cm = micromhos per centimeter

Qualifiers (Q):

U	The analyte was analyzed for, but was not detected above the associated detection limit.
B	The analyte was detected in a laboratory blank at a similar concentration.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
UJ	The analyte was not detected and the associated detection limit is estimated

TABLE 2 Continued
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA

PARAMETER	MONITORING WELL MW-8A																																	2L Std	SWSL
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011	2012		2013			
	SEPT.	APRIL	SEPT	MAR	NOV	MAR	SEPT	MAR.	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	SEPT	MAR	AUG	MAR	AUG	FEB	FEB	AUG	FEB		
BOD, mg/L	3.48	<2	<2	<2	4	4	<1.0	<2.0	<2.0	6	<2.0	<2.0	<2.0	< 5	<5	<5	<2.00	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	2 UJ	2 UJ	2 U	2 UJ	2 U	4 U	4 UJ	26.1 J	NE	NE
COD, mg/L	110	19.3	12.6	9.96	46	8	<5.0	6	<5.0	7	59	8	<20	< 20	30	<20	<20	<20	<20	<20	<20	<20	5.9	25 U	25 U	25 U	25 U	13 J	16 U	22	16 U	NE	NE
TOX, mg/L	0.012	0.028	0.014	0.028	<0.01	<0.010	0.018	0.0217	0.0198	0.0397	0.041	0.014	<0.01	< 0.010	<100	<0.100	<0.100	<5.0	<0.10	0.56	<0.10	0.03	0.018	0.07	0.05	7.7	0.1 U	0.271	0.1 U	0.1 U	0.08 U	NE	NE
TOC, as C, mg/L	5.04	4.65	3.42	2.11	8.4	3.4	3.9	4	3.3	<0.5	<0.5	4.4	5.9	4	5.2	3.4	6.5	3.0	4	2.9	9	3.9	6.2	35.1	11.2	0.4	17	3.4	3.3	3.9	66.8	NE	NE
TDS, mg/L	448	407	464	346	337	256	448	295	480	418	862	399	500	1,100	580	400	480	330	350	300	370	730	510	718	1020	580	998	495	872	1210	511	500	NE
pH, s.u.	7.32	7.24	7.02	7.03	6.86	7.13	6.89	7.39	7.49	7.44	7.04	7.47	7.1	6.5	6.5	6.9	7.0	6.8	6.8	7.0	7	7.6	6.6	6.5 J	6.7 J	6.9 J	6.7 J	6.87 J	6.84 J	6.68 J	7.02 J	6.5-8.5	NE
Conductivity, umohs/cm	662	634	701	547	526	619	667	505	670	602	965	442	790	710	830	670	780	600	600	600	640	990	770	1110	1300	836	1250	739	1070	1360	747	NE	NE
Sulfate Turbidimetric, mg/L	134	26.5	111	80.3	33	43	74	32	100	30	290	28	91	70	130	68	38	21	9.8	13	20	370	89	318	452	233	259	156	422	631	131	250	250
Chloride, as Cl, mg/L	9.6	3.82	12.2	6.76	11	13.5	8.5	2.0	3.9	3.9	4.0	2.1	4.4	3	3.0	3.0	4.4	3.8	1.7	2.8	5.1	3.2	2	6.5	7	5 U	6.7	3.68	3.36	5.02	2.2	250	NE
Fluoride, as F, mg/L	0.118	0.183	0.168	0.187	0.23	0.45	0.26	<0.2	0.35	0.17	<0.10	0.3	<0.100	0.220	0.320	0.240	0.360	0.220	0.16	0.2	0.21	0.12	0.19	0.21	0.3	0.1 U	0.1 U	0.19 J	0.23	0.51	0.22	2	2
Nitrate, as NO3-N, mg/L	<0.1	<0.1	<0.1	<0.1	0.07	0.19	0.37	<0.2	<0.2	0.38	0.22	<0.2	<0.100	< 0.100	< 0.100	<0.100	<0.100	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.1 U	0.1 U	0.1 U	0.1 U	0.04 U	0.03 U	0.03 U	0.03 U	10	10
Arsenic, as As, mg/L	<0.025	<0.025	<0.025	<0.025	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	0.011	<0.0100	<0.010	< 0.010	< 0.010	<0.020	0.021	<0.020	<0.020	<0.020	0.022	<0.0010	0.00034	0.0082	0.0074	0.0046 J	0.0073	0.003 U	0.011	0.009 J	0.0051 J	0.010	0.010
Barium, as Ba, mg/L	0.09	0.054	0.0601	0.0691	<0.1	<0.1	<0.1	<0.100	<0.100	<0.100	0.164	<0.0100	0.081	0.080	0.110	0.072	0.100	0.079	0.13	0.1	0.089	0.074	0.085	0.0526	0.0757	0.0494	0.0578	0.072	0.042	0.046	0.041	0.700	0.100
Cadmium, as Cd, mg/L	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0050	<0.005	<0.0100	<0.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.00050	<0.00050	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.00021 BJ	0.0002 U	0.00017 U	0.002	0.001
Chromium, as Cr, mg/L	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.02	<0.0100	<0.0100	<0.0100	0.0259	<0.0100	<0.010	< 0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	0.015	<0.010	<0.010	0.0019 B	0.002 J	0.00063 B	0.00041 J	0.001 B	0.0005 U	0.0005 U	0.00041 U	0.010	0.010
Copper, as Cu, mg/L	<0.005	<0.005	<0.005	<0.005	<0.02	<0.02	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	0.32	0.0021	0.001	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.002 U	0.0022 J	0.002 U	0.002 U	1	0.010
Iron, as Fe, mg/L	0.832	4.24	0.68	0.85	0.25	0.258	0.198	0.230	0.289	0.310	4.33	0.190	0.390	0.68	5.50	2.30	8.40	0.47	1	0.82	5.7	0.33	0.21	5.61	27.6	1.68	16.4	0.95	7.15	38.9	2.67	0.300	0.300
Lead, as Pb, mg/L	0.02	<0.020	<0.020	<0.020	<0.01	<0.01	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.005	< 0.0050	< 0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.004 U	0.004 U	0.004 U	0.004 U	0.002 B	0.004 U	0.004 U	0.0033 U	0.015	0.010
Manganese, as Mn, mg/L	0.123	0.171	0.172	0.016	0.035	0.0109	0.066	0.0134	0.0231	0.0158	2.29	0.275	0.500	0.280	2.000	0.068	0.800	0.180	0.1	0.04	0.077	0.015	0.011	0.143	2.05	0.0547	1.03	0.024	0.673	1.67	0.082	0.050	0.050
Mercury, as Hg, mg/L	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	< 0.0002	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00007 U	0.00007 U	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.000012 U	0.000012 U	0.001	0.0002
Selenium, as Se, mg/L	<0.100	<0.100	<0.100	<0.100	<0.01	<0.01	<0.01	<0.0100	0.0114	<0.0100	<0.0100	<0.0100	<0.010	< 0.010	< 0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.0010	0.00051	0.0038 U	0.0072 J	0.0038 U	0.0038 U	0.005 U	0.007 U	0.007 U	0.0062 U	0.020	0.010
Silver, as Ag, mg/L	<0.015	<0.015	<0.015	<0.015	<0.01	<0.02	<0.01	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.005	< 0.0050	< 0.0050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0033	<0.010	0.001 J	0.001 J	0.0001 U	0.00024 J	0.001 U	0.002 U	0.002 U	0.0012 U	0.020	0.010
Vanadium, mg/L	NA	NA	NA	NA	NA	<0.05	<0.05	<0.0500	<0.0500	<0.0500	<0.0500	<0.0500	<0.010	< 0.010	< 0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.00074 B	0.0036 J	0.00084 J	0.0002 U	0.002 U	0.002 U	0.002 U	0.0016 U	0.0003 (I)	0.025
Zinc, as Zn, mg/L	<0.010	0.015	<0.100	<0.01	<0.02	<0.02	<0.02	<0.0200	<0.0200	<0.0200	0.0244	<0.0200	<0.030	< 0.030	< 0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.4	0.017	0.01	0.007 B	0.0362	0.0085 B	0.0066 J	0.009 J	0.0036 BJ	0.002 U	0.0033 BJ	1	0.010

NOTES:
< Symbol = Below Laboratory Detectable Limits
2L Std - Title 15, North Carolina Administrative Code, Subchapter 2L, class GA groundwater standard.
I - Ground Water Protection Standard (used when no 2L Standards are established). *The GWP Standard for vanadium is 0.0003 mg/L
SWSL - Solid Waste Section Limits - target laboratory method detection limits
Bold text denotes results that exceed NC ground-water standards
Data is reported in milligrams per liter (mg/L) unless otherwise noted
NA = Not Analyzed
NE = Not Established
Refer to laboratory reports for actual sample dates

BOD = Biological oxygen demand
COD = Chemical oxygen demand
s.u. = Standard units
TDS = Total Dissolved Solids
TOC = Total organic carbon
TOX = Total organic halides
umohs/cm = micromhos per centimeter

Qualifiers (Q):

U	The analyte was analyzed for, but was not detected above the associated detection limit.
B	The analyte was detected in a laboratory blank at a similar concentration.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
UJ	The analyte was not detected and the associated detection limit is estimated

TABLE 3
NEW LANDFILL CELL 1 ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA

		Client Sample ID:	Primary Leachate Collection System		Secondary Leachate Collection System		Under-Drain Leachate Collection System		2L Standard	SWSL
		Collect Date:	2/19/13		2/19/13		2/19/13			
Method	Parameter	Units	Value	Q	Value	Q	Value	Q		
SW-846 6010C	Arsenic	ug/l	145		3.6	U	11		10	10
SW-846 6010C	Barium	ug/l	205		29		237		700	100
SW-846 6010C	Cadmium	ug/l	0.17	U	0.17	U	0.17	U	2	1
SW-846 6010C	Chromium	ug/l	140		24		30		10	10
SW-846 6010C	Copper	ug/l	8.6	J	2	U	2	U	1,000	10
SW-846 6010C	Iron	ug/l	8,880		2,960		140,000		300	300
SW-846 6010C	Lead	ug/l	3.3	U	3.3	U	3.3	U	15	10
SW-846 6010C	Manganese	ug/l	468		421		878		50	50
SW-846 6010C	Selenium	ug/l	6.2	U	6.2	U	6.2	U	20	10
SW-846 6010C	Silver	ug/l	1.6	J	1.2	U	1.2	U	20	10
SW-846 6010C	Vanadium	ug/l	1580		21		103		0.3 (I)	25
SW-846 6010C	Zinc	ug/l	28		25		11	J	1,000	10
SW-846 7470A	Mercury	ug/l	0.14		0.012	U	0.057	J	1	0.2
EPA 120.1	Specific Conductance	umhos/cm	10,800		1,960		3,020		NE	NE
EPA 300.0	Chloride	mg/l	153		40.5		232		250	NE
EPA 300.0	Fluoride	mg/l	0.07	U	0.5		0.18	J	2	2
EPA 300.0	Nitrate	mg/l	0.2	U	0.03	U	0.03	U	10	10
EPA 300.0	Orthophosphate	mg/l	1.1		1.07		0.02	U	NE	NE
EPA 300.0	Sulfate	mg/l	1,620		73.7		158		250	250
EPA 410.4	Chemical oxygen demand	mg/l	1610	J	113		197		NE	NE
SM 2540C	Total Dissolved Solids	mg/l	6,660		1,420		2,180		500	NE
SM 4500H	Laboratory pH	s.u.	7.54	J	6.76	J	6.89	J	6.5-8.5	NE
SM 5210B	Biochemical oxygen demand	mg/l	1110		34.8	J	43.4	J	NE	NE
SM 5310B	Total Organic Carbon	mg/l	819	J	192		229		NE	NE
SW-846 9020B	Total Organic Halides	mg/l	1.6	J	0.22		0.73		NE	NE

Notes:

Bold values indicate concentrations in excess of NC Groundwater quality standards for the protection of the groundwater.

2L Standard - 15A NCAC 2L Groundwater Standards

I - Ground Water Protection Standard (used when no 2L Standards are established). *The GWP Standard for vanadium is 0.3 ug/L.

SWSL - Solid Waste Section Limits

mg/L = Milligrams per Liter

NE = Not Established

s.u. = Standard unit

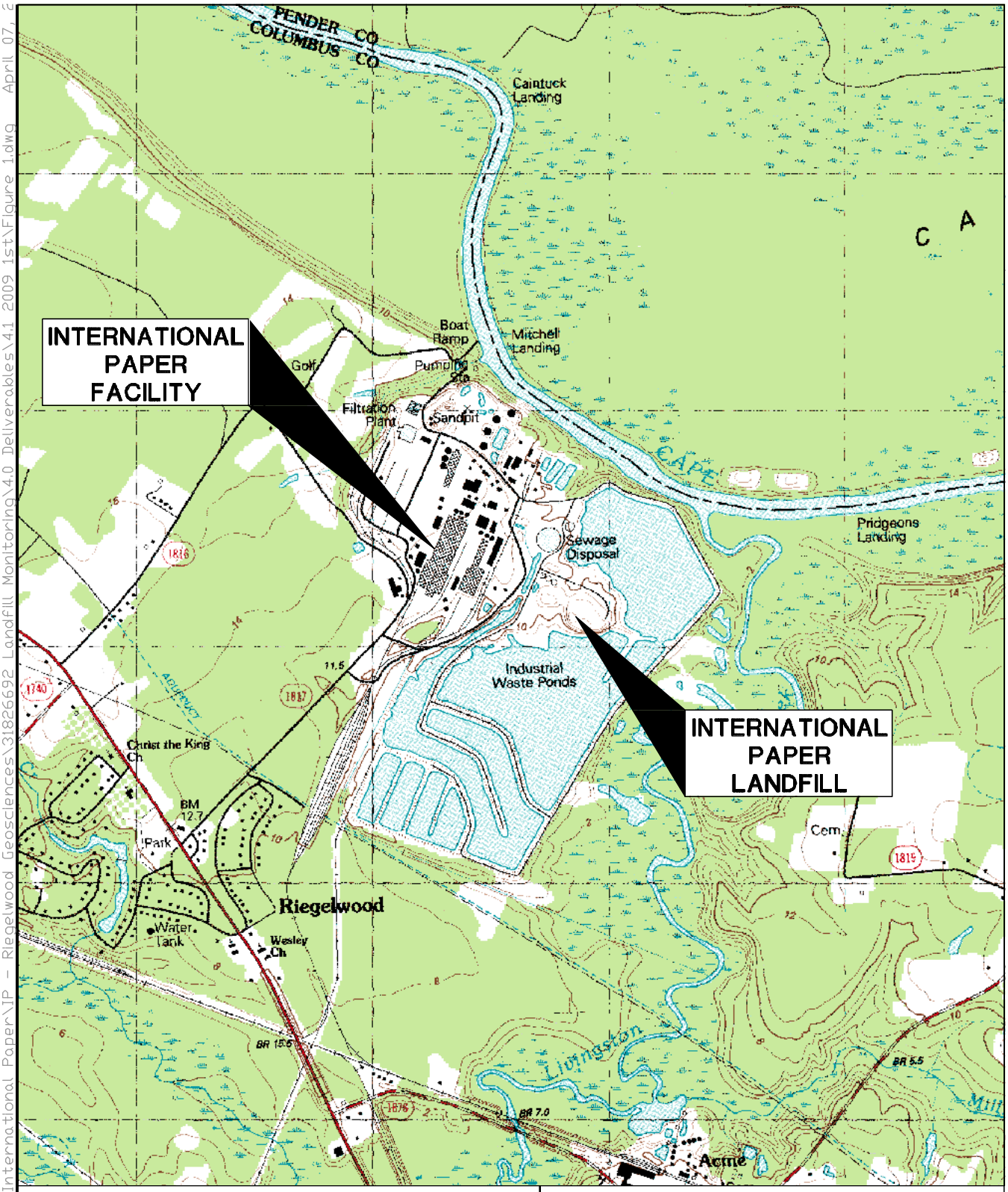
ug/L = Micrograms per Liter

umhos/cm = Micromhos per centimeter

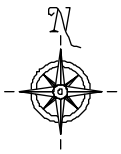
Qualifiers (Q):

U	The analyte was analyzed for, but was not detected above the associated detection limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample

FIGURES



QUADRANGLE LOCATION



SCALE IN FEET

0 2000

SOURCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE
ACME, NC – DATED 1984

FIGURE 1. LOCATION MAP

INTERNATIONAL PAPER
RIEGELWOOD MILL
RIEGELWOOD, NORTH CAROLINA

Prepared for:
INTERNATIONAL PAPER

URS
RDU, NORTH CAROLINA 27560

DRAWN BY: TSH
DATE: 04/07/09
PROJECT NO.

Fig. 1

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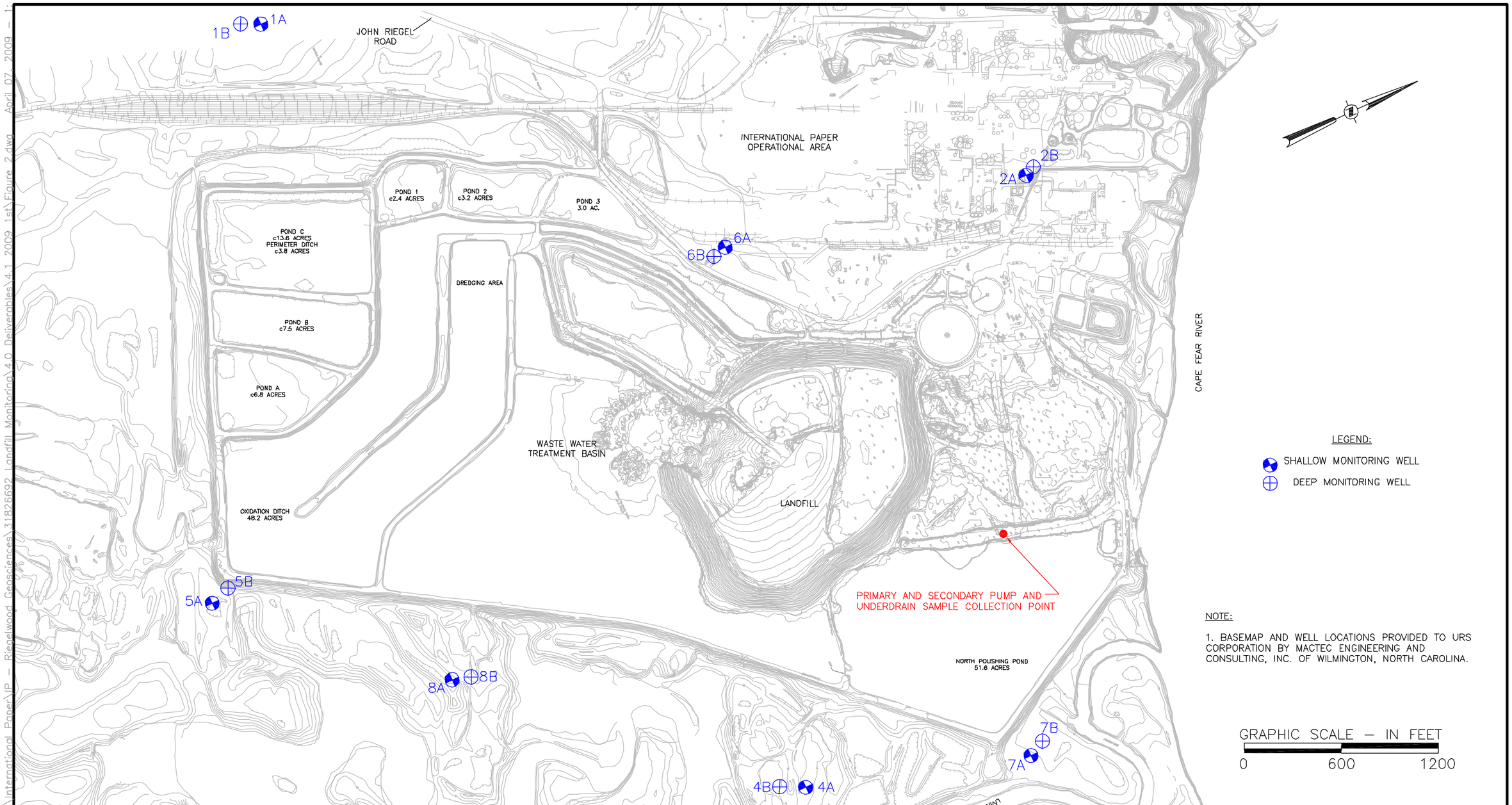

NOTE:

1. BASEMAP AND WELL LOCATIONS PROVIDED TO URS CORPORATION BY MACTEC ENGINEERING AND CONSULTING, INC. OF WILMINGTON, NORTH CAROLINA.

SCALE: AS SHOWN	DESIGNED BY	DATE	Figure 2. Site Map Landfill Compliance Monitoring, International Paper Riegelwood Mill, Riegelwood, NC
CONFIDENTIAL–ALL RIGHTS RESERVED–PROPERTY OF URS, RDU, NORTH CAROLINA 27560	DRAWN BY TSH	DATE 07APR09	
	CHECKED BY CK	DATE 07APR09	CONTRACT NO. 31826692.00001 / DRAWING NO. FIGURE–2 / REV. 0
	APPROVED BY CK	DATE 07APR09	

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APPENDIX A

Data Validation Checklist
Organic and Inorganic Analyses

Project:	IP – Riegelwood, NC (Landfill Monitoring)	Project No:	31828965.00001
Work Order:	J1300929	Methods:	EPA 120.1 (Specific Conductance), 300 (Chloride, Fluoride, Nitrate, Orthophosphate, and Sulfate), 410.4 (COD), 6010C (ICP Metals[1]), 7470A (Mercury), and 9020B (TOX); Standard Methods 2540C (Total Dissolved Solids), 4500-H + B (pH), 5210B (BOD), and 5310B (TOC)
Laboratory:	Columbia Analytical Services, Inc. (CAS)[2] Jacksonville, FL	Associated Sample IDs:	MW-1A, MW-1B, MW-4A, MW-5A, MW-7A, MW-8A, Primary, Secondary, & Under Drain
Sample Matrix:	Water	Date(s) Sampled:	2/19/13
Reviewer:	Jenine Abbassi	Date:	3/19/13
Concurrence[3]:	Martha Meyers-Lee	Date:	4/17/13

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
1. Were holding times met?	✓			• EPA 6010: ≤180 days	
	✓			• EPA 7470: ≤ 28 days	
	✓			• EPA 120.1: ≤ 28 days	
	✓			• EPA 300: ○ ≤ 48 hours (Nitrate and Orthophosphate) ○ ≤ 28 days (Chloride, Fluoride, and Sulfate)	
	✓			• EPA 410.4: ≤ 28 days	
		✓		• SM 4500-H: ≤15 minutes. Samples were analyzed more than 15 minutes after sample collection. J-flag positive results.	J
	✓			• SM 2540C: ≤7 days	
	✓			• SM 5210B: ≤ 48 hours and after 5-day (±6 hours) incubation period.	
	✓			• SM 5310B: ≤ 28 days	
	✓			• EPA 9020B: ≤ 28 days	
2. Were sample storage and preservation requirements met?	✓			• Temperatures of sample containers upon receipt were 1.1, 1.4, and 2.1 °C (≤6°C).	

[1] As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag, V, and Zn
[2] CAS subcontracted the TOX analysis to Summit Environmental Technologies, Inc. of Cuyahoga Falls, OH. The TOX analysis was conducted under Order number 13020374.
[3] Independent Technical Reviewer

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
				The laboratory verified that all samples, except Primary, Under Drain, Secondary, MW-5A, and MW-7A, were properly preserved in the field.	
		✓		• The pH of the COD, TOX, and TOC bottles provided for the Primary sample was >2 upon receipt at the laboratory. The laboratory attempted to adjust the pH of the sample to <2 with the addition of the appropriate acid to each container. The Primary sample foamed with the addition of acid preservatives. The COD and TOX sample results, which are preserved to pH <2 to prevent biological activity, may be biased low (J). The TOC sample result may be biased high (J), as all inorganic carbon may not have been converted to CO2.	J
				• The pH of the metals bottles provided for Primary, Under Drain, Secondary, MW-5A, and MW-7A was >2 upon receipt at the laboratory. The laboratory adjusted the pH of the sample bottles with the addition of nitric acid prior to analysis to correct the pH; therefore, qualification of data is not required.	
3. Was a method blank analyzed with each batch?	✓			• EPA 6010: MB-01229-02	
	✓			• EPA 7470: MB-01223-02	
	✓			• EPA 120.1: J1300929-MB1	
	✓			• EPA 300: J1300929-MB1	
	✓			• EPA 410.4: J1300929-MB1	
			✓	• SM 4500-H: Not applicable	
	✓			• SM 2540C: J1300929-MB1	
	✓			• SM 5210B: J1300929-MB1	
	✓			• SM 5310B: J1300929-MB1 & J1300929-MB2	
	✓			• EPA 9020B: MB-R603	

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
4. Were target analytes reported in the method/calibration blank above the Detection Limit (DL)?	✓			• EPA 6010, CCB 2/21/13 @ 14:17: o Barium @ 0.283 J µg/L (RL 10.000, MDL 0.220) o Zinc @ 1.560 J µg/L (RL 20.000, MDL 1.400) • SM 5310B, J1300929-MB1 & J1300929-MB2: TOC @ 0.1 J mg/L (RL 1.0, MDL 0.09)	
5. Were target analytes reported in field blank analyses (e.g., trip, ~~ambient, field, or equipment~~) above the DL?			✓		
6. Were contaminants detected in samples below the blank contamination action level?	✓			Blank contamination action levels: • Barium @ 1.415 µg/L (0.283 x 5) • TOC @ 0.5 mg/L (0.1 x 5) • Zinc @ 7.800 µg/L (1.560 x 5)	B
7. Was a field duplicate sample collected?		✓			
8. Was precision deemed acceptable as defined by the project plans and/or DV Guidelines?			✓		
9. Was a LCS prepared/analyzed with each batch?	✓			• EPA 6010: LCS-01229-01 (LCS Only)	
	✓			• EPA 7470: LCS-01223-01 (LCS Only)	
	✓			• EPA 120.1: J1300929-LCS1 (LCS Only)	
	✓			• EPA 300: J1300929-LCS1 (LCS Only)	
	✓			• EPA 410.4: J1300929-LCS1 (LCS Only)	
			✓	• SM 4500-H: Not applicable	
	✓			• SM 2540C: J1300929-LCS1 (LCS Only)	
	✓			• SM 5210B: J1300929-LCS1 (LCS Only)	
	✓			• SM 5310B: J1300929- LCS1 and J1300929-LCS2 (LCS Only)	
	✓			• EPA 9020B: LCS-R603 (LCS Only)	
10. Were LCS recoveries within lab/project[4] specifications?	✓				
11. Were LCS/LCSD RPD within lab specifications?			✓	LCS only	
12. Was a MS/MSD pair analyzed with each batch?	✓			• EPA 6010: J1300929-001 (MW-1A), MS/MSD	
	✓			• EPA 7470: J1300894-002 (Batch)[5], MS/MSD	
			✓	• EPA 120.1: Not applicable	
	✓			• EPA 300: J1300929-001 (MW-1A), MS only	
	✓			• EPA 410.4: J1300929-001 (MW-1A), MS only	

[4] LCS recovery is to be within 60-140% of the true value
[5] Per Craig Meyers of ALS, batch sample results are not included in the laboratory data package.

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
			✓	• SM 4500-H: Not applicable	
			✓	• SM 2540C: Not applicable	
			✓	• SM 5210B: Not applicable	
	✓			• SM 5310B: J1300929-006 (MW-5A), MS only	
	✓			• EPA 9020B: J1300929-001 (MW-1A), MS/MSD	
13. Is the MS/MSD parent sample a project-specific sample?	✓	✓		See above.	
14. Were MS/MSD recoveries within lab specifications? *Only QC results for project samples are evaluated.*		✓		MW-1A (J1300929-001), 300: Sulfate @ 89%R (90-110). J-Flag positive result.	J
15. Were laboratory criteria met for precision during the MS/MSD analysis? *Only QC results for project samples are evaluated.*	✓				
16. Was a serial dilution conducted on each inorganic batch?	✓			• EPA 6010: J1300929-001 (MW-1A)	
			✓	• EPA 7470: Batch[5]	
17. Is the serial dilution parent sample a project-specific sample?	✓			See above.	
18. Is the percent difference between the serially diluted result and undiluted result less than 10% (for those analytes with native concentrations greater than 50x the DL)? *Only QC results for project samples are evaluated.*	✓			The percent difference between serially diluted and undiluted results was less than 10 when the native sample concentration was greater than fifty times the detection limit.	
19. Was a post-digestion spike analysis conducted whenever the MS or serial dilution results did not meet QC limits?	✓			• EPA 6010: J1300929-001 (MW-1A) was subject to a PDS analysis even though MS/MSD results met control limits.	
			✓	• EPA 7470: Batch[5]	
20. Were laboratory/project specifications met during the PDS analysis? *Only QC results for project samples are evaluated.*	✓				
21. Was a laboratory duplicate analyzed with each batch?		✓		See below.	
22. Is the laboratory duplicate sample a project-specific sample?			✓	• EPA 6010: Not applicable	
			✓	• EPA 7470: Not applicable	
	✓			• EPA 120.1: J1300929-001 (MW-1A)	
	✓			• EPA 300: J1300929-001 (MW-1A)	
	✓			• EPA 410.4: J1300929-001 (MW-1A)	
	✓			• SM 4500-H: J1300929-001 (MW-1A)	
	✓			• SM 2540C: J1300929-001 (MW-1A)	
	✓			• SM 5210B: J1300921-001 (Batch)	
	✓			• SM 5310B: J1300929-006 (MW-5A)	
			✓	• EPA 9020B: Not applicable	
23. Does laboratory duplicate results meet lab specifications? *Only QC results for project samples are evaluated.*	✓				

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
24. Were initial and continuing calibration standards analyzed at the lab/project-specified frequency for each instrument?	✓			EPA 120.1, 300, 410.4, 6010, and 7470, SM 4500-H, 5210B, and 5310B	
25. Were these results within lab/project specifications?	✓				
26. Were surrogate recoveries within lab/project specifications?			✓		
27. Were internal standard results within lab specifications?			✓		
28. Were TIC reported and were reported results qualified as estimated concentrations?			✓		
29. Were laboratory-generated Corrective Action Reports (i.e., QCER) issued? If yes, summarize contents or attach copy of the report.		✓			
30. Were lab comments included in report? If yes, summarize contents or attach a copy of the narrative.	✓			According to the Case Narrative, samples MW-1A, MW-1B, MW-4A, MW-5A, MW-7A, MW-8A, Secondary, and Under Drain (J1300929-001 through -006 and -008 through -009) exhibited signs of potential toxicity for the biological oxygen demand analysis, yielding successively lower results as the sample dilution decreased. BOD results for these eight samples are estimated (J). Refer to **Attachment A** for additional comments.	J

Comments: The data review process was modeled after the *USEPA Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Superfund Organic Methods Data Review* (EPA, June 2008) and *USEPA CLP NFG for Inorganic Superfund Data Review* (USEPA, January 2010). Sample results have been qualified based on the results of the data review process (refer to **Attachment B**). In performing the data evaluation, the URS' data reviewer assumed that the data reported by the laboratory are complete, compliant, and an accurate representation of the raw data. Criteria for acceptability of data were based upon available site information, analytical method requirements, guidance documents, and professional judgment.

DV Flag Definitions:

B Blank contamination
J Estimated value
UJ Not detected and the detection limit is estimated
U Not present above the associated level; blank contamination exists
R Unusable data

ATTACHMENT A

CASE NARRATIVE

COLUMBIA ANALYTICAL SERVICES, INC dba ALS

Client:	URS Corporation	**Service Request No.:**	J1300929
Project:	IP Riegelwood Landfill	**Date Received:**	2/20/13
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier III data deliverables including validation summary forms. When appropriate to the procedure, method blank results have been reported with each analytical test. Analytical procedures performed by the lab are validated in accordance with NELAC standards. Parameters that are included in the NELAC Fields of Testing but are not included in the lab's NELAC accreditation are identified in the discussion of each analytical procedure.

Sample Receipt

Nine water samples were received for analysis at ALS Environmental on 2/20/13. The samples were received in good condition and consistent with the accompanying chain of custody form. Samples are refrigerated at ≤6°C upon receipt at the lab except for aqueous samples designated for metals analyses, which are stored at room temperature.

Metals Analyses:

Method 6010C: The control criterion for the serial dilution analysis of Arsenic, Vanadium, and Zinc for sample J1300929-001 is not applicable. The concentration of the analytes in the parent sample is less than 10x the reporting limit. No further corrective action was required

General Chemistry Analyses:

Method 300.0: The reporting limit is elevated for Fluoride and Nitrate in sample J1300929-007. The chromatogram indicated the presence of non-target background components that interfered with the analysis. The matrix interference prevented adequate resolution of the target compound at the reporting limit.

Method SM5210B (BOD): The dilution water used for the batch did not meet the method guidance for dissolved oxygen depletion of less than 0.2 mg/L. This guidance is used to evaluate the potential for biases. A review of the sample data indicates that the quality is not significantly affected. No further corrective action was appropriate.

Method SM5210B (BOD): Samples J1300929-001 through -006 and -008 through -009 exhibited signs of potential toxicity for the BOD analysis, yielding successively lower results as the sample dilution decreased. The results for BOD for these samples should be considered estimated.

Method 300.0: The matrix spike recovery of Sulfate for sample J1300929-001 was outside control criteria. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicates the analytical batch was in control. The matrix spike outlier suggests a potential bias in this matrix. No further corrective action was appropriate.

Subcontracted Analytical Parameters:

The samples were delivered to Summit Environmental in Cuyahoga Falls, OH on 2/22/13 for EPA Method 9020 determination. The certified analytical report has been included in its entirety in Appendix A: Subcontracted Analytical Results.

Approved by _____ **Date** 3/11/13

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Data Qualifiers

Inorganic Data

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E The result is an estimated amount because the value exceeded the instrument calibration range.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
Z Too many colonies were present (TNTC). The numeric value represents the filtration volume.
i The MRL/MDL has been elevated due to matrix interference.
X See case narrative.

Metals Data

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E The reported value is estimated because of the presence of matrix interference.
M The duplicate injection precision was not met.
N The Matrix Spike sample recovery is not within control limits. See case narrative.
S The result was determined by Method of Standard Additions (MSA).
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i The MRL/MDL has been elevated due to matrix interference.
X See case narrative.
+ The correlation coefficient for the MSA is less than 0.995.

Organic Data

* The result is an outlier. See case narrative.
# The control limit criteria are not applicable. See case narrative.
A The tentatively identified compound is a suspected aldol-condensation product.
B The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D The reported result is from a dilution.
E The result is an estimated amount because the value exceeded the instrument calibration range.
J The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P The GC or HPLC confirmation criteria were exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides)
U The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i The MRL/MDL has been elevated due to a chromatographic interference.
X See case narrative.

Petroleum Hydrocarbon Specific

F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z The chromatographic fingerprint does not resemble a petroleum product.

ATTACHMENT B

QUALIFIED SAMPLE RESULTS

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1300929 **Method Type:**

Sample ID: J1300929-001 **Client ID:** MW-1A

Matrix: WATER **Date Received:** 2/20/2013 **Level:** LOW

% Solids: **Sample Wt/Vol:** 50.0 **Final Vol:** 50.0

Prep Batch ID: 177323 **Prep Date:** 2/20/2013

Analyte	Concentration	Units	C	Qual	Method	MDL	MRL	Dil	Analytical Date	Analytical Time
Arsenic	4.0	ug/L	J		6010C	3.6	10	1.00	2/21/2013	12:38:19
Barium	111	ug/L			6010C	0.22	10	1.00	2/21/2013	12:38:19
Cadmium	0.17	ug/L	U		6010C	0.17	5.0	1.00	2/21/2013	12:38:19
Chromium	0.41	ug/L	U		6010C	0.41	10	1.00	2/21/2013	12:38:19
Copper	2.0	ug/L	U		6010C	2.0	10	1.00	2/21/2013	12:38:19
Iron	865	ug/L			6010C	2.5	100	1.00	2/21/2013	12:38:19
Lead	3.3	ug/L	U		6010C	3.3	10	1.00	2/21/2013	12:38:19
Manganese	15	ug/L			6010C	2.3	10	1.00	2/21/2013	12:38:19
Mercury	0.012	ug/L	U		7470A	0.012	0.10	1.00	2/21/2013	12:24:19
Selenium	6.2	ug/L	U		6010C	6.2	10	1.00	2/21/2013	12:38:19
Silver	1.2	ug/L	U		6010C	1.2	10	1.00	2/21/2013	12:38:19
Vanadium	2.0	ug/L	J		6010C	1.6	20	1.00	2/21/2013	12:38:19
Zinc	6.7	ug/L	J B		6010C	1.4	20	1.00	2/21/2013	12:38:19

Comments:

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1300929 **Method Type:**

Sample ID: J1300929-002 **Client ID:** MW-1B

Matrix: WATER **Date Received:** 2/20/2013 **Level:** LOW

% Solids: **Sample Wt/Vol:** 50.0 **Final Vol:** 50.0

Prep Batch ID: 177323 **Prep Date:** 2/20/2013

Analyte	Concentration	Units	C	Qual	Method	MDL	MRL	Dil	Analytical Date	Analytical Time
Arsenic	6.0	ug/L	J		6010C	3.6	10	1.00	2/21/2013	13:08:51
Barium	22	ug/L			6010C	0.22	10	1.00	2/21/2013	13:08:51
Cadmium	0.17	ug/L	U		6010C	0.17	5.0	1.00	2/21/2013	13:08:51
Chromium	0.61	ug/L	J		6010C	0.41	10	1.00	2/21/2013	13:08:51
Copper	2.0	ug/L	U		6010C	2.0	10	1.00	2/21/2013	13:08:51
Iron	1470	ug/L			6010C	2.5	100	1.00	2/21/2013	13:08:51
Lead	3.3	ug/L	U		6010C	3.3	10	1.00	2/21/2013	13:08:51
Manganese	83	ug/L			6010C	2.3	10	1.00	2/21/2013	13:08:51
Mercury	0.012	ug/L	U		7470A	0.012	0.10	1.00	2/21/2013	12:25:31
Selenium	6.2	ug/L	U		6010C	6.2	10	1.00	2/21/2013	13:08:51
Silver	1.2	ug/L	U		6010C	1.2	10	1.00	2/21/2013	13:08:51
Vanadium	4.5	ug/L	J		6010C	1.6	20	1.00	2/21/2013	13:08:51
Zinc	1.4	ug/L	U		6010C	1.4	20	1.00	2/21/2013	13:08:51

Comments:

M Meyerslee, 4/17/2013

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1300929 **Method Type:**

Sample ID: J1300929-003 **Client ID:** MW-7A

Matrix: WATER **Date Received:** 2/20/2013 **Level:** LOW

% Solids: **Sample Wt/Vol:** 50.0 **Final Vol:** 50.0

Prep Batch ID: 177323 **Prep Date:** 2/20/2013

Analyte	Concentration	Units	C	Qual	Method	MDL	MRL	Dil	Analytical Date	Analytical Time
Arsenic	13	ug/L			6010C	3.6	10	1.00	2/21/2013	13:13:09
Barium	36	ug/L			6010C	0.22	10	1.00	2/21/2013	13:13:09
Cadmium	1.0	ug/L	J		6010C	0.17	5.0	1.00	2/21/2013	13:13:09
Chromium	6.0	ug/L	J		6010C	0.41	10	1.00	2/21/2013	13:13:09
Copper	2.0	ug/L	U		6010C	2.0	10	1.00	2/21/2013	13:13:09
Iron	14500	ug/L			6010C	2.5	100	1.00	2/21/2013	13:13:09
Lead	3.3	ug/L	U		6010C	3.3	10	1.00	2/21/2013	13:13:09
Manganese	232	ug/L			6010C	2.3	10	1.00	2/21/2013	13:13:09
Mercury	0.016	ug/L	J		7470A	0.012	0.10	1.00	2/21/2013	12:26:43
Selenium	6.2	ug/L	U		6010C	6.2	10	1.00	2/21/2013	13:13:09
Silver	1.2	ug/L	U		6010C	1.2	10	1.00	2/21/2013	13:13:09
Vanadium	10	ug/L	J		6010C	1.6	20	1.00	2/21/2013	13:13:09
Zinc	3.1	ug/L	J B		6010C	1.4	20	1.00	2/21/2013	13:13:09

Comments:

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1300929 **Method Type:**

Sample ID: J1300929-004 **Client ID:** MW-4A

Matrix: WATER **Date Received:** 2/20/2013 **Level:** LOW

% Solids: **Sample Wt/Vol:** 50.0 **Final Vol:** 50.0

Prep Batch ID: 177323 **Prep Date:** 2/20/2013

Analyte	Concentration	Units	C	Qual	Method	MDL	MRL	Dil	Analytical Date	Analytical Time
Arsenic	3.6	ug/L	U		6010C	3.6	10	1.00	2/21/2013	13:22:42
Barium	42	ug/L			6010C	0.22	10	1.00	2/21/2013	13:22:42
Cadmium	0.17	ug/L	U		6010C	0.17	5.0	1.00	2/21/2013	13:22:42
Chromium	0.41	ug/L	U		6010C	0.41	10	1.00	2/21/2013	13:22:42
Copper	2.0	ug/L	U		6010C	2.0	10	1.00	2/21/2013	13:22:42
Iron	1260	ug/L			6010C	2.5	100	1.00	2/21/2013	13:22:42
Lead	3.3	ug/L	U		6010C	3.3	10	1.00	2/21/2013	13:22:42
Manganese	46	ug/L			6010C	2.3	10	1.00	2/21/2013	13:22:42
Mercury	0.012	ug/L	U		7470A	0.012	0.10	1.00	2/21/2013	12:27:56
Selenium	6.2	ug/L	U		6010C	6.2	10	1.00	2/21/2013	13:22:42
Silver	1.2	ug/L	U		6010C	1.2	10	1.00	2/21/2013	13:22:42
Vanadium	1.6	ug/L	U		6010C	1.6	20	1.00	2/21/2013	13:22:42
Zinc	4.8	ug/L	J B		6010C	1.4	20	1.00	2/21/2013	13:22:42

Comments:

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1300929 **Method Type:**

Sample ID: J1300929-005 **Client ID:** MW-8A

Matrix: WATER **Date Received:** 2/20/2013 **Level:** LOW

% Solids: **Sample Wt/Vol:** 50.0 **Final Vol:** 50.0

Prep Batch ID: 177323 **Prep Date:** 2/20/2013

Analyte	Concentration	Units	C	Qual	Method	MDL	MRL	Dil	Analytical Date	Analytical Time
Arsenic	5.1	ug/L	J		6010C	3.6	10	1.00	2/21/2013	13:26:58
Barium	41	ug/L			6010C	0.22	10	1.00	2/21/2013	13:26:58
Cadmium	0.17	ug/L	U		6010C	0.17	5.0	1.00	2/21/2013	13:26:58
Chromium	0.41	ug/L	U		6010C	0.41	10	1.00	2/21/2013	13:26:58
Copper	2.0	ug/L	U		6010C	2.0	10	1.00	2/21/2013	13:26:58
Iron	2670	ug/L			6010C	2.5	100	1.00	2/21/2013	13:26:58
Lead	3.3	ug/L	U		6010C	3.3	10	1.00	2/21/2013	13:26:58
Manganese	82	ug/L			6010C	2.3	10	1.00	2/21/2013	13:26:58
Mercury	0.012	ug/L	U		7470A	0.012	0.10	1.00	2/21/2013	12:29:09
Selenium	6.2	ug/L	U		6010C	6.2	10	1.00	2/21/2013	13:26:58
Silver	1.2	ug/L	U		6010C	1.2	10	1.00	2/21/2013	13:26:58
Vanadium	1.6	ug/L	U		6010C	1.6	20	1.00	2/21/2013	13:26:58
Zinc	3.3	ug/L	J B		6010C	1.4	20	1.00	2/21/2013	13:26:58

Comments:

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1300929 **Method Type:**

Sample ID: J1300929-006 **Client ID:** MW-5A

Matrix: WATER **Date Received:** 2/20/2013 **Level:** LOW

% Solids: **Sample Wt/Vol:** 50.0 **Final Vol:** 50.0

Prep Batch ID: 177323 **Prep Date:** 2/20/2013

Analyte	Concentration	Units	C	Qual	Method	MDL	MRL	Dil	Analytical Date	Analytical Time
Arsenic	5.4	ug/L	J		6010C	3.6	10	1.00	2/21/2013	13:31:39
Barium	134	ug/L			6010C	0.22	10	1.00	2/21/2013	13:31:39
Cadmium	3.4	ug/L	J		6010C	0.17	5.0	1.00	2/21/2013	13:31:39
Chromium	5.6	ug/L	J		6010C	0.41	10	1.00	2/21/2013	13:31:39
Copper	2.0	ug/L	U		6010C	2.0	10	1.00	2/21/2013	13:31:39
Iron	306	ug/L			6010C	2.5	100	1.00	2/21/2013	13:31:39
Lead	3.3	ug/L	U		6010C	3.3	10	1.00	2/21/2013	13:31:39
Manganese	226	ug/L			6010C	2.3	10	1.00	2/21/2013	13:31:39
Mercury	0.012	ug/L	U		7470A	0.012	0.10	1.00	2/21/2013	12:30:22
Selenium	6.2	ug/L	U		6010C	6.2	10	1.00	2/21/2013	13:31:39
Silver	1.2	ug/L	U		6010C	1.2	10	1.00	2/21/2013	13:31:39
Vanadium	9.7	ug/L	J		6010C	1.6	20	1.00	2/21/2013	13:31:39
Zinc	1.8	ug/L	J	B	6010C	1.4	20	1.00	2/21/2013	13:31:39

Comments:

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1300929 **Method Type:**

Sample ID: J1300929-007 **Client ID:** Primary

Matrix: WATER **Date Received:** 2/20/2013 **Level:** LOW

% Solids: **Sample Wt/Vol:** 50.0 **Final Vol:** 50.0

Prep Batch ID: 177323 **Prep Date:** 2/20/2013

Analyte	Concentration	Units	C	Qual	Method	MDL	MRL	Dil	Analytical Date	Analytical Time
Arsenic	145	ug/L			6010C	3.6	10	1.00	2/21/2013	13:40:59
Barium	205	ug/L			6010C	0.22	10	1.00	2/21/2013	13:40:59
Cadmium	0.17	ug/L	U		6010C	0.17	5.0	1.00	2/21/2013	13:40:59
Chromium	140	ug/L			6010C	0.41	10	1.00	2/21/2013	13:40:59
Copper	8.6	ug/L	J		6010C	2.0	10	1.00	2/21/2013	13:40:59
Iron	8880	ug/L			6010C	2.5	100	1.00	2/21/2013	13:40:59
Lead	3.3	ug/L	U		6010C	3.3	10	1.00	2/21/2013	13:40:59
Manganese	468	ug/L			6010C	2.3	10	1.00	2/21/2013	13:40:59
Mercury	0.14	ug/L			7470A	0.012	0.10	1.00	2/21/2013	12:31:36
Selenium	6.2	ug/L	U		6010C	6.2	10	1.00	2/21/2013	13:40:59
Silver	1.6	ug/L	J		6010C	1.2	10	1.00	2/21/2013	13:40:59
Vanadium	1580	ug/L			6010C	1.6	20	1.00	2/21/2013	13:40:59
Zinc	28	ug/L			6010C	1.4	20	1.00	2/21/2013	13:40:59

Comments:

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1300929 **Method Type:**

Sample ID: J1300929-008 **Client ID:** Secondary

Matrix: WATER **Date Received:** 2/20/2013 **Level:** LOW

% Solids: **Sample Wt/Vol:** 50.0 **Final Vol:** 50.0

Prep Batch ID: 177323 **Prep Date:** 2/20/2013

Analyte	Concentration	Units	C	Qual	Method	MDL	MRL	Dil	Analytical Date	Analytical Time
Arsenic	3.6	ug/L	U		6010C	3.6	10	1.00	2/21/2013	13:50:06
Barium	29	ug/L			6010C	0.22	10	1.00	2/21/2013	13:50:06
Cadmium	0.17	ug/L	U		6010C	0.17	5.0	1.00	2/21/2013	13:50:06
Chromium	24	ug/L			6010C	0.41	10	1.00	2/21/2013	13:50:06
Copper	2.0	ug/L	U		6010C	2.0	10	1.00	2/21/2013	13:50:06
Iron	2960	ug/L			6010C	2.5	100	1.00	2/21/2013	13:50:06
Lead	3.3	ug/L	U		6010C	3.3	10	1.00	2/21/2013	13:50:06
Manganese	421	ug/L			6010C	2.3	10	1.00	2/21/2013	13:50:06
Mercury	0.012	ug/L	U		7470A	0.012	0.10	1.00	2/21/2013	12:35:50
Selenium	6.2	ug/L	U		6010C	6.2	10	1.00	2/21/2013	13:50:06
Silver	1.2	ug/L	U		6010C	1.2	10	1.00	2/21/2013	13:50:06
Vanadium	21	ug/L			6010C	1.6	20	1.00	2/21/2013	13:50:06
Zinc	25	ug/L			6010C	1.4	20	1.00	2/21/2013	13:50:06

Comments:

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1300929 **Method Type:**

Sample ID: J1300929-009 **Client ID:** Under Drain

Matrix: WATER **Date Received:** 2/20/2013 **Level:** LOW

% Solids: **Sample Wt/Vol:** 50.0 **Final Vol:** 50.0

Prep Batch ID: 177323 **Prep Date:** 2/20/2013

Analyte	Concentration	Units	C	Qual	Method	MDL	MRL	Dil	Analytical Date	Analytical Time
Arsenic	11	ug/L			6010C	3.6	10	1.00	2/21/2013	13:59:13
Barium	237	ug/L			6010C	0.22	10	1.00	2/21/2013	13:59:13
Cadmium	0.17	ug/L	U		6010C	0.17	5.0	1.00	2/21/2013	13:59:13
Chromium	30	ug/L			6010C	0.41	10	1.00	2/21/2013	13:59:13
Copper	2.0	ug/L	U		6010C	2.0	10	1.00	2/21/2013	13:59:13
Iron	140000	ug/L			6010C	2.5	100	1.00	2/21/2013	13:59:13
Lead	3.3	ug/L	U		6010C	3.3	10	1.00	2/21/2013	13:59:13
Manganese	878	ug/L			6010C	2.3	10	1.00	2/21/2013	13:59:13
Mercury	0.057	ug/L	J		7470A	0.012	0.10	1.00	2/21/2013	12:37:04
Selenium	6.2	ug/L	U		6010C	6.2	10	1.00	2/21/2013	13:59:13
Silver	1.2	ug/L	U		6010C	1.2	10	1.00	2/21/2013	13:59:13
Vanadium	103	ug/L			6010C	1.6	20	1.00	2/21/2013	13:59:13
Zinc	11	ug/L	J		6010C	1.4	20	1.00	2/21/2013	13:59:13

Comments:

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

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Client:	URS Corporation	**Service Request:**	J1300929
Project:	IP Riegelwood Landfill	**Date Collected:**	2/19/13 1005
Sample Matrix:	Water	**Date Received:**	2/20/13
Sample Name:	MW-1A		
Lab Code:	J1300929-001	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	SM 5210 B	**39.4**	~~X~~ J	mg/L	2.0	2.0	1	NA	2/20/13 13:00	
Carbon, Total Organic (TOC)	SM 5310 B	**27.5**		mg/L	1.0	0.09	1	NA	2/22/13 14:30	
Chemical Oxygen Demand, Total	410.4	ND	U	mg/L	20	16	1	2/22/13	2/25/13 14:44	
Chloride	300.0	**6.73**		mg/L	0.50	0.11	1	NA	2/20/13 18:35	
Conductivity at 25 Degrees Celsius	120.1	**146**		µMHOS/cm	1.0	1.0	1	NA	2/26/13 13:13	
Fluoride	300.0	**0.17**	J	mg/L	0.20	0.02	1	NA	2/20/13 18:35	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	2/20/13 18:35	
pH	SM 4500-H+ B	4.37	~~X~~ J	pH Units			1	NA	2/20/13 17:19	H
Solids, Total Dissolved	SM 2540 C	**85**		mg/L	10	10	1	NA	2/21/13 15:20	
Sulfate	300.0	**51.0**	J	mg/L	0.50	0.18	1	NA	2/20/13 18:35	

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

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Client:	URS Corporation	**Service Request:**	J1300929
Project:	IP Riegelwood Landfill	**Date Collected:**	2/19/13 1040
Sample Matrix:	Water	**Date Received:**	2/20/13
Sample Name:	MW-1B		
Lab Code:	J1300929-002	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	SM 5210 B	**32.2**	X J	mg/L	2.0	2.0	1	NA	2/20/13 13:00	
Carbon, Total Organic (TOC)	SM 5310 B	**42.3**		mg/L	1.0	0.09	1	NA	2/22/13 14:44	
Chemical Oxygen Demand, Total	410.4	ND	U	mg/L	20	16	1	2/22/13	2/25/13 14:45	
Chloride	300.0	**10.0**		mg/L	0.50	0.11	1	NA	2/20/13 19:20	
Conductivity at 25 Degrees Celsius	120.1	**439**		µMHOS/cm	1.0	1.0	1	NA	2/26/13 13:16	
Fluoride	300.0	**0.15**	J	mg/L	0.20	0.02	1	NA	2/20/13 19:20	
Nitrate as Nitrogen	300.0	**0.17**	J	mg/L	0.20	0.03	1	NA	2/20/13 19:20	
pH	SM 4500-H+ B	7.43	X J	pH Units			1	NA	2/20/13 17:25	H
Solids, Total Dissolved	SM 2540 C	**290**		mg/L	10	10	1	NA	2/21/13 15:20	
Sulfate	300.0	**22.0**		mg/L	0.50	0.18	1	NA	2/20/13 19:20	

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

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Client:	URS Corporation	**Service Request:**	J1300929
Project:	IP Riegelwood Landfill	**Date Collected:**	2/19/13 1340
Sample Matrix:	Water	**Date Received:**	2/20/13
Sample Name:	MW-7A		
Lab Code:	J1300929-003	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	SM 5210 B	**50.9**	X J	mg/L	2.0	2.0	1	NA	2/20/13 13:00	
Carbon, Total Organic (TOC)	SM 5310 B	**100**		mg/L	1.0	0.09	1	NA	2/22/13 15:27	
Chemical Oxygen Demand, Total	410.4	**49**		mg/L	20	16	1	2/22/13	2/25/13 14:46	
Chloride	300.0	**141**		mg/L	0.50	0.11	1	NA	2/20/13 19:35	
Conductivity at 25 Degrees Celsius	120.1	**1240**		µMHOS/cm	1.0	1.0	1	NA	2/26/13 13:19	
Fluoride	300.0	**0.18**	J	mg/L	0.20	0.02	1	NA	2/20/13 19:35	
Nitrate as Nitrogen	300.0	**0.17**	J	mg/L	0.20	0.03	1	NA	2/20/13 19:35	
pH	SM 4500-H+ B	7.12	X J	pH Units			1	NA	2/20/13 17:27	H
Solids, Total Dissolved	SM 2540 C	**848**		mg/L	20	20	2	NA	2/21/13 15:20	
Sulfate	300.0	**50.1**		mg/L	0.50	0.18	1	NA	2/20/13 19:35	

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

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Client:	URS Corporation	**Service Request:**	J1300929
Project:	IP Riegelwood Landfill	**Date Collected:**	2/19/13 1420
Sample Matrix:	Water	**Date Received:**	2/20/13
Sample Name:	MW-4A		
Lab Code:	J1300929-004	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	SM 5210 B	**26.8**	X J	mg/L	2.0	2.0	1	NA	2/20/13 13:00	
Carbon, Total Organic (TOC)	SM 5310 B	**16.3**		mg/L	1.0	0.09	1	NA	2/22/13 15:41	
Chemical Oxygen Demand, Total	410.4	ND	U	mg/L	20	16	1	2/22/13	2/25/13 14:46	
Chloride	300.0	**17.9**		mg/L	0.50	0.11	1	NA	2/20/13 19:50	
Conductivity at 25 Degrees Celsius	120.1	**175**		µMHOS/cm	1.0	1.0	1	NA	2/26/13 13:22	
Fluoride	300.0	**0.14**	J	mg/L	0.20	0.02	1	NA	2/20/13 19:50	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	2/20/13 19:50	
pH	SM 4500-H+ B	4.77	X J	pH Units			1	NA	2/20/13 17:29	H
Solids, Total Dissolved	SM 2540 C	**114**		mg/L	10	10	1	NA	2/21/13 15:20	
Sulfate	300.0	**45.0**		mg/L	0.50	0.18	1	NA	2/20/13 19:50	

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

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Client: URS Corporation
Project: IP Riegelwood Landfill
Sample Matrix: Water

Service Request: J1300929
Date Collected: 2/19/13 1500
Date Received: 2/20/13

Sample Name: MW-8A
Lab Code: J1300929-005

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	SM 5210 B	**26.1**	X J	mg/L	2.0	2.0	1	NA	2/20/13 13:00	
Carbon, Total Organic (TOC)	SM 5310 B	**66.8**		mg/L	1.0	0.09	1	NA	2/22/13 15:55	
Chemical Oxygen Demand, Total	410.4	ND	U	mg/L	20	16	1	2/22/13	2/25/13 14:46	
Chloride	300.0	**2.20**		mg/L	0.50	0.11	1	NA	2/20/13 20:05	
Conductivity at 25 Degrees Celsius	120.1	**747**		µMHOS/cm	1.0	1.0	1	NA	2/26/13 13:24	
Fluoride	300.0	**0.22**		mg/L	0.20	0.02	1	NA	2/20/13 20:05	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	2/20/13 20:05	
pH	SM 4500-H+ B	7.02	X J	pH Units			1	NA	2/20/13 17:31	H
Solids, Total Dissolved	SM 2540 C	**511**		mg/L	10	10	1	NA	2/21/13 15:20	
Sulfate	300.0	**131**		mg/L	0.50	0.18	1	NA	2/20/13 20:05	

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

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Client:	URS Corporation	**Service Request:**	J1300929
Project:	IP Riegelwood Landfill	**Date Collected:**	2/19/13 1545
Sample Matrix:	Water	**Date Received:**	2/20/13
Sample Name:	MW-5A		
Lab Code:	J1300929-006	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	SM 5210 B	**33.8**	~~X~~ J	mg/L	2.0	2.0	1	NA	2/20/13 13:00	
Carbon, Total Organic (TOC)	SM 5310 B	**158**		mg/L	10	0.9	10	NA	2/27/13 17:07	
Chemical Oxygen Demand, Total	410.4	**155**		mg/L	20	16	1	2/22/13	2/25/13 14:46	
Chloride	300.0	**234**		mg/L	1.0	0.3	2	NA	2/20/13 21:05	
Conductivity at 25 Degrees Celsius	120.1	**2020**		µMHOS/cm	1.0	1.0	1	NA	2/26/13 13:27	
Fluoride	300.0	**0.15**	J	mg/L	0.20	0.02	1	NA	2/20/13 20:50	
Nitrate as Nitrogen	300.0	**0.19**	J	mg/L	0.20	0.03	1	NA	2/20/13 20:50	
pH	SM 4500-H+ B	6.91	~~X~~ J	pH Units			1	NA	2/20/13 17:32	H
Solids, Total Dissolved	SM 2540 C	**1250**		mg/L	40	40	4	NA	2/21/13 15:20	
Sulfate	300.0	**11.0**		mg/L	0.50	0.18	1	NA	2/20/13 20:50	

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

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Client:	URS Corporation	**Service Request:**	J1300929
Project:	IP Riegelwood Landfill	**Date Collected:**	2/19/13 1115
Sample Matrix:	Water	**Date Received:**	2/20/13
Sample Name:	Primary		
Lab Code:	J1300929-007	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	SM 5210 B	**1110**		mg/L	2.0	2.0	1	NA	2/20/13 13:00	
Carbon, Total Organic (TOC)	SM 5310 B	**819**	J	mg/L	10	0.9	10	NA	2/22/13 16:25	
Chemical Oxygen Demand, Total	410.4	**1610**	J	mg/L	200	160	10	2/22/13	2/25/13 14:47	
Chloride	300.0	**153**		mg/L	2.5	0.6	5	NA	2/20/13 21:20	
Conductivity at 25 Degrees Celsius	120.1	**10800**		µMHOS/cm	1.0	1.0	1	NA	2/26/13 13:31	
Fluoride	300.0	ND	U	mg/L	1.0	0.07	5	NA	2/20/13 21:20	
Nitrate as Nitrogen	300.0	ND	U	mg/L	1.0	0.2	5	NA	2/20/13 21:20	
Orthophosphate as Phosphorus	300.0	**1.10**		mg/L	0.50	0.09	5	NA	2/20/13 21:20	
pH	SM 4500-H+ B	7.54	~~X~~ J	pH Units			1	NA	2/20/13 17:34	H
Solids, Total Dissolved	SM 2540 C	**6660**		mg/L	200	200	20	NA	2/21/13 15:20	
Sulfate	300.0	**1620**		mg/L	5.0	1.8	10	NA	2/20/13 21:35	

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

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Client:	URS Corporation	**Service Request:**	J1300929
Project:	IP Riegelwood Landfill	**Date Collected:**	2/19/13 1130
Sample Matrix:	Water	**Date Received:**	2/20/13
Sample Name:	Secondary		
Lab Code:	J1300929-008	**Basis:**	NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	SM 5210 B	**34.8**	X J	mg/L	2.0	2.0	1	NA	2/20/13 13:00	
Carbon, Total Organic (TOC)	SM 5310 B	**192**		mg/L	10	0.9	10	NA	2/27/13 18:16	
Chemical Oxygen Demand, Total	410.4	**113**		mg/L	20	16	1	2/22/13	2/25/13 14:47	
Chloride	300.0	**40.5**		mg/L	0.50	0.11	1	NA	2/20/13 22:05	
Conductivity at 25 Degrees Celsius	120.1	**1960**		µMHOS/cm	1.0	1.0	1	NA	2/26/13 13:53	
Fluoride	300.0	**0.50**		mg/L	0.20	0.02	1	NA	2/20/13 22:05	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	2/20/13 22:05	
Orthophosphate as Phosphorus	300.0	**1.07**		mg/L	0.10	0.02	1	NA	2/20/13 22:05	
pH	SM 4500-H+ B	6.76	X J	pH Units			1	NA	2/20/13 17:36	H
Solids, Total Dissolved	SM 2540 C	**1420**		mg/L	40	40	4	NA	2/21/13 15:20	
Sulfate	300.0	**73.7**		mg/L	0.50	0.18	1	NA	2/20/13 22:05	

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

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Client: URS Corporation
Project: IP Riegelwood Landfill
Sample Matrix: Water

Service Request: J1300929
Date Collected: 2/19/13 1200
Date Received: 2/20/13

Sample Name: Under Drain
Lab Code: J1300929-009

Basis: NA

General Chemistry Parameters

Analyte Name	Method	Result	Q	Units	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
Biochemical Oxygen Demand (BOD)	SM 5210 B	**43.4**	X J	mg/L	2.0	2.0	1	NA	2/20/13 13:00	
Carbon, Total Organic (TOC)	SM 5310 B	**229**		mg/L	10	0.9	10	NA	2/27/13 18:30	
Chemical Oxygen Demand, Total	410.4	**197**		mg/L	20	16	1	2/22/13	2/25/13 14:48	
Chloride	300.0	**232**		mg/L	1.0	0.3	2	NA	2/20/13 22:50	
Conductivity at 25 Degrees Celsius	120.1	**3020**		µMHOS/cm	1.0	1.0	1	NA	2/26/13 13:56	
Fluoride	300.0	**0.18**	J	mg/L	0.20	0.02	1	NA	2/20/13 22:35	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	2/20/13 22:35	
Orthophosphate as Phosphorus	300.0	ND	U	mg/L	0.10	0.02	1	NA	2/20/13 22:35	
pH	SM 4500-H+ B	6.89	X J	pH Units			1	NA	2/20/13 17:40	H
Solids, Total Dissolved	SM 2540 C	**2180**		mg/L	40	40	4	NA	2/21/13 15:20	
Sulfate	300.0	**158**		mg/L	0.50	0.18	1	NA	2/20/13 22:35	

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

SUMMIT ENVIRONMENTAL TECHNOLOGIES, INC
Analytical Laboratories

Summit Environmental Technologies, Inc.
3310 Win St.
Cuyahoga Falls, Ohio 44223
TEL: (330) 253-8211 FAX: (330) 253-4489
Website: http://www.settek.com

WO#: **13020374**
Date Reported: **2/28/2013**
Company: ALS Environmental, Inc.
Address: 9143 Philips HWY
Jacksonville FL 32256
Received: 2/22/2013
Project#: J1300929

Client ID#	Lab ID#	Collected	Analyte	Result Units	Qual	Matrix	Method	DF	LOD	LOQ	Run	Analyst
J1300929-001 MW-1A	001	2/19/2013	Total Organic Halides	ND mg/L	U	Non-Potable Water	EPA 9020	1	0.080	0.10	2/25/2013	JRK
J1300929-002 MW-1B	002	2/19/2013	Total Organic Halides	0.078 mg/L	J	Non-Potable Water	EPA 9020	1	0.080	0.10	2/25/2013	JRK
J1300929-003 MW-7A	003	2/19/2013	Total Organic Halides	0.60 mg/L		Non-Potable Water	EPA 9020	1	0.080	0.10	2/25/2013	JRK
J1300929-004 MW-4A	004	2/19/2013	Total Organic Halides	ND mg/L	U	Non-Potable Water	EPA 9020	1	0.080	0.10	2/25/2013	JRK
J1300929-005 MW-8A	005	2/19/2013	Total Organic Halides	ND mg/L	U	Non-Potable Water	EPA 9020	1	0.080	0.10	2/25/2013	JRK
J1300929-006 MW-5A	006	2/19/2013	Total Organic Halides	1.1 mg/L		Non-Potable Water	EPA 9020	1	0.080	0.10	2/25/2013	JRK
J1300929-007 Primary	007	2/19/2013	Total Organic Halides	1.6 mg/L J		Non-Potable Water	EPA 9020	1	0.080	0.10	2/25/2013	JRK
J1300929-008 06 Secondary	008	2/19/2013	Total Organic Halides	0.22 mg/L		Non-Potable Water	EPA 9020	1	0.080	0.10	2/25/2013	JRK
J1300929-009 Under Drain	009	2/19/2013	Total Organic Halides	0.73 mg/L		Non-Potable Water	EPA 9020	1	0.080	0.10	2/25/2013	JRK

Sample results have been qualified by URS based on the results of the data review process, which is modeled after the USEPA CLP NFG for Superfund Organic Methods Data Review (EPA, June 2008) and USEPA CLP NFG Inorganic Superfund Data Review (USEPA, January 2010).

APPENDIX B

Location IP - Ridgelwood Date 2-19-13

Project / Client Landfill Area

URS Personel: Mike Meese, Duncan Briley

Weather: 50° overcast

0910 Arrive onsite, mob to MW-1 well Cluster.

0920 Get round of water levels

well ID	TD	T	W.C
MW-1A	29.50	15.23	14.27
MW-1B	50.00	14.78	35.22
MW-4A	11.90	4.74	7.16
MW-4B	25.17	6.68	18.49
MW-5A	20.00	9.25	10.75
MW-5B	29.00	10.10	18.90
MW-7A	13.00	2.79	10.21
MW-7B	24.73	3.01	21.72
MW-8A	12.50	3.67	8.83
MW-8B	25.00	5.79	19.21

0930 will keep all notes for sampling on field sheets.

1000 Coran onsite, will let us know if he needs help collecting soil samples, will continue groundwater sampling.

1155 Coran calls done onsite, will meet us @ the underdrain.

1210 Coran onsite finish collecting samples @ the Under Drain

Location IP - Ridgelwood Date 2-19-13

Project / Client Landfill Area

1215 Break for lunch.

1245 Back onsite, mob to landfill to continue groundwater sampling

1600 Finish onsite, talk with Coran.

1610 Sign out @ contractor gate, leave site to pack coolers and ship samples.

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: IP Riegelwood Landfill

PROJECT NO. 31828323.00001

SAMPLE NO. MW-1A

WELL NO. MW-1A

DATE/TIME COLLECTED 2-19-13 / 1005

PERSONNEL Michael Meese, Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4/Orange	TOX
1 - 500ml Poly	HNO3/Red	Metals 200.7
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date: 2-19-13

Time Started: 0935

Time Completed: 1005

Well Depth (ft. BTOC): 29.50

Depth to Water (ft BTOC): 15.23

Actual Purge (liters): 5

Purge rate (liters/min): 0.33

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
0939	1	15.23	17.30	0.135	1.80	4.74	17.1	5.2
0942	2	15.23	17.88	0.135	1.06	4.32	59.7	8.1
0945	3	15.23	18.04	0.135	0.80	4.29	78.2	4.8
0948	4	15.23	18.13	0.136	0.80	4.27	80.3	2.4
0951	5	15.23	18.16	0.136	0.80	4.27	82.6	1.9

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Solinst 100'	NA
Water Quality Meter	YSI 556-MPS	pH 4 &7, Cond., Zobell's Solutions
Turbidity Meter	Lamotte 20/20	1 NTU & 10 NTU Solutions

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **IP Riegelwood Landfill** PROJECT NO. **31828323.00001**

SAMPLE NO. MW-1B WELL NO. MW-1B

DATE/TIME COLLECTED 2-19-13 / 1040 PERSONNEL Michael Meese

SAMPLE METHOD Peristaltic pump with 1/8" tubing Duncan Briley

SAMPLE MEDIA: **Groundwater**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4/Orange	TOX
1 - 500ml Poly	HNO3/Red	Metals 200.7
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date 2-19-13

Time Started 1010

Time Completed 1040

Well Depth (ft. BTOC) 50.00

Depth to Water (ft BTOC) 14.78

Actual Purge (liters) 6

Purge rate (liters/min) 0.33

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1018	1	14.81	18.21	0.388	6.86	6.42	73.5	5.9
1021	2	14.85	18.24	0.396	7.32	6.67	63.0	5.5
1024	3	14.86	18.24	0.397	7.21	6.76	59.9	8.6
1027	4	14.86	18.25	0.397	7.14	6.81	56.0	8.4
1030	5	14.87	18.26	0.398	7.12	6.86	54.0	11.3
1033	6	14.87	18.28	0.398	7.11	6.89	53.9	9.7

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Solinst 100'	NA
Water Quality Meter	YSI 556-MPS	pH 4 &7, Cond., Zobell's Solutions
Turbidity Meter	Lamotte 20/20	1 NTU & 10 NTU Solutions

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: IP Riegelwood Landfill

PROJECT NO. 31828323.00001

SAMPLE NO. MW-7A

WELL NO. MW-7A

DATE/TIME COLLECTED 2-19-13 / 1340

PERSONNEL Michael Meese, Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4/Orange	TOX
1 - 500ml Poly	HNO3/Red	Metals 200.7
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date: MW-7A

Time Started: 1310

Time Completed: 1340

Well Depth (ft. BTOC): 13.00

Depth to Water (ft BTOC): 2.79

Actual Purge (liters): 5

Purge rate (liters/min): 0.33

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1319	1	5.70	13.75	1.111	2.09	7.48	-66.7	83.3
1322	2	6.92	13.74	1.108	1.94	7.35	-59.8	79.5
1325	3	6.95	13.73	1.109	1.42	7.26	-58.4	72.3
1328	4	6.99	13.78	1.120	1.40	7.22	-58.8	64.2
1331	5	7.03	13.80	1.121	1.38	7.18	-62.1	62.8

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Solinst 100'	NA
Water Quality Meter	YSI 556-MPS	pH 4 &7, Cond., Zobell's Solutions
Turbidity Meter	Lamotte 20/20	1 NTU & 10 NTU Solutions

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: IP Riegelwood Landfill

PROJECT NO. 31828323.00001

SAMPLE NO. MW-4A

WELL NO. MW-4A

DATE/TIME COLLECTED 2-19-13/ 1420

PERSONNEL Michael Meese, Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4/Orange	TOX
1 - 500ml Poly	HNO3/Red	Metals 200.7
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date: 2-19-13

Time Started: 1350

Time Completed: 1420

Well Depth (ft. BTOC): 11.90

Depth to Water (ft BTOC): 4.74

Actual Purge (liters): 6

Purge rate (liters/min): 0.33

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1358	1	5.10	15.37	0.191	4.51	7.27	44.9	28.2
1401	2	5.10	15.41	0.173	3.50	6.61	107.9	18.9
1404	3	5.10	15.47	0.165	2.90	6.16	152.3	14.0
1407	4	5.10	15.48	0.163	2.11	5.70	158.4	6.8
1410	5	5.10	15.45	0.164	2.09	5.68	161.2	6.6
1413	6	5.10	15.46	0.163	2.06	5.59	162.8	6.2

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Solinst 100'	NA
Water Quality Meter	YSI 556-MPS	pH 4 &7, Cond., Zobell's Solutions
Turbidity Meter	Lamotte 20/20	1 NTU & 10 NTU Solutions

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: IP Riegelwood Landfill

PROJECT NO. 31828323.00001

SAMPLE NO. MW-8A

WELL NO. MW-8A

DATE/TIME COLLECTED 2-19-13/1500

PERSONNEL Michael Meese, Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4/Orange	TOX
1 - 500ml Poly	HNO3/Red	Metals 200.7
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date: 2-19-13

Time Started: 1430

Time Completed: 1500

Well Depth (ft. BTOC): 12.50

Depth to Water (ft BTOC): 3.67

Actual Purge (liters): ~~8.83~~ mm

Purge rate (liters/min): 0.33

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1438	1	4.15	13.88	0.689	3.35	6.39	44.1	49.3
1441	2	4.44	13.51	0.687	3.27	6.52	39.2	46.4
1444	3	4.50	13.21	0.695	3.25	6.58	39.9	36.1
1447	4	4.55	13.20	0.687	3.22	6.62	36.9	29.7
1450	5	4.58	13.18	0.684	3.26	6.64	34.9	27.7

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Solinst 100'	NA
Water Quality Meter	YSI 556-MPS	pH 4 &7, Cond., Zobell's Solutions
Turbidity Meter	Lamotte 20/20	1 NTU & 10 NTU Solutions

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **IP Riegelwood Landfill** PROJECT NO. **31828323.00001**

SAMPLE NO. MW-5A WELL NO. MW-5A

DATE/TIME COLLECTED 2-19-13/1545 PERSONNEL Michael Meese

SAMPLE METHOD Peristaltic pump with 1/8" tubing Duncan Briley

SAMPLE MEDIA: **Groundwater**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4/Orange	TOX
1 - 500ml Poly	HNO3/Red	Metals 200.7
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date 2-19-13

Time Started 1515

Time Completed 1545

Well Depth (ft. BTOC) 20.00

Depth to Water (ft BTOC) 9.25

Actual Purge (liters) 6

Purge rate (liters/min) 0.33

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1523	1	9.25	15.42	1.635	1.25	6.70	35.8	5.1
1526	2	9.25	15.35	1.686	0.95	6.71	3.0	5.2
1529	3	9.25	15.32	1.694	0.87	6.72	-8.9	4.5
1532	4	9.25	15.29	1.696	0.78	6.71	-27.8	4.3
1535	5	9.25	15.22	1.699	0.79	6.72	-28.2	4.3
1538	6	9.25	15.22	1.698	0.80	6.72	-29.5	4.2

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Solinst 100'	NA
Water Quality Meter	YSI 556-MPS	pH 4 &7, Cond., Zobell's Solutions
Turbidity Meter	Lamotte 20/20	1 NTU & 10 NTU Solutions

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **IP Riegelwood Landfill** PROJECT NO. **31828323.00001**

SAMPLE NO. Primary WELL NO. Primary

DATE/TIME COLLECTED 2-19-13 / 1115 PERSONNEL Michael Meese

SAMPLE METHOD Through pumping system (pump #1) Duncan Briley

SAMPLE MEDIA: **Leachate**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4, Ophos
1 - 1L Amber	H2SO4/Orange	TOX
1 - 500ml Poly	HNO3/Red	Metals 200.7
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date NA

Time Started NA

Time Completed NA

Well Depth (ft. BTOC) NA

Depth to Water (ft BTOC) NA

Actual Purge (liters) NA

Purge rate (liters/min) NA

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1115	NA	NA	19.67	9.043	8.56	7.08	-225.0	84.1

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Solinst 100'	NA
Water Quality Meter	YSI 556-MPS	pH 4 &7, Cond., Zobell's Solutions
Turbidity Meter	Lamotte 20/20	1 NTU & 10 NTU Solutions

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **IP Riegelwood Landfill** PROJECT NO. **31828323.00001**

SAMPLE NO. Secondary WELL NO. Secondary

DATE/TIME COLLECTED 2-19-13 / 1130 PERSONNEL Michael Meese

SAMPLE METHOD Through pumping system (pump #3) Duncan Briley

SAMPLE MEDIA: **Leachate**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4, phos
1 - 1L Amber	H2SO4/Orange	TOX
1 - 500ml Poly	HNO3/Red	Metals 200.7
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date NA

Time Started NA

Time Completed NA

Well Depth (ft. BTOC) NA

Depth to Water (ft BTOC) NA

Actual Purge (liters) NA

Purge rate (liters/min) NA

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1130	NA	NA	21.74	1.845	1.26	7.74	-122.7	21.1

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Solinst 100'	NA
Water Quality Meter	YSI 556-MPS	pH 4 &7, Cond., Zobell's Solutions
Turbidity Meter	Lamotte 20/20	1 NTU & 10 NTU Solutions

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **IP Riegelwood Landfill** PROJECT NO. **31828323.00001**

SAMPLE NO. Under Drain WELL NO. Under Drain

DATE/TIME COLLECTED 2-19-13 / 1200 PERSONNEL Michael Meese

SAMPLE METHOD bailer Duncan Briley

SAMPLE MEDIA: **Leachate**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4, Ophros
1 - 1L Amber	H2SO4/Orange	TOX
1 - 500ml Poly	HNO3/Red	Metals 200.7
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date NA

Time Started NA

Time Completed NA

Well Depth (ft. BTOC) NA

Depth to Water (ft BTOC) NA

Actual Purge (liters) NA

Purge rate (liters/min) NA

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1200	NA	NA	19.52	2.704	2.70	7.35	-77.0	45.9

FIELD EQUIPMENT AND CALIBRATION

	Model	Calibration
Water Level Probe	Solinst 100'	NA
Water Quality Meter	YSI 556-MPS	pH 4 &7, Cond., Zobell's Solutions
Turbidity Meter	Lamotte 20/20	1 NTU & 10 NTU Solutions

GENERAL COMMENTS

ALS Environmental

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

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PAGE 1 OF 2

SR#

CAS Contract

Project Name: IP- Ridgewood Landfill	Project Number:
Project Manager: Martha Meyers-Leed	Email Address: URS.com
Company/Address: URS Corporation, 1600 Perimeter Park Dr. Suite 400, Morrisville, NC 27560	
Phone #: (919) 461-1519	FAX #: (919) 461-1415
Sampler's Signature: [signature]	Sampler's Printed Name: Michael Meese

ANALYSIS REQUESTED (Include Method Number and Container Preservative)

CLIENT SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	TOC	TOX	Metals 200.7	COD	TDS, BOD, Cl, F, SO4, NO3, pH, Cond.											REMARKS/ ALTERNATE DESCRIPTION
PRESERVATIVE						1	3	2	3	0											
MW-1A		2-19-13	1005	GW	6	X	X	X	X	X											
MW-1B			1040	GW	6	X	X	X	X	X											
MW-7A			1340	GW	6	X	X	X	X	X											
MW-4A			1420	GW	6	X	X	X	X	X											
MW-8A			1500	GW	6	X	X	X	X	X											
MW-5A		2-19-13	1545	GW	6	X	X	X	X	X											

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS

See QAPP ☐

TURNAROUND REQUIREMENTS
____ RUSH (SURCHARGES APPLY)
X STANDARD
REQUESTED FAX DATE _____
REQUESTED REPORT DATE _____

REPORT REQUIREMENTS
____ I. Results Only
____ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)
____ III. Results + QC and Calibration Summaries
____ IV. Data Validation Report with Raw Data
____ V. Specialized Forms / Custom Report
Edata ____Yes ____No

INVOICE INFORMATION
PO # SAME
BILL TO:

SAMPLE RECEIPT: CONDITION/COOLER TEMP: CUSTODY SEALS: Y N

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: [signature]	Signature	Signature	Signature	Signature	Signature
Printed Name: Michael Meese	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Firm: URS Corporation	Firm	Firm	Firm	Firm	Firm
Date/Time: 2-19-13 / 1800	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator; Yellow - Retained by Client

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CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

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SR#

CAS Contract

Project Name: IP-Ringgetwood-Landfill	Project Number:
Project Manager: Martha Meyers-Lee@URS.Com	Email Address:
Company/Address: URS Corporation, 1600 Perimeter Park Dr. Suite 400, Morrisville, N.C. 27560	
Phone #: (919) 461-1519	FAX #: (919) 461-1415
Sampler's Signature: Michael Meese	Sampler's Printed Name: Michael Meese

ANALYSIS REQUESTED *(Include Method Number and Container Preservative)*

CLIENT SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	NUMBER OF CONTAINERS	TOC	TOX	Metals 200.7	COD	TDS, BOD, Cl, F, SO4, NO3, pH, Cond, Cyanides											REMARKS/ ALTERNATE DESCRIPTION
PRESERVATIVE						1	3	2	3	0											
Primary		2-19-13	1115	GW	6	X	X	X	X	X											
Secondary		2-19-13	1130	GW	6	X	X	X	X	X											
Under Drain		2-19-13	1200	GW	6	X	X	X	X	X											

Preservative Key
0. NONE
1. HCL
2. HNO_3
3. H_2SO_4
4. NaOH
5. Zn. Acetate
6. MeOH
7. $NaHSO_4$
8. Other _____

SPECIAL INSTRUCTIONS/COMMENTS

See QAPP ☐

TURNAROUND REQUIREMENTS

___ RUSH (SURCHARGES APPLY)

X STANDARD

REQUESTED FAX DATE _____

REQUESTED REPORT DATE _____

REPORT REQUIREMENTS

___ I. Results Only

___ II. Results + QC Summaries (LCS, DUP, MS/MSD as required)

___ III. Results + QC and Calibration Summaries

___ IV. Data Validation Report with Raw Data

___ V. Specialized Forms / Custom Report

Edata ___ Yes ___ No

INVOICE INFORMATION

PO #

BILL TO SAME

SAMPLE RECEIPT: CONDITION/COOLER TEMP: CUSTODY SEALS: Y N

RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
Signature: Michael Meese	Signature	Signature	Signature	Signature	Signature
Printed Name: Michael Meese	Printed Name	Printed Name	Printed Name	Printed Name	Printed Name
Firm: URS Corporation	Firm	Firm	Firm	Firm	Firm
Date/Time: 2-19-13/1800	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator; Yellow - Retained by Client

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